NORWEGIAN SCHOOL OF ECONOMICS AND BUSINESS ADMINISTRATION, NHH
BERGEN, 20 December 2010

Master Profile: Financial Economics
Advisor: Professor Siri Pettersen Strandenes

DOF ASA – An Offshore Service Company Organized For Expansion

Jan Tore Vad and Aleksander Engås

This thesis was written as a part of the master program at NHH. Neither the institution, the supervisor, nor the censors are - through the approval of this thesis - responsible for neither the theories and methods used, nor results and conclusions drawn in this work.

Abstract:

The purpose of this thesis is a valuation of DOF ASA with a thorough analysis of the offshore service market. The valuation is based on public available information up until November 2010, and discussions with CFO Hilde Drønnen at DOF ASA. The market analysis is based on reports and presentations obtained from various Norwegian investment houses that cover the offshore service and subsea market. We will compile and use them as input in a market model.

The market analysis concludes that the OSV market is currently under pressure. Many OSVs where ordered during the economic upturn prior to the financial crisis and is now entering the market. Improvement in OSV market is not expected before late 2011. The outlook for the subsea market looks better, and with attrition of old subsea vessels, the subsea market should maintain high utilization.

The valuation is performed using 3 valuation methods: The Discounted cash flow method, net asset value method, and a peer view analysis. The conclusion of our valuation arrives at a fundamental value of NOK 72 per share. With a discount based on low liquidity and a controlling shareholder our target share price is NOK 58. The target share price offers a 29% upside potential compared to today's share price, and we conclude with a buy recommendation.

Acknowledgment:

Writing this thesis required a comprehensive gathering of information. We received help from many people whom we want to offer our thanks. First we would like to thank Hilde Drønnen, CFO at DOF ASA, who took time out of her hectic days and agreed to work with us. Hilde provided us with much information about DOF and knowledge of the offshore service sector through several meetings. We would also like to thank our academic advisor, Professor Siri Pettersen Strandenes. Siri has, through her high level of expertise in the area of international economics and shipping, provided invaluable comments and constructive feedback in the making of this thesis.

We have received reports on DOF and the offshore service and subsea sector from various investment houses. We would like to thank personnel at Arctic Securities, Carnegie, DnB NOR Markets, First Securities, Nordea Markets, ODS-Petrodata, Pareto Securities RS Platau and SEB Enskilda for providing us with valuable reports and presentations.

Bergen, December 2010

Jan Tore Vad Aleksander Engås

Contents

Preface

Valuations are performed on a daily basis based on new information released to the market. Many methods can be applied to perform these valuations, and theory on what is the best methods vary. The purpose of this thesis is to apply some of the theories to perform a fundamental valuation. We have in cooperation with DOF agreed to analyze the underlying values in DOF ASA. They believe that the values of the company are not portrayed correctly in the market.

We would therefore like to answer/research 2 questions:

1. What is the underlying fundamental value of DOF, and how is the value reflected in today`s stock price?
2. What are the prospects for the market and segments where DOF operates?

The research questions are interesting questions because DOF is in a high growth phase which makes DOF difficult to analyze. It would be interesting to see if values that are displayed through the share price are valid based on underlying values. The results of our analysis will form a basis for investment decisions, and will be interesting reading for current and future investors, both share holders and creditors. A thorough market analysis might be interesting for investors who want to include offshore service into their existing portfolio.

Organization of thesis

Chapter 1 contains a description on DOF's company profile and introduces readers to DOF's corporate structure, their main operations, and DOF's vessels. Classification of DOF`s fleet will be the basis for further discussion in our thesis. We will present a summary of DOF`s internal strengths.

In chapter 2 we will address theories and methodology. Theory on market structure, freight rate mechanism and the relationship between futures prices and expected spot prices will be discussed. An outline of the methodology behind the offshore service market model that is used

in the thesis will be explained. Finally theory and discussions on valuation methods that will be used in the thesis will be addressed.

Chapter 3 deals with the market model. Main factors that contribute to affect demand and supply of the offshore service sector will be addressed. The balance between demand and supply will be studied, and how investor sentiment affects the balance trough the supply side. It will give readers a good understanding on fundamentals in the market. Compiled forecasts incorporated in the market model will form the basis for financial projections.

A competitor analysis is performed in chapter 4 to illustrate how DOF differs or is equal to their Norwegian peers. We have limited our scope to only include Norwegian peers, due to the vast number of competitors worldwide. Differences in the fleet, strategy, and financials will be explored. We will show that DOF has competitive advantages, but most likely short term advantages.

Chapter 5 cover DOF`s financials and will take readers through a discussion on historic profit & loss statements and the balance sheet. The discussion will form a basis for projections for the next 5 years. By combining chapter 3 and 4 with historical performance we have constructed a model for revenue projections. The model will be outlined in Appendix A.

The projections on cash flow that we found in chapter 5 will be used in chapter 6 to perform a Discounted Cash Flow valuation. We will also perform a NAV valuation based on vessel values from the second hand market. In cases where vessel transactions are non-existing we will base values on newbuilding costs. A peer view valuation will compare DOF`s values with Norwegian peers. Finally we present scenarios that affect the outcome of the three valuation methods.

Abbreviations

AHTS	Anchor Handling Tug Support Vessel
AUV	Autonomous Underwater Vehicle
BBL	Barrels
BHP	Break Horse Power
CAPEX	Capital Expansion cost (investments)
CAPM	Capital Asset Pricing Model
CSV	Construction Support Vessel
DCF	Discounted Cash Flow model
DSV	Dive Support Vessel
DWT	Deadweight Tonnage
E&P	Exploration and Production
EBITDA	Earnings before interest, tax, depreciation, and amortization
EV	Enterprise Value
FPSO	Floating Production, Storage and Offload vessel
GDP	Gross Domestic Product
GOM	Gulf of Mexico
HQSE	Health, Quality, Safety and Environment
LCP	Large Cap Players
M&A	Merger and Acquisition
MBOE	Thousands of Barrels of Oil Equivalent
MMBOE	Million Barrels of Oil Equivalent
MSV	Multi Support Vessel
MVD	Market Value of Debt
MVE	Market Value of Equity
NAV	Net Asset Value model
NIBD	Net Interest Bearing Debt
NIBOR	Norwegian Inter-Bank Offered Rate
NOC	National Oil Companies
NS	North Sea
OCV	Offshore Construction vessel
OPEX	Operating Expenses
OSE	Oslo Stock Exchange
OSV	Offshore Support Vessel
OTC	Over The Counter
P&L	Profit and Loss statement
PLV	Pipe Lay Vessel
PSV	Platform Support vessel
ROV	Remotely Operated Vehicle
ROVSV	Remotely Operated Vehicle Support Vessel
ROTV	Remote Towed Vehicle
RRR	Reserve Replacement ratio
TC	Time Charter
WACC	Weighted Average Cost of Capital
WIV	Well Intervention Vessel

Illustrations

Tables:

1 DOF ASA - company profile

1.1 Introduction

DOF ASA was founded in 1981 and today the company controls one of the largest and modern fleets among its Norwegian peers. None of the other Norwegian offshore service vessel operators has the same subsea exposure. In addition to operating vessels they offer engineering capacity to service the subsea market.

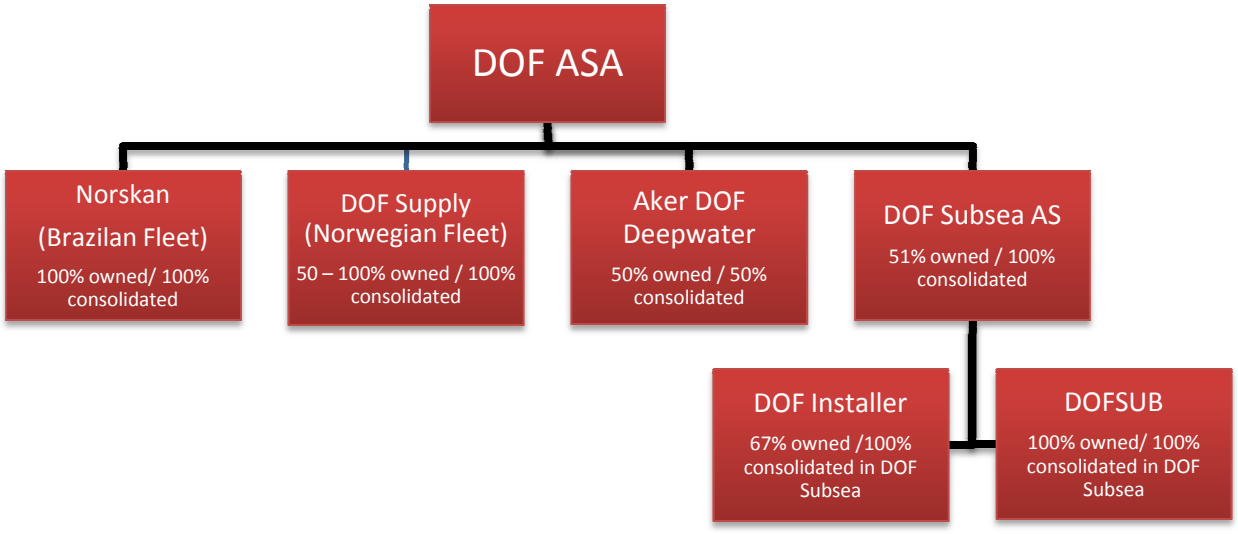
DOF ASA is represented in all major regions where global oil and gas industry operates. To achieve this, the company has a strong local presence in all of their operating regions with offices, and a large multinational workforce of about 3.100 employees.

DOF is in strong growth with many newbuildings. The fleet comprise of 68 vessels, including newbuildings and vessels operated by subsidiaries. A detailed description of the fleets operations will be given later in this chapter.

1.2 Structure

DOF's current company structure is complex compared to their Norwegian peers. The current company structure is presented in figure 2-1.

Figure 2-1: DOF ASA Company Structre



Source: DOF ASA, compiled by authors

DOF ASA is a holding company for the various subsidiaries presented. Subsea operations for DOF ASA are mainly handled by DOF Subsea AS, which is 51% owned. The remaining 49% is owned by the private equity group First Reserve. DOF Installer, with 3 large AHTSs under construction, is owned 67% by DOF Subsea AS, and the remaining shares are OTC listed on OSE. DOFSUB and DOF Installer are 100% consolidated into DOF Subsea AS which is 100% consolidated in DOF ASA.

1.3 Operations

DOF ASA operates in two business areas, offshore service and subsea. Offshore service operations charter platform supply vessels (PSV) and anchor handling tug supply vessels (AHTS) mainly on long-term contract with focus on the North Sea and Brazil regions. Contractors are mostly national oil companies and large cap oil and gas companies.

Subsea vessels are chartered on long-term term charters (TC) or on a day-rate project contract. Project contracts are usually short term and rates corresponds to service provided day to day. Services can include remotely operated vehicle (ROV) and engineering capabilities like divers, ROV operators and geologists. TC contracts provide a fixed day rate which is index regulated often in line with the expected cost inflation. Most contracts have extended options added where charterers can choose to exercise options at predetermined terms. If rates decrease significantly, options will probably not be exercised.

DOF has equipment to carry out large scale subsea operations and is in process of acquiring engineering skills and personnel to handle these operations. DOF recently acquired SWG Offshore, an Australian company serving the Asia Pacific region. SWG`s core business is project management and engineering.

The main operating areas for DOF ASA are the North Sea, Brazil, West Africa, and South East Asia. Details on operating areas will be presented later in this chapter.

1.4 Fleet

DOF operates as mentioned in the offshore service vessel market (OSV) and Subsea market. We will now present aspects of operations for the PSVs, AHTSs and Subsea vessels.

The fleet composition of DOF ASA is presented in table 1-1. DOF has 51 vessels in operation and 17 newbuildings. The vessels are scheduled to be delivered over the next 3 years.

Table 1-1: DOF ASA fleet overview

	PSV	AHTS	ROV / OSCV / DSV / Seismic	Total	Of which are under construction
DOF Supply	13	3	2	18	1
Norskan Offshore Ltda	7	12	2	21	8
DOF Subsea AS	0	0	21	21	3
DOF Installer ASA	0	3	0	3	2
Aker DOF Deepwater AS	0	5	0	5	5
Total	20	23	25	68	17
Contract Coverage 2010 (firm)	98%	96%	91%	95%	
Contract Coverage 2011 (firm)	68%	74%	66%	69%	

Source: DOF ASA, compiled by authors

1.4.1 The Offshore Service Vessels

Offshore Service Vessels (OSV) can be divided into PSV and AHTS.

PSV

Platform Supply Vessels (PSV) transport supplies to and from offshore installations. PSVs most important specification is large deck space and tanks under the deck which can carry different fluids in separate tanks. On deck PSVs can carry containers, equipment and pipes, while under deck the vessels can transport fluids like mud & brine, cements or other dry bulk, water and fuel. Some vessels have tanks for special fluids like methanol.

Table 1-2: Classifications of PSVs

	Small	Medium	Large
Free deck space	<400m2	400-800m2	>800m2
Dead weight ton (DWT)	<2000 dwt	2000-3000 dwt	>3000 dwt

Source: Compiled by authors

PSV's are classified according to their carrying capacities: Size of free deck space, total

carrying capacity in dead weight ton (DWT), or specifics of tanks. The most common classification is DWT.

DOF operates 20 PSV's including newbuildings, and vessels are in the medium to large range, most in the large range. All vessels are on long term contracts, even newbuildings.

AHTS

Anchor Handling Tug Supply (AHTS) vessels are especially designed for towing and anchoring of rigs and other offshore installations. Recent developments in the offshore market have showed that deepwater operations require the need for bigger engines and winches. To anchor a drilling rig or a floating production unit at high depths require more powerful engines. We can observe an increase in larger AHTSs being built in order to facilitate a safe and efficient operation for the oil companies.

ATHS vessels are classified mainly according to their towing capacity. The most common yardstick is break horse power (BHP), but also winch power and supply operational capabilities

Table 1-3: Classification of AHTS

	Small	Medium	Large
Break horse power(BHP)	<10 000	10 000 – 15 000	>15 000

Source: Compiled by authors

DOF owns 23 AHTS's including newbuildings, and all vessels are in the medium to large range, mostly in large. Two of DOF`s newest vessels under construction in Brazil have 31 000 BHP, which is among the largest in the world. Some of the AHTSs are very large and have huge cranes, and can operate as construction support vessels. Most of DOF`s AHTS fleet is on long term contracts with major contractors.

1.4.2 Subsea vessels

Subsea vessel is a common term for offshore construction vessels (OCV) and construction support vessels (CSV). Subsea vessels main operations include installation, inspection and maintenance of subsea equipment for the oil and gas industry. They also service offshore platforms and buoys. Specialized vessels handle operations like pipe-laying, installations of mooring systems, construction and removal of offshore installations. Subsea vessels are large

vessels with huge cranes and large deck space to transport equipment. Many of the vessels have ROV and diving capabilities.

DOF's subsea vessels can be divided into Multi Support Vessels (MSV), Dive Support Vessels (DSV), Survey vessels, and Well Intervention Vessels (WIV). MSV is a general term that covers vessels which can install medium to lightweight subsea equipment, and also operate ROVs. DSVs have dive capabilities through on-board saturation diving chambers. Survey vessels perform seismic and survey operations, mapping the seabed for subsea installations and pipeline routes.

Table 1-4: Classification of DOF`s subsea fleet

DOF's subsea fleet (incl. new builds)	
Vessels:	
MSV/ROVSV	15
DSV	6
Well-intervention	2
Seismic/Survey	4
Equipment:	
ROVs	40
ROTVs	2
AUV	1

Source: DOF Q2 2010, Compiled by authors

DOF also owns two well-intervention vessels, Skandi Aker and Santos, which are the only vessels in the world that can conduct offshore testing and installations of subsea installations (DOF Q2 2010). Table 1-4 illustrate the classification of DOF`s subsea fleet and the vessels associated equipment.

DOF charters vessels with marine crew to major contractors on long-term contracts. They also have engineering capabilities, through DOFSUB, offering vessels with full crew and equipment directly to the oil companies. In connection with offshore construction work, DOF can use their whole operations specter since the AHTS vessels and PSVs provide support duties and towing assistance.

1.5 Areas of operations

The offshore service and subsea market will be addressed in the market analysis in chapter 3. DOF's areas of operations are presented below.

1.5.1 Northwest Europe

The North Sea region is a mature market with many oil and gas installations in place. Few large projects are under construction, except for Stockhman which is in a planning and survey phase. The region is today one of the largest OSV markets in the world with an average of around 200 vessels, and many operators charter on spot.

DOF operates 12 PSVs and 2 AHTSs on long-term contract in the North Sea, and one PSV on spot. The company has therefore very little spot exposure, and contract renewals are not needed before end 2011. DOF used to operate more vessels in the North Sea region, but has transferred vessels to Brazil to service the national oil company Petrobras. Brazil is an area in high growth compared to the North Sea.

1.5.2 Brazil

DOF has operated in Brazil for 10 years with a good track record. DOF's wholly-owned Norskan has a leading position in Brazil with the largest owned OSV and subsea fleet.

Most oil and gas discoveries in Brazil are at very high depths where fields are around 3 times further from shore than in the North Sea region. Brazil's oil and gas industry is in very high growth and Petrobras is expected to double its production levels offshore by 2020, which indicates an annual growth of 7.1 % (DN 09.09.2010). The growth in exploration and production will increase the need for OSVs and subsea vessels.

Special regulations in Brazil apply to OSV and subsea operations. The Brazilian government is committed to develop Brazil through local content by instituting favorable policies for those who commit to the country's growth. The local content involves giving priority to Brazilian flagged vessels over foreign flagged vessels. Foreign flagged vessels under operation in Brazil need to undergo circularization every year which implies that contracts can be taken over by Brazilian flagged vessels, if available. At end Q2 2010 there were 93 OSV vessels under Brazilian

flag and 151 under foreign flag. DOF has 17 of 27 vessels operating in Brazil under Brazilian flag. To increase the number of vessels operating under Brazilian flag, a special Brazilian regime (REB) will allow for each vessel ton owned by a Brazilian registered shipping company to import one half of additional tons to operate under REB regime. In addition, for each vessel ton under construction, twice the vessel tonnage of the same type of vessel are allowed under the REB regime during construction period (DOF Q2 2010).

1.5.3 Asia-Pacific region

DOF have operated in the Asia-Pacific region the last 6 years and has increased their presence over the years. The market is fairly new like the Brazil region, and major oil and gas projects are in a development phase. DOF operates 4 subsea vessels in the region.

1.5.4 West Africa

Many new deepwater fields have been discovered In West Africa. Development of fields in the region will require subsea installations and DOF has been operating in the region for some time to perform project work. West Africa is unstable with political unrest, rebels and piracy.

1.6 Internal summary

DOF's internal strengths lie with their employees which are shown through their strong track record. DOF has crew and engineers that are highly qualified, and have through acquisition of SWG Offshore acquired management knowledge of subsea operations. Combining this with new and high quality vessels and equipment, DOF will have a strong position for future growth. DOF has a strong global presence with office locations in all operating areas which bring them closer to charterers and strengthen bonds.

DOF`s company structure is large and complex which can imply a relative large management organization. Their local presence in operating areas might lead to high management costs, but the costs must be viewed in context with the benefits from presence in the regions.

2 Theory and methodology

2.1 The market analysis

Theory on the offshore service industry and the subsea industry is hard to come by. Theory on the shipping industry and different aspects that affect the industry is more common. Offshore service and subsea are industries which have developed in later years in line with the offshore production of oil and gas. First the oil and gas companies had integrated offshore services and subsea services for their installations, but this have now been outsourced to improve efficiency. The offshore service industry and subsea industry were created.

A common practice for a strategic analysis is to perform an analysis using the well known Porter model for external analysis and VRIO model for internal. We will address the same issues that these models deal with, but in a different approach. The external analysis will be highlighted through the market model in chapter 3 and we will address the differences amongst the Norwegian peers with a competitor analysis in chapter 4. Internal values are highlighted in chapter 1.6.

For the market model we first thought of using Stopford`s 9 step model, but the model is generalized around tanker and bulk shipping. Instead we have adjusted a macroeconomic shipping model and an overview of the model is presented in chapter 2.1.4. We will use market reports obtained from various financial institutions, and form a consensus on how the market is expected to develop in the next five years in chapter 3.

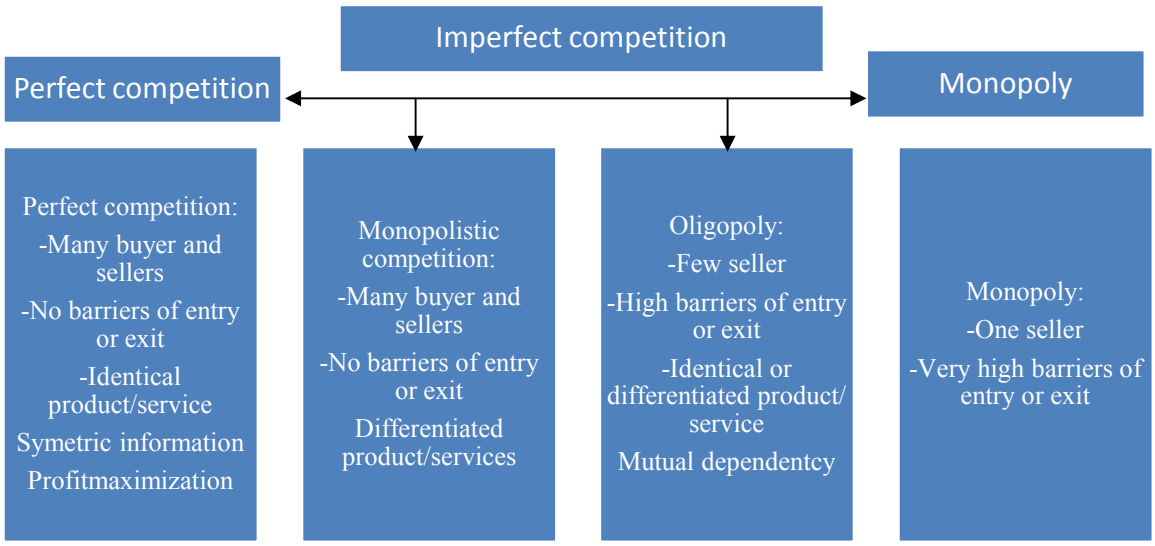
2.1.1 Market structure:

The market structure in the offshore service industry and subsea industry is important to understand because the market structure influence competition and prices in the short and long run. A *perfect competition* situation refers to a market where no producers or consumers are large enough to affect prices (Samuelson and Nordhus 2005). A *monopoly situation* is the polar structure to perfect competition where one seller has complete control over the industry. One firm produces all the products or services for the industry. Market structure in a monopoly is the most imperfect structure.

It is common for an industry to have a market structure in between the two polar structures (Pugel 2009). Some degree of imperfect competition is expected in most industries today. *Monopolistic competition* occurs when a large number of buyers and sellers are operating in the market, but the products/services are differentiated. In a perfect competitive structure the products/services are homogeneous. *Oligopoly* situation is a structure with few sellers who dominate the market. Companies in an oligopoly have high barriers of entry and substantial economies of scale. The structure is a stronger form of imperfect competition. Characteristics for different market structures are listed in figure 2-1.

Prices in a perfect competition situation are equal to the marginal cost (P=MC). In a monopoly the prices are where marginal revenue equals marginal cost (MR=MC). In imperfect competition the prices are somewhere in between the prices in perfect competition and monopoly.

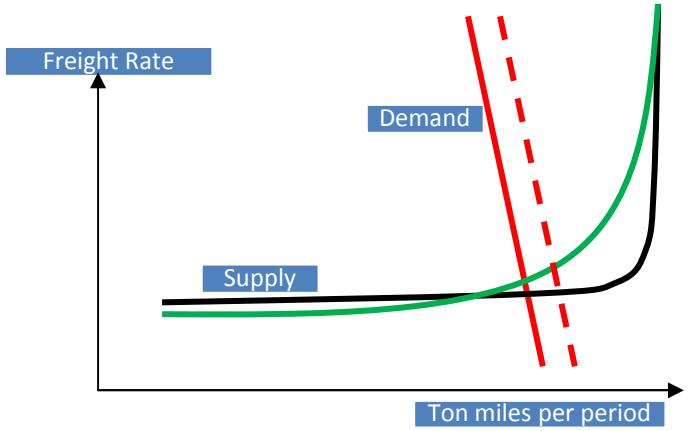
Figure 2-1: Characteristics for different market structure



Source: Course lectures BUS 401 , Adjusted by authors

2.1.2 The Freight Rate Mechanism

Figure 2-2: The Freight Rate Mechanism



Source: Stopford 2009, adjusted by authors

The green line in figure 2-2 illustrates the supply curve for ordinary shipping and the black line illustrates the supply curve for offshore service. The supply curves for ordinary shipping (inter-regional cargo) and offshore service are different.

Supply in ordinary shipping can be affected in the short term by adjusting speed, moving vessels in and out of lay-up and scarping. Maximum supply is almost constant in short term, because it takes time to deliver a new vessel, illustrated by the green and black supply curves. The demand curve is almost vertical and represents how the charterers adjust to price changes, illustrated by the red line.

The demand and supply curves can be applied to most shipping markets, but the relationship is different for the OSV market. “The practical reasons are that the weather often is not good enough for high speed, the difference between economical and high speed is low and the relevant travelling distances are usually short. This makes the time gain very modest combined with the fact that a few minutes gained or lost usually does not matter much”(Aas 2009).

It is difficult to affect supply with the speed element for offshore service. However in Brazil the offshore installations are further from land, up to 3 times longer than in the North Sea which might increase the relevance. The economical speed for the most modern vessels is around 11-13 knots, and the maximum speed is usually around 17-18 knots. To speed up will represent an increase in the cost of fuel. The speed difference represents flexibility, but flexibility is not always possible due to harsh weather conditions (Aas 2009). The black line in figure 2-2 illustrates a possible supply curve which is less convex due to less flexibility. Demand for offshore service shown in figure 2-2 is almost vertical. It correspond to that oil companies need

offshore service whether costs are high or low and that there is no alternative transport of offshore service than shipping (Stopford 2009).

At equilibrium the charterers and vessel owners agree on a price. If there is a shift in the demand curve to the right, we get a new intersection point, and we see from figure 2-2 that the supply curve is steeper for ordinary shipping and nearly unchanged for offshore service. The new equilibrium will attribute to a higher freight rate and more ton miles pr period for ordinary shipping while for offshore service there is limited affect on "freight rates". We assume that ordinary shipping companies and offshore service companies have excess supply capacity. Vessels will come out of lay-up as the increased freight rate will make it possible for the older vessels to support higher operation costs.

The long term equilibrium effect on supply is decided by the fleet size. Demand decides if the fleet will grow with new buildings or decrease with scraping.

2.1.3 Futures prices versus expected spot prices

Futures prices are forecasted prices on future spot prices. To explain how well futures prices forecast future spot prices there have been put forward three hypotheses (Bodie et al. 2008).

1. The expectation hypotheses:

   The hypotheses rely on risk neutrality where all participants are risk neutral. The participants agree on a price that provides an expected profit equal to zero for all parties. The hypotheses states that the future prices are equal to expected value of spot price at a given, future time. $F_0 = E(P_T)$
2. Normal backwardation:

   Offshore service companies want to hedge against risk and take short position[1] to guarantee services for a given price. To get speculators to take the corresponding long position[2] the offshore service companies need to offer the speculators an expectation of profit. Speculators will only go long if the futures price is below the

[1] Short position = Sell position at time zero
[2] Long position = Buy position at time zero

expected spot price. Speculators make a profit equal to $E(P_T) – F_0$ and offshore service companies loose the same amount, and eliminate all price risk.

3. Contango:

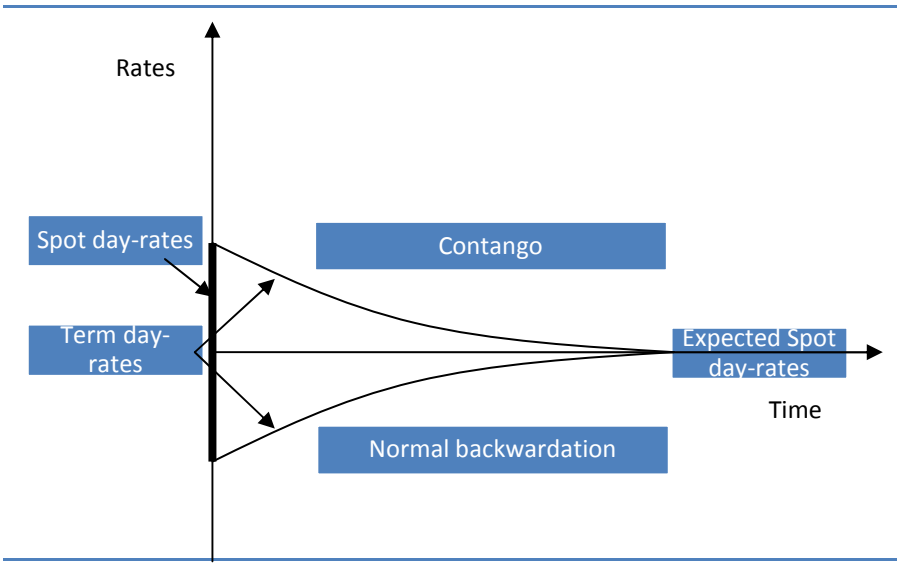
   Contango is the polar hypotheses to backwardation. The hypotheses state that it is purchasers (oil companies) of offshore services that want to hedge. Oil companies would be willing to pay a premium to lock the price they must pay for offshore services. Oil companies take a long position in the futures market and speculators take the short position. Long hedgers are willing to pay a higher futures price and speculators bear the risk, and must be paid a premium for entering in the short position. F_0 have to be higher than $E(P_T)$ for the contango hypotheses to hold.

The relationship between futures prices and expected spot prices can be used to explain the relationship between spot day-rates and term day-rates for offshore services.

Spot day-rates are prices offshore service companies get for services with instant delivery for a short given period. Services include use of different vessels with different specifications. Term day-rates are prices offshore service companies get for services in agreement with oil companies over a longer time period, or a future time period. Term day-rates are forecasted spot day-rates. Hence we can interpret the development in rates like the development in futures (Hannesson 2010).

Figure 2-3 illustrates the development in prices. At time zero the spot day-rate is equal to the term day-rate. The term day-rate can differ from the expected normal spot day-rate, over or under. As we move into time the spot day-rates are expected to follow the term day-rates as shown in the figure below.

Figure 2-3: Spot day-rates and term day-rates



Source: Hannesson 2010, adjusted by authors

Term day-rates will move towards expected long run spot day-rates which reflect long term offshore service cost for the oil companies. Term day-rates are therefore reflecting future spot rates. We will return to offshore service cost in chapter 3.

2.1.4 The market model

There is not much theory on the offshore service market. We will therefore use a classic maritime supply-demand model which is called "The macroeconomic shipping model" as a skeleton (Stopford 2009). We will adjust the model to fit the offshore service market. The Market analysis model separates the market into 3 sections; demand, supply and the balance between the two. We will use reports from investment houses and come to a consensus/understanding of different aspects that we will use in the model.

1. The demand section will be highlighted by a top-down approach which starts with the world economy and down to ship demand for different segments within the offshore service industry and subsea industry. We will look at factors and relationships which is important to give an understanding of the development of ship demand, and compile forecasts for future years.
2. In the supply section we want to derive the total existing fleet for offshore service and subsea operations. The section will also discuss factors and relationships that we want to address; scrapping and newbuildings determines the size of the fleet, but we will also discuss the subjectivity from an investor`s perspective. The investor`s sentiment is

dependent on the balance between demand and supply, but the investor can only affect the supply of vessels. We will look at historic and forecasted supply for vessels.

3. The balance between demand and supply determines utilization, rates and asset prices for vessels. If there is oversupply of vessels, these determinants will drop and the other way around. In this section we will reach a forecast based on the market reports from the investment houses and later implement the forecasts in our valuation.

The ordinary shipping industry differs from the offshore service and subsea sectors. Vessel owners and charterers come to an agreement on rates based on market balance in both cases. For ordinary shipping the vessel owners can use the freight rate mechanism discussed earlier to use an optimal economic speed to reduce operating cost in bad times and exploit god times.

2.2 Valuation models

Valuation models use a market and competitor analysis to create a base line for future projections on cash flows. When valuing a company, basing estimates on the market outlook and the company's current strategic position we will arrive at a fundamental value of the company. The value may differ substantially from the current stock price, if listed, but will serve as an indicator of what the company should be worth if the projections are correct. The fundamental value might never be reached if the stock has low liquidity or few shareholder control the company.

There are various methods to perform a valuation of a company. The method must be adapted according to type of company and sector of the valuation target. There are three main methods for valuation. Fundamental valuation, comparative valuation and option based valuation (Koller et al. 2005).

There are two main approaches to fundamental valuation. Cash flow models and asset models. Cash flow models base the value of the company on the present value of cash flows generated by the company over its lifetime. Asset models base the value of a company on current market values of the company's assets. We will use the discounted cash flow model and a net asset value approach when performing our fundamental valuation.

Comparative valuation is used to compare key financial figures of a company to its competitors and the sector. We will perform a peer view analysis of DOF and their Norwegian peers.

We will not conduct an option based valuation because it is highly complex and is highly subjective to errors. The valuation methods we use is the most common methods for shipping companies (Dahl et al. 1997).

2.2.1 Discounted Cash Flow model

The discounted cash flow (DCF) model is the most recognized and used model in valuation today. The basis for the model is to discount future cash flows based on future expectation. The valuation method takes direct consideration to uncertainty through the discount rate or the cash flow assumptions. Information on historical cash flows can contribute to reduce the uncertainty in the assumptions on future cash flows, and contribute to a more correct valuation of the company.

Differences in financing and depreciation will often affect accounting from year to year and will therefore be difficult to estimate. We will start by looking at earnings before Interest, tax, depreciation and amortization (EBITDA) numbers. We adjust the EBITDA numbers by removing abnormal items, as one offs, to get a more correct presentation of historic performance. Capital structure will be taken care of in the discount rate. We also have to consider capital expenditures (CAPEX) and changes in net working capital (Kinserdal 2010).

Cash flow from operations shows what the operational activities have generated over a period of time. Cash flow to investments shows what is paid for investments less sale of assets. We also have to consider the change in net working capital, which show how much capital is reserved for daily operations.

Cash flow from operations
– Cash flow to investments
= Free cash flow from operations

When we have calculated the free cash flow for operations, we will discount the cash flows to take the value of money over time into consideration. We do that with a weighted average cost

of capital (WACC). When using WACC, we do not have to consider how the company is financed, i.e. in the calculation of free cash flows we do not include financial items.

By discounting with a WACC rate we will arrive at the Enterprise Value. The net interest bearing debt is deducted to find the market cap of the company.

Limitations with DCF lies in the assumptions one uses. Assumptions can impact the outcome of the valuation significantly. With the DCF model one will calculate a terminal value at the end of the projection period. This is done since there is very much uncertainty after 5 years, and this value will usually count for a very large part of the Enterprise Value, usually around 50 – 70%. It is therefore very important that the assumptions on the long term growth and WACC are correct.

Other limitations include the use of the discount rate, WACC, which assumes that market values should be used.

$$\mathrm{WACC} = \frac{\mathrm{MVE}}{\mathrm{EV}} * \mathrm{R_E} + (1 - \mathrm{t_s}) * \mathrm{R_D} * \frac{\mathrm{MVD}}{\mathrm{EV}}$$

Where R_E is the return on equity derived from the Capital Asset Pricing Model (CAPM), R_D is the cost of debt, t_C is the corporate tax, EV is the Enterprise Value, MVE is the Market Value of Equity, and MVD is the Market Value of Debt. To find the market values of debt we usually use values equal to book values. The problem occurs when we are to find the market value of equity, and hence the Enterprise Value (EV=MVE+MVD). This is what we want to arrive at with the model. A discussion on how we solved this problem one can find in chapter 6.1.1 where we outline the values for WACC.

WACC also suppose that there is a fixed capital structure. This implies that the cost of equity varies.

$$\mathrm{R_E} = \mathrm{WACC} + \frac{\mathrm{MVD}}{\mathrm{MVE}} * (\mathrm{WACC} - \mathrm{R_D} * (1 - \mathrm{t_s}))$$

The financial risk decrease with the repayment of the debt and opposite, but we suppose that that there is constant business risk, i.e. no debt tax effects. We see that by changing the debt ratio, the cost of equity will change since all other parameters will be constant.

2.2.2 Net Asset Value

Net asset value (NAV) is a valuation method much used when valuating shipping companies. NAV is defined as the market value of the assets, less the market value of the debt. When applying this method the real value of each asset will be estimated as if it they were to be sold of one by one. The difference between this model and a liquidation model is that this model assumes that it is a going concern.

NAV valuation	
	Vessel value
+	Working capital
+	Cash
+	Other assets
=	**Total assets**
	Interest bearing debt
+	Remaining CAPEX
+	Minorities
=	**Total Liabilities**
	Net Asset Value

The value of a vessel should represent the potential cash flow that the vessel could generate over its lifetime. The general life expectancy for the vessels in this sector is usually 30 years. To predict the potential cash flow generated is almost impossible, and one usually have to base the projections on sales and purchases in the second hand markets.

It is often quite difficult to get these values since it requires a liquid second hand market. This is also a problem with the vessels operating in DOF's markets. The market of OSV and subsea is relatively new compared to other shipping sectors, and there is little re-sale of vessels. There is though a lot of new building for this sector.

Another problem is that these vessels are not homogeneous; they have different specifications that could make the values differ substantially. We have learned that when this is the case like for DOF's Skandi Aker, they will be valued at their building cost.

We will make use of second hand transaction values obtained for various vessel designs that DOF owns, and adjust values according to specifications like age, engine and size. The method can be applied for the OSV fleet, but due to lack of vessel transactions in the subsea market we will have to use another approach for DOF`s subsea vessels. We have obtained newbuilding cost for different types of subsea vessels and will value the subsea vessels at building costs. DOF

recently released own projections on the value of the vessels, and we will compare these values to our projections, and also the projections from various investment banks.

Historically there has been a discount to NAV (share price relative to NAV pr share), and we will try to analyze the reasons for this, and also look at what we can expect in the future.

Limitations with the use of this model will be that it will give the NAV for today, but will not take into account the uncertainty of the future. The value of the vessels will swing in line with the rest of the world economy and the balance between demand and supply.

2.2.3 Peer view

The uses of multiples in valuation are today widely used because they are less time consuming and more cost effective. Peer view analysis is used to compare a company's multiples against a comparable competitor (Koller et al. 2005). If used properly this valuation method can indicate if a company is mispriced, since there is usually no reason why a company should be priced much higher or lower than the peer group average. Combined with other models like DCF, the multiple approach can test the plausibility of assumptions to the end result.

$$V_0 = \frac{\text{Price pr share}}{\text{Earnings pr share}} * \text{Price pr share}_0$$

First we find the peer group multiple by using the market values. For example if we use the multiple P/E (price per share/earnings per share for sector) and multiply by the scaling factor (earnings per share of target company), we get the value of the company (V_0).

We can divide multiples into two groups (Dyrnes 2004):

1. Starting point is price per share or market cap of the equity. These are often called equity multiples and are recognized by the denominator in the fraction is price (P).
2. Starting point in the sum of market values of both equity and net interest bearing debt. These are called total asset multiples and are recognized by the denominator in the fraction is enterprise value (EV).

When using multiples in valuation one has to be careful. First it is very important to identify comparable companies. Differences in capital structures and financial accounting will impact the multiples and can lead to a misleading outcome. For example the use of the well known price/earnings multiple, will display issues. For instance the difference in capital structure and the depreciation will impact the earnings per share. Therefore it is quite difficult to find a competitor one can compare too.

2.2.4 Simulation models

The use of simulation models is a great way to analyze a mathematical problem that is to complex and difficult to reproduce. The Monte Carlo simulation model can be of good support to try out uncertainties to our analysis. The model randomly generates values for uncertain variable over and over based on predefined probability distributions (Mun 2003).

With the DCF model and NAV valuation there are great uncertainty to the assumptions, and the model will produce a result based on the inputs that you define. By running a simulation, you can define crucial inputs to the DCF model, like OPEX and the discount rate, and run a scenario analysis. The simulation will repeatedly pick values from the probability distribution and produce different scenarios. The model will produce results based on the causalities, correlations and interrelationships of the variables defined in the model.

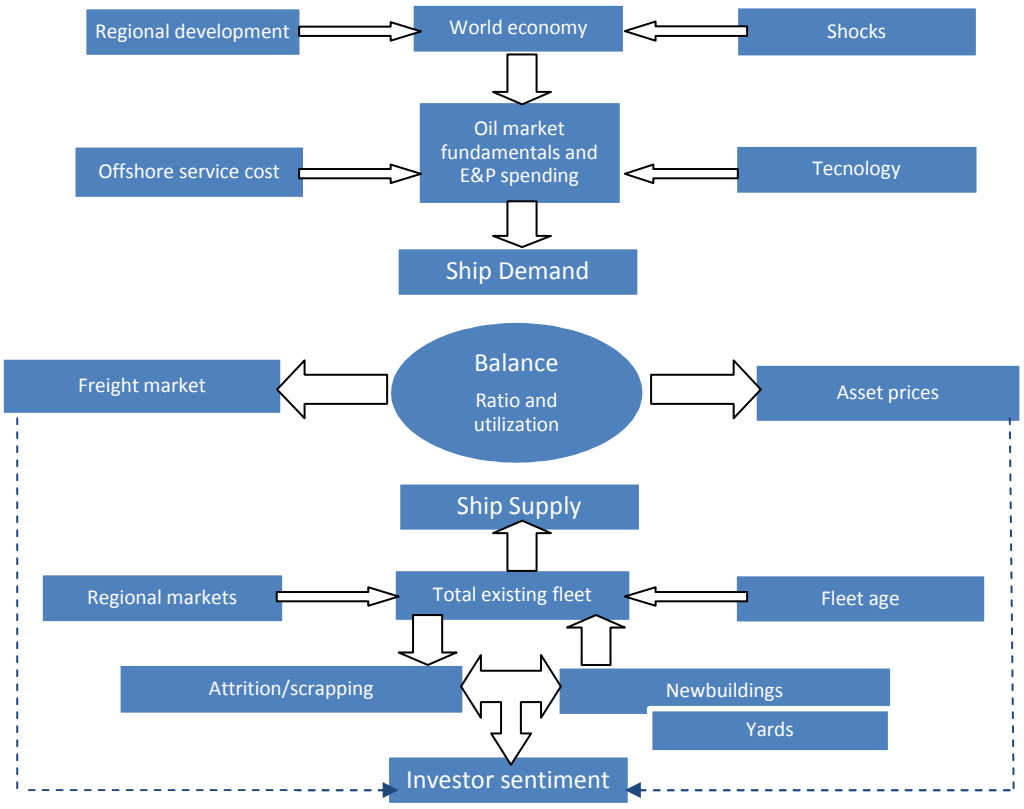
We arrive at a range of probable results which will be weighted based on their distribution. The results received here can help to show the robustness of the result achieved from the standard DCF model.

The model is not perfect, since there is assumption on inputs. The probability distribution we set for the variables will have a mean and standard deviation from the mean. The strength of the analysis is then based on finding a reasonable mean and a reasonable deviation from the mean.

3 The Market

When looking at the market we adjusted Stopford`s macroeconomic shipping model to the offshore supply and subsea market (Stopford 2009). The model illustrated in figure 3-1 is a skeleton where the thick arrows show the relationship between variables. The thin arrows show elements of the variables worth analyzing and the stapled arrows link the balance between demand and supply with the subjectivity of the investor. We do not use the model as a numerical forecast model since we would have to touch the area of econometrics, and complex equations are then implied. We use the model to analyze the OSV and subsea market which are the markets where DOF operates. We will discuss the markets current state and compile the latest reports from ODS-Petrodata, Carnegie, Arctic Securities, RS Platou and DnB NOR Markets, and use as input to the model. The model will give us an understanding of the market in which DOF operates and the prospect of the two markets and different segments within.

Figure 3-1: Offshore Service Market Model



Source: Stopford 2009, adjusted by authors

3.1 Ship Demand

Demand for vessels in the offshore service and subsea industry depends on various elements which we will discuss in this chapter. We will perform a top-down approach and first discuss the world economy and elements affecting world economy like regional development and shocks. Secondly we move toward oil market fundamentals and implement the elements offshore service cost and technology. Finally we discuss demand for different segments in which DOF operates.

In our market analysis we have focused on the high end segments since DOF and their Norwegian peers operates in this segment. We will separate out the high end development from the total development to give a more suitable analysis.

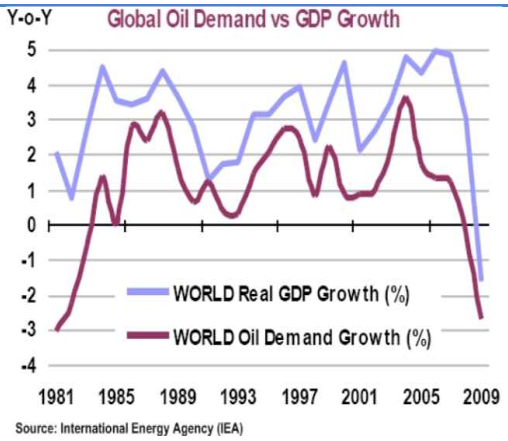
3.1.1 World economy

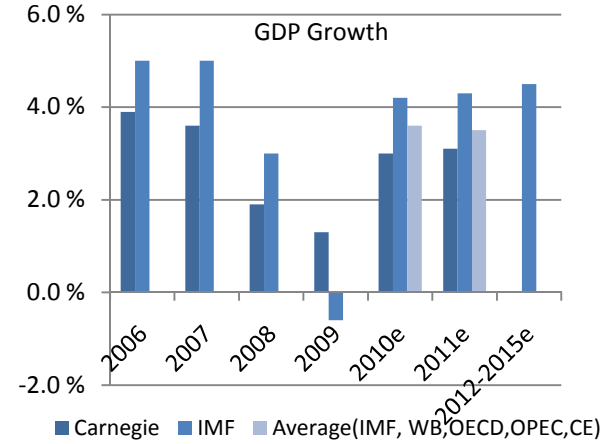
There is limited amount of oil I the world, 50% of the oil production today comes from 100 offshore and onshore fields, which are mostly old fields. 75% of the large fields have a declining production rate. The other half comes from 75,000 fields. Oil and gas have a given supply of unknown magnitude and costs are very high to find out about supply of oil and gas. These facts influence the supply curve and price formation (Hannesson 1998). Due to scarcity, the oil and gas market acts differently than standard markets. With standard markets we mean a supply function with a constant linear growth rate. The theory behind the supply function for oil and gas is discussed in chapter 2.1.2.

In general the production of oil and gas fields has three phases (Hannesson 1998). First a rapidly growing production phase. Then comes a plateau phase which is economical optimal, and finally an exponential declining phase due to declining pressure in the fields. Conservatively the worldwide annual decline rate in existing production is 4.7% (DnB NOR Markets 2010). Deepwater fields have an annual decline rate of 18% and shallow water fields have an annual decline rate of 10%. Also there have been very few new large discoveries in recent years. This has lead to a focus towards exploration and production (E&P) of oil and gas which has a higher

cost of production, known as unconventional oil and gas. We will in chapter 3.1.2 discuss the important replacement recovery rate (RRR).

Figure 3-2: Global oil demand and GDP growth





Source: Compiled by authors

Global oil demand and GDP growth are correlated. It is therefore worth discussing GDP growth when we look at oil market fundamentals. The graph on the left in figure 3-2 illustrates the correlated development. The recent recession in 2008 and 2009 resulted in a negative growth rate for GDP and oil demand. The figure on the right show forecasted GDP growth from different sources. GDP is expected to have a growth rate in 2010 and onwards similar to levels before the recession.

Demand is dependent on the development in the world economy. Developing countries, especially China and India experience high growth in their economy and have contributed to much of the high demand for oil and gas. Development in the world economy is referred to as overall market conditions.

Regional development

Northwest Europe

The North Sea (NS) is an open mature offshore oil production region. Oil production in the NS reached its peak around the year 2000 and is now in a decreasing phase. The decline in

production is because there have not been any large new discoveries since the big finds in the 60ies. Learning about the fields and enhanced oil recovery through technological improvement has increased recoverable reserves. The decline phase would otherwise have happened many years before year 2000 (Hannesson 2010).

The NS is the only well functional spot market in the world. The region is mature and has a large share of fixed installations, which explain why the market consists mainly of PSV and AHTS. Normally spot day-rates for the NS are an indicator for international rates. International term day-rates have not followed the decline in rates we can see in the NS to the same extent. A probable reason for different developments in rates can be the large numbers of newbuilds entering the NS market. Vessels without contracts are, if not put in lay-up or scarped, deployed in the NS spot market. Recently Statoil, which is the main producer of oil and gas in the North Sea, stated that they will focus on cost control (NRK online 27.9.2010). This relates to declining production, and they have to produce from smaller fields. For production to be economically viable Statoil need to reduce costs. How this will affect the North Sea rates is uncertain, but it indicates a decrease in rates for offshore service companies in the NS region.

According to Arctic Securities, many OSV operators have exposure to the NS spot market to exploit strong rates when the market spikes. Due to weather conditions and season dependent travel, the rates are extremely volatile. Since December 08 there have been few spikes or short term tightness due to overall market conditions. Arctic securities expect the spot market in the NS to improve in line with the overall expected market conditions.

DnB NOR markets are not that optimistic. They believe that the offshore service market will be redundant due to a large number of newbuilds that will enter the market, and that the outlook for daily rates to remain relatively low in the next three years, but with an upward trend. Carnegie comment that the NS has improved, but recently the number of rigs operating is down slightly. This can be seen through the day-rates for PSV and AHTS.

The demand for midrange AHTS vessels (10-14,999 BHP) has been steadily decreasing the last years with an annual decline rate of 9.1%. The demand was 15 vessels in 2005, 10 vessels in

2009 and is expected to decrease to 7 vessels by 2013. The demand for high end AHTS vessels (15,000+ BHP) has grown slightly the last years with 17 vessels in 2005, 22 vessels in 2009 and estimated 24 vessels by 2013. The annual growth rate is 4.4%. The demand for high end PSVs (3,000+ DWT) has been increasing with an annual growth rate of 5.3%, from 93 vessels in 2005 and 135 in 2009 to an estimated 141 in 2013 (DnB NOR Markets 2010).

North and South America

South America has become more popular among the oil and gas companies since 2007 due to large discoveries outside Brazil. Petrobras has announced an aggressive spending program. The Basin, Tupi and Campos fields has a proven reserve of more than 5,000 mmboe[3]. The region is in ultra deepwater, in the range 1,000 – 2,500 meters and has challenges such as large salt layer. The natural resources are 5-7,000 meters beneath the seabed (DnB NOR Markets 2010).

Brazil has an aggressive activity growth and will increase production from 2.5mboe/d in 2009 to 5.7mboe/d[4] by 2020 (Arctic Securities 2010). Petrobras will be a significant driver for the OSV market. The area outside Brazil is far from shore (3x North Sea) and in very deep water. These two elements contribute to increased demand for the high end OSV market. Offshore Brazil is an open market with local content. State-owned Petrobras and a privately held oil company OGX operating in Brazil will contribute to an increase in demand for offshore service and subsea vessels. The oil field outside Brazil is in a development phase and has therefore the need for subsea vessels to service Petrobras and OGX in the construction of the fields.

Demand for high end vessels in Brazil has been increasing every year except for 2010. Demand for midrange and high end AHTS vessels (10,000+ BHP), and high end PSVs (3,000+ DWT) has grown from 61 vessels in 2005 to an estimated 156 vessels in 2013 (Arctic Securities 2010).

The Gulf of Mexico

The accident in the Gulf of Mexico (GoM) April 20 put in place a moratorium on deepwater drilling May 30 and was going to last until November 30. The moratorium was for exploratory

[3] mmboe=Million Barrels of Oil Equivalents
[4] mboe = Thousand Barrels of Oil Equivalents

wells and put a halt on 33 exploratory wells. The moratorium was also for wells deeper than 500 feet (Offshore Magazine 1.10.2010). The moratorium was lifted October 12 which is earlier than planned, but deepwater drilling is not expected to start before late 2011. That is because companies are now faced with new tougher safety regulations. Companies must satisfy the new regulations on safety and rigs must pass Bureau of Ocean Energy, Management, Regulation and Enforcement inspections before permits are given and drilling can start (Platts 2.11.2010).
The US government has released two new regulations (Offshore magazine 1.10.2010). The new drilling safety rule and the workplace safety rule, and more regulations are expected. New regulations will impact the cost of operating in GoM. The regulations will probably be implemented in other regions as well to prevent similar accidents. That means that offshore service and subsea operations will be affected by the regulations.

Asia-Pacific

National Oil Companies (NOCs) and Majors (Large caps) are continuing the search to replace reserves in the Asia-Pacific region. The region has demanded more and more high end vessels for exploration and production (E&P), but there is oversupply and the demand has a low growth rate. Expected annual demand growth is 2.3%, 2.8% and 2.1% for the period 2011-2013 (DnB NOR Markets 2010).

Oversupply in the region will continue because of the high number of deliveries. Approximately 8-10 vessels are being delivered into South East Asia every month and there is strong competition on the contracts. The power of the market favors the charterers. Demand in Australia is better because of higher demand and the strong trade union laws that protect the market. The strong union laws favor local workers through a “heads of agreement” between the Maritime Union of Australia (MUA) and all major offshore employers. The agreement provides a 30% pay increase from 2010 to 2013 (Direct Action 20.3.2010). Day-rates in Australia are higher than the overall market and are expected to be so in the future.

West Africa

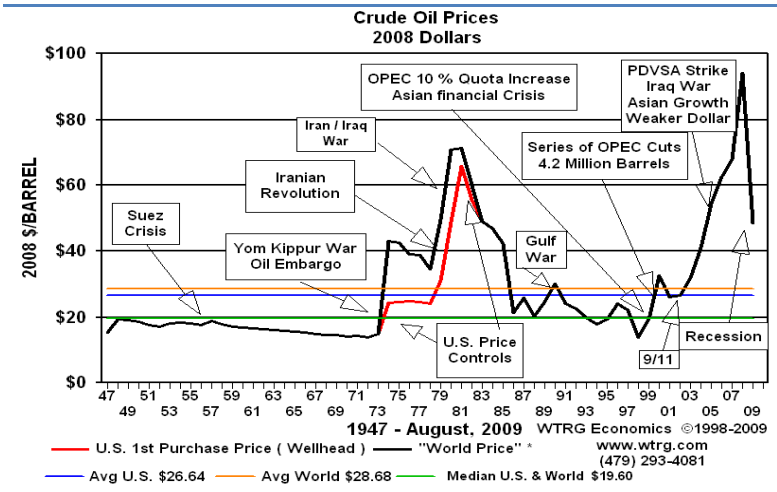
West Africa is a region with governing challenges and political unrest. Promising areas for future expansion of offshore oil and gas activities are located outside the shores of Angola, Ghana,

Nigeria and The Republic of Cote d`Ivoire. Militant groups, piracy and other rebels are a problem for these countries. The outlook for the region is expected to improve which can lead to an increase of rigs being used, and an increase in offshore service and subsea vessels.

Random shocks

Macroeconomic shocks have occurred in the market and will happen again. Shocks affect the oil price which is the most important determinant for E&P spending. From figure 3-3 we can clearly see the effects the two OPEC crises in 1973 and 1979 had on the oil price. 9/11 and the problems with the US currency contributed to the oil price increase in this century. The dynamics that affects the oil price is continuously changing, but there are some elements which are important. Elements which can lead to a rise in the oil price are strong underlying demand from non OPEC countries, lower growth in supply, low spare capacity, a weaker dollar and mismatch between capacity in refining and demand for oil (IEA 2008).

Figure 3-3: Historic overview of how macroeconomic shocks affect the oil price



Source: World Trade Resources Guide 2009

Investment houses expect E&P spending to increase in the coming years which will increase demand for offshore oil service. The demand for bigger and stronger vessels has been a historic trend since offshore exploration and production of oil, but is now accelerating with the search for oil and gas in deeper waters.

Summary: World Economy

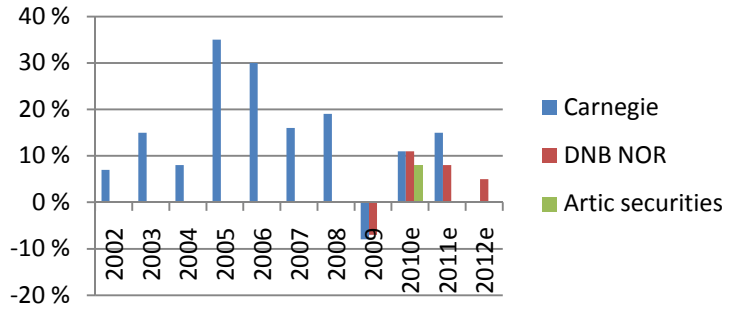
The world economy is stabilizing and the outlook for coming years looks promising when we look at the GDP estimates. The developing countries are building up their economies and have a high growth rate. The developing countries will be a key driver for the demand for oil and gas. Recent oil and gas discoveries in Brazil are currently in a phase where they are building up their production capacity. The North Sea, West Africa and South East Asia are regions which currently have some problems, but improvements are expected.

3.1.2 E&P spending and field development

Exploration and Production (E&P) spending is pending on activities like aerial survey & seismic operations, exploration & appraisal drilling, development & production, and decommissioning & rehabilitation. E&P spending for offshore oil and gas installations is the most important determinant for activity within the offshore service market (Offshore Oil and Gas Environment Forum 2010).

E&P is vulnerable to shocks in the world economy as discussed above. E&P can relative easily be put on hold by the oil companies, but it takes longer to put on stream. The offshore service market is therefore dependent on the oil companies and is volatile and risky. During the recent crisis, the decrease in E&P spending hit the offshore service market very hard.

Figure 3-4: Estimated E&P spending growth for different investment companies



Source: Compiled by authors

DnB NOR Markets has a comprehensive report on E&P spending. The survey is based on 70 oil and gas companies in the upstream oil and gas industry. DnB NOR Markets estimates an

increase of 11%, 8% and 5% for 2010, 2011 and 2012 respectively for E&P spending. The 2009 spending was revised from -8% to -7% in the august report and is then the same as the Carnegie E&P spending growth for 2009. The overall E&P spending has been rising steadily over the years, driven by the increasingly more challenging access to resources for the oil companies. The objective is to replace resources and maintain production levels.

While oil prices dropped below USD 40/bbl in the crisis, it has now increased to around USD 80/bbl. At the same time the overall macroeconomic conditions has become more stable and confidence is returning to the market.

The demand for oil and gas is now starting to increase and the confidence among oil companies is increasing. Factors that have contributed to the confidence are higher commodity income and stabilized oil price. Onshore Large Cap Independents has shorter lead time and can more easily turn around projects that were put on hold. The national oil companies (NOCs) have longer lead time. The expected E&P spending growth for NOCs is 10% for 2010 compared to previous expected 14%. This is due to a high, but dampened growth rate of Petrobras and Petrochina.

Determinants for E&P spending

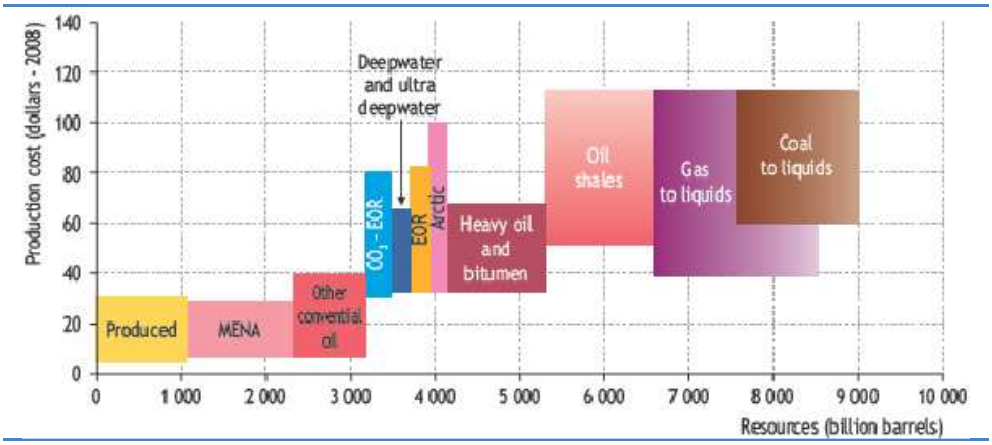
The most important element that determines the E&P spending is the oil price, with a lag of 6-18 months because of time to adjust. Oil and gas companies are comfortable with the current high oil price level and they expect the oil price to be maintained with a slight increase. Expected oil prices are USD 80/bbl[5] for 2010 and USD 85/bbl for 2011. There are many factors which indicate this. An increase in demand and tightness in refining capacity, demand for holding stocks due to geopolitical issues, poor supply from non-OPEC countries, and finally a rising marginal costs and a weaker dollar (DnB NOR Markets 2010). This indicates high long term spending. A second element is that the estimated long-term spending remains at high levels due to strong underlying fundamentals. Fundamentals like declining exploration in existing oil fields implies that production must come from new fields and enhanced oil production from existing fields. There are no current alternatives to fossil fuel, while the demand for oil is increasing.

[5] bbl = barrel

Global production (from existing fields) is declining with a 2.6% decline in 2009 compared to 2008.

A third element is the hurdle rate oil price. The hurdle rate oil price reflects the cost where it is profitable to produce one barrel of oil. The hurdle rate increased 11 % to 56 USD/bbl from 2009 to 2010 (DnB NOR Markets 2010). Increase in the hurdle rate leads to an increase in activity for unconventional oil extraction like oil-shales, bitumen and ultra deepwater oil extraction. Production of conventional oil is onshore production where cost of production is relatively low.

Figure 3-5: Long-term oil-supply curve



Source: IEA 2008

Figure 3-5 illustrates production cost for different resources. It is cheapest to produce conventional oil and OPEC countries have much of this resource. When the hurdle rate increases it becomes economical to produce from unconventional resources. In the center of figure 3-5 we can see deep water-, ultra deep water-, heavy oil- and bitumen production costs. These resources are well below the current hurdle rate of 56 USD/bbl and are economical to produce. The technology for oil shales, gas to liquid and coal to liquid exist and are produced on a small scale today. It is however not economical to produce from these resources on a large scale. Resources with high hurdle rates are of large quantities and explain why we can assume a backstop price which is a maximum price of oil. The backstop price reflects the limitation on how high the oil price can become before alternative resources are economical to develop

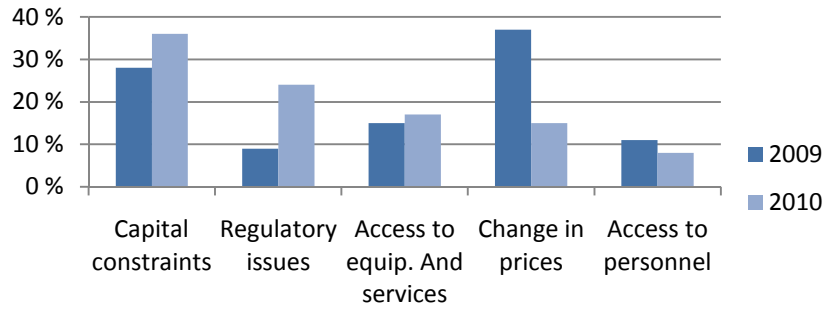
(Hannesson 2010). Unconventional resources will come on stream if prices of oil and gas become too high.

The consensus from the oil-companies is that long term demand is up and the reserve replacement ratio (RRR) is above 100% (DnB NOR Markets 2010). The RRR tells us if companies are replacing reserves as they are being produced. The demand and production is constantly increasing and replacing the reserves is becoming more difficult. To replace reserves the oil companies must increase their E&P spending. The expected annual declining rate of existing fields is 4.5% and with an increasing demand it looks promising for the demand for oil service companies because this mismatch must be met with production in new fields and enhanced oil recovery. The world RRR has been well above 100% since production of offshore oil and gas started, but is now moving toward the 100% mark. Independent oil companies are struggling more than national oil companies.

Drivers for constraints of E&P spending

According to the oil and gas companies in the DnB NOR Markets survey we can see from figure 3-6 that prices were the most limiting factor for E&P spending in 2009. That put pressure on the oil service market.

Figure 3-6: Constraints for E&P spending



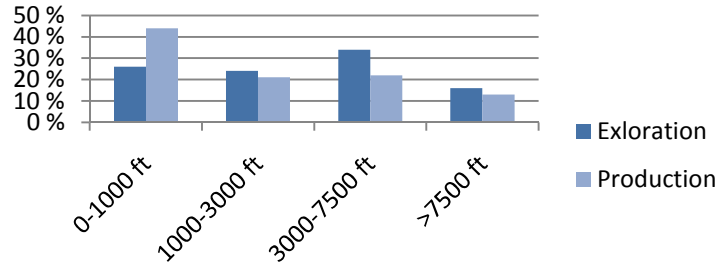
Source: DnB NOR Markets 2010

The constraints have shifted towards capital constraints and regulatory issues in 2010, mainly due to the GOM accident and the new expected legislation. Oil and gas companies are expecting an increase in cost of 1% in 2010. In the diagram we can see that changes in prices which involves offshore service had a high focus in 2009, while it was less important in 2010.

Composition of E&P spending

The DnB NOR Markets survey showed that oil companies have increased their focus on deepwater. We can see from figure 3-7 that exploration activity in deepwater (3,000+ ft) was 50 % while production in deepwater was 35% in 2010 which is in line with surveys in earlier years.

Figure 3-7: Offshore exploration and production



Source: DnB NOR Markets 2010

Exploration has been quite stable at 20% of total E&P spending for several years while 80% consist of production. Exploration dropped to 17% in 2010 which affected the offshore service market hard. It is expecting to be 21% in 2011. The focus toward deepwater is due to better technology, declining alternatives in shallow waters, and the potential for large discoveries in deeper waters. Attractive deepwater regions have in recent years been the North- and South America, and West Africa. An interesting region in the near future can be Stochman, but there is much political uncertainty surrounding the development.

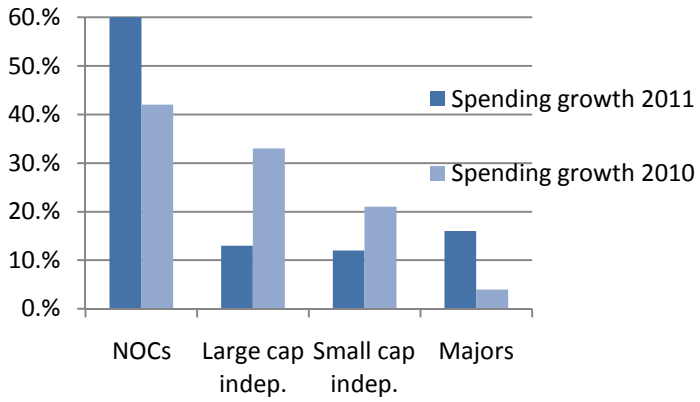
Field development and subsea construction

The age profile for jack-up rigs show that there where a large number of newbuildings in the late 70ies and early 80ies. These are getting old and it is now an increase in newbuilds for this segment to cover deepwater drilling demand. Many fields are expected to come on stream in 2010 and beyond which will increase order intake for jack-up rigs and FPSO and therefore the subsea sector. Deepwater production indicates the need for subsea wells and FPSOs, therefore we assume this market to experience high growth in the short and long term. Estimates for new FPSO contracts (Carnegie 2010) are in the range 10-15 and 15-20 in 2010 and 2011. Technip are the most optimistic with 88 new contracts during the period from 2010 to 2012.

E&P spending growth

Contribution to spending growth is driven by the national oil companies (NOCs), but we can also see from figure 3-8 that 54% of the E&P spending growth comes from the Independents and the Majors are holding back in 2010.

Figure 3-8: Share of E&P spending growth amongst the oil companies



Source: DnB NOR Markets 2010

Oil companies in the DnB NOR Markets survey indicate a total E&P spending growth of 8% for 2011. The growth for NOCs and The Majors is larger for 2011 than for the independents. NOCs are the biggest contributor to E&P spending growth and are estimated to be so in the nearby future.

Upside potential for E&P spending

- The market is stabilizing through demand and commodity prices which increase the cash flow, confidence and financial strength of the independents and the majors.
- We have recently experienced an economy with higher growth and the world economy is currently coming out of the financial crisis. National oil companies will have less problem getting approved budgets with a settled economy.
- DnB NOR Markets believes that the spending level will stay robust with an oil prices above USD 50/bbl. They estimate an oil price of USD 80/bbl and USD 85/bbl in 2010 and 2011 respectively. Brent Crude Oil is USD 91.05/bbl as of 09.12.2010.

- The deepwater drilling moratorium in Golf of Mexico was lifted the October 12 2010 with some new regulations. The moratorium has dampened the drilling effort in GOM and in other deepwater regions as well.

Potential downside risks of E&P spending

The E&P growth has in retrospect followed the aggregated growth for the companies listed at the offshore service sector index (OSX). The estimated revenue growth for the OSX listed companies is 13% in 2011 and the estimated spending growth is 8% in 2011. The estimated revenue growth is 5% above the estimated spending growth. This mismatch is a risk since offshore service companies is highly correlated with the OSX index (DnB NOR Markets 2010).

Offshore service costs

Over time the OSV market have adjusted to the needs from oil and gas companies. Demand for higher quality service requires larger and stronger vessels, improved efficiency and in general better operations.

We mentioned that the incident in GoM has led to new legislation to prevent similar accidents, and more legislation is expected. It is expected that subsea operating costs in particular and offshore service costs in general will increase through Health, Quality, Safety and Environment (HQSE) legislations in the GoM region, which is assumed to manifest to other regions.

Table 3-1: Expected average operating expenses for vessel type for 2009-2012

Vessel type	Description	Average op. cost
AHTS UUL:	25,000+ BHP	13 000
AHTS UL:	23-25,000 BHP	8 000
AHTS L:	16-23,000 BHP	7 000
AHTS M:	10-16,000 BHP	6 000
AHTS S:	<10,000+ BHP	5 000
PSV UL:	4,000+ DWT	5 750
PSV L:	3-4,000 DWT	4 600
PSV M:	2-3,000 DWT	4 600
PSV S:	<2,000 DWT	4 025

Source: DnB NOR Markets 2010

Long run operating cost for the OSV companies determines the cost of offshore service for the oil companies because the OSV market must have a reasonable return on investments. DnB NOR Markets have estimated the average operating cost in the North Sea

region for the different vessels with different specifications. Table 3-1 show the average operating costs for offshore services for oil companies in 2009 which are expected to be maintained to 2012.

Technology

Technology aiming to increase revenue seems to be more important than technology to reduce costs. Oil companies in the DnB NOR Markets survey show that the most attractive technologies are the ones that improve the oil recovery rate and the probability of identifying reserves.

Enhanced oil recovery (EOC) technologies are used to increase the recovery rate that usually is between 20-50% and accounted for 3% of the oil production in 2008 (IEA 2008). Technology and exploration of the field increase recoverable reserves, and reserves are therefore revised continuously.

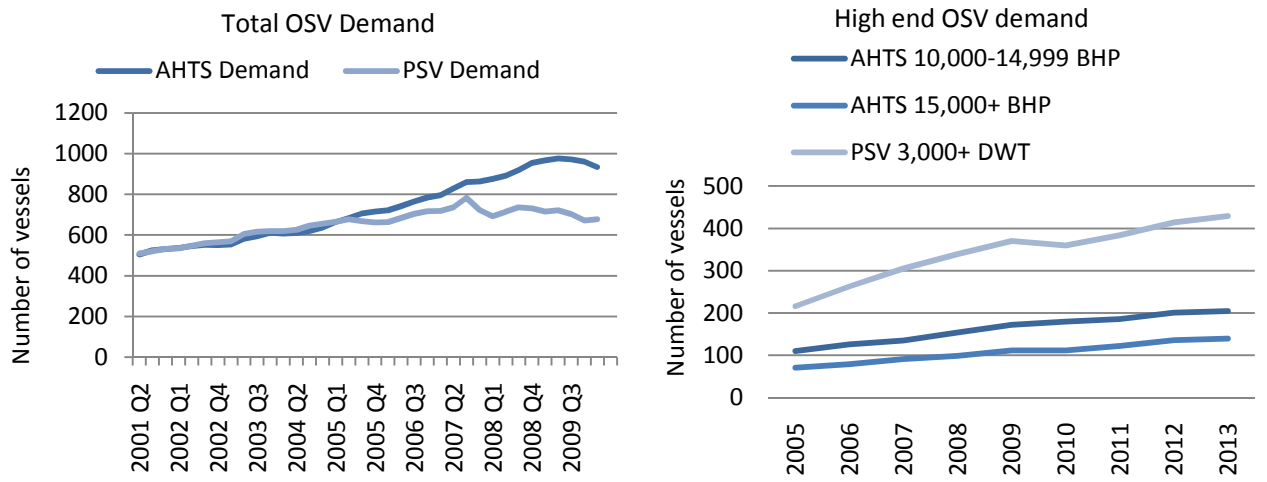
3.1.3 Summary Ship Demand

We have discussed the world economy which is linked to E&P spending and field development. E&P spending is the most important determinant for the demand for OSV and subsea vessels. The financial crisis and the incident in GOM dampened E&P spending in 2009, but E&P spending is now improving and has upside potential. We will now discuss offshore service and subsea demand and for offshore service pay most attention to the high end segment. High end PSVs are classified as 3,000+ DWT and AHTS vessels are classified as midrange (10-15,000 BHP) and high end (15,000+ BHP).

AHTS and PSV Demand

The demand for AHTSs and PSVs are dependent on the overall market demand which we discussed earlier. There are however some development to pay attention to. From figure 3-9 we can see that the growth in total AHTS demand has been higher than for total PSV demand the last few years. High end PSV demand has an expected annual growth rate of 3.77% from 2009 to 2013. The midrange and high end AHTS demand has an expected annual growth rate of 4.49% and 5.74% during the same period. The outlook for high end AHTS demand is better.

Figure 3-9: Demand for OSVs



Source: ODS-Petrodata 2010

The accumulated annual growth rate for demand of high end PSVs has been 14.4% from 2006 to 2009 and the accumulated annual growth is expected to be -2.7%, 6.7%, 7.8% and 3.6% for the period 2010- 2013. The total fleet`s accumulated annual growth rate was 7.75% from 2005 Q2 to 2010 Q1 in comparison. High end demand for PSV has increased more than total demand for PSV and is expected to do so in the future (ODS-Petrodata 2010).

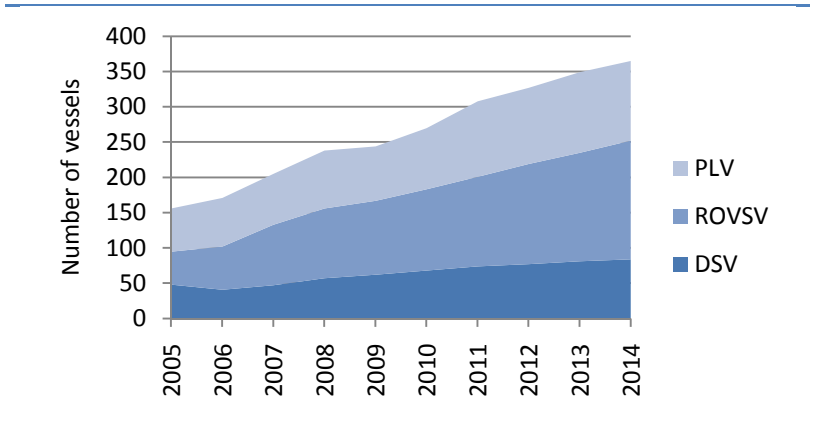
Demand for midrange and high end AHTS has increased considerably more than the total demand for AHTS. Accumulated annual growth rate for total AHTS demand was 3.6% from Q2 2005 to Q1 2010. The demand for midrange AHTS was 11.8% from 2005-2009 and has an average expected growth rate of 4.5% from 2009 to 2013. The demand growth for high end AHTS was even higher from 2005 to 2009 at an average rate of 12.1% and has an average growth rate of 5.7% from 2009 to 2013.

The development illustrates that the market demands larger and stronger vessels. We expect the development to continue in the future and there will be less increase in demand for the low end vessels.

Subsea Demand

Offshore oil production is becoming more technically advanced and exploration is moving towards deeper waters. The subsea market is therefore growing and demand for advanced vessels is rising. The Subsea market is not easy to analyze because there are many different vessels with different specifications to support the subsea market. We have divided the subsea market into Pipelay Vessels (PLV), Remotely Operated Vehicle Support Vessels (ROVSV) and Diving Support Vessels (DSV). Multipurpose Vessels are incorporated into ROVSVs.

Figure 3-10: Subsea demand



Source: ODS-Petrodata 2010

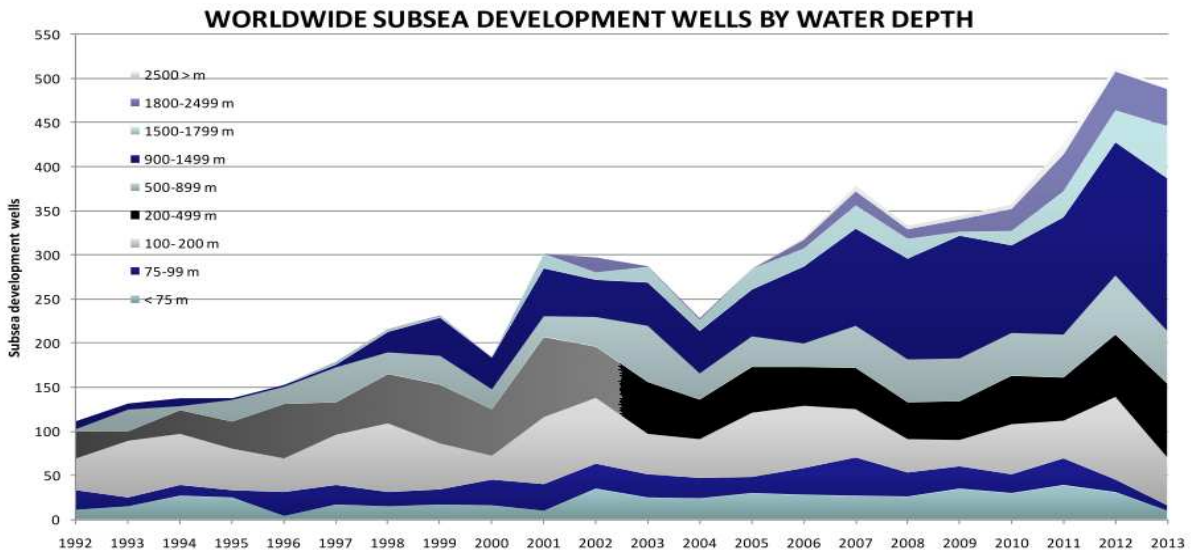
We can see from figure 3-10 that total subsea demand will increase from around 150 vessels in 2005 to an expected demand just over 350 vessels in 2014. We can also see the impact from the financial crisis in 2008-2009, but the growth is expected to pick up with the increase in floating production installations and the movement toward production from deeper wells. The annual average growth in demand from 2010 to 2014 is expected to be 24% for DSV, 46% for ROVSV and 30% for PLV (ODS-Petrodata 2010).

Floating Production, Storage and Off-loading (FPSO) accounted for 47% of total floating production demand in 2010. DnB NOR Markets has in their survey estimated demand for FPSO over the next 8 years to be 117. The most important region is South America, with Petrobras as the biggest contributor to demand. South America holds 33% of total estimated demand for

FPSO. The Asia Pacific region is the second largest region with 26% of total estimated demand for FPSO. West Africa and The North Sea follows with 21% and 12 % of total demand.

Demand for subsea vessels increase with the search in deeper waters. Figure 3-11 illustrates that the development for subsea wells has grown rapidly the recent years.

Figure 3-11: Subsea development wells by water depth



Source: Prospectus DOF ASA 2009

Worldwide subsea developments show an increase of deepwater wells and decrease of shallow water wells. Figure 3-11 illustrates what we discussed in relation to figure 3-5. The development in deepwater wells has become economical viable because of higher oil price and limited new discoveries from shallow water.

Conclusion

Demand for OSV has grown at a high rate in recent years. The recent recession led to a downturn in demand, but is expected to improve. The developments in demand for larger and stronger vessels are expected to continue as we move toward deeper waters. From figure 3-11 we can see that deepwater development is expected to increase demand for subsea vessels significantly. The subsea market is currently in high growth.

3.2 Ship Supply

Ship supply is controlled by the decision-makers in shipping companies. It is difficult to adjust supply of offshore service and subsea vessels to meet demand in the short run. Yards usually take 2-3 years to build and deliver advanced OSV and subsea vessels and it can even take as long as 4 years if the yards are busy. Supply is driven by the owners or individuals responsible for decisions within the companies; the supply is based on the subjective view of these individuals.

3.2.1 Total existing fleet

The total existing fleet consists of about 1,400 AHTS vessels, 1050 PSVs and 340 subsea vessels globally as of June 2010 (ODS-Petrodata 2010). Supply is now in a high growth trend and supply is expected to increase significantly in the coming years. The active existing fleet for different segment is difficult to keep track of because the fleet is large and diversified. The active fleet is continuously changing because vessels can stop working for a given period due to layup, transit and maintenance.

Table 3-2: Existing OSV and subsea fleet

Segment	**Existing fleet As of June 2010**	**Average fleet 2010**	**Older than 20 yrs As of June 2010**	**Newbuilds As of Jan. 2010**
AHTS	*AHTS*	*AHTS*	*AHTS*	*AHTS*
<9.999BHP	996	956	482	265
10.000-14.999BHP	227	218	77	89
>15.000BHP	178	165	6	103
Totalt	1401	1339	565	457
PSV	*PSV*	*PSV*	*PSV*	*PSV*
<2.999 DWT	557	566	290	46
3.000+ DWT	487	463	12	224
Totalt	1044	1029	302	270
OSV	*OSV*	*OSV*	*OSV*	*OSV*
Total	2445	2368	867	727
Subsea	*Subsea*	*Subsea*	*Subsea*	*Subsea*
ROVSV	141	159	17	56
DSV	76	88	45	63
PLV	126	133	78	38
Total	343	380	140	157

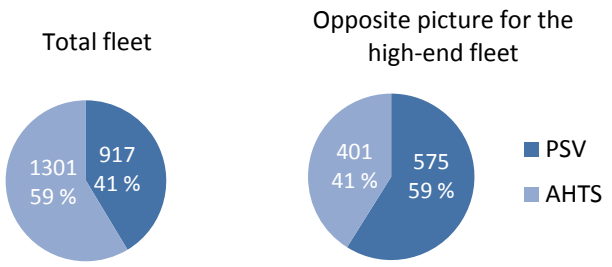
Source: ODS-Petrodata 2010

Table 3-2 presents an overview of the OSV and subsea fleet from June 2010, expected average for 2010, vessels older than 20 years and actual newbuildings on order as of January 2010. Age and newbuildings will be discussed more in detail later in this chapter.

High end OSV fleet

Arctic defines high-end PSV to be 2,000+ DWT and high-end AHTS 10,000+ BHP which is different to what we use in this thesis. Figure 3-12 illustrates the opposite development in the high end fleet compared to the total fleet.

Figure 3-12: Existing OSV Fleet

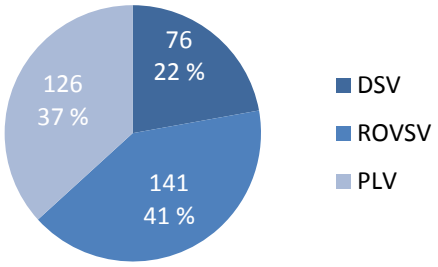


Source: Arctic Securities 2010

The high end AHTS fleet is considerably lower than the high end PSV fleet when compared to the total fleet. This is consistent with the high number of new deliveries of high end PSV the last few years, and that the average age of high-end PSV fleet is low. We will come back to the age profile of the vessels.

Subsea fleet

Figure 3-13: Subsea Fleet



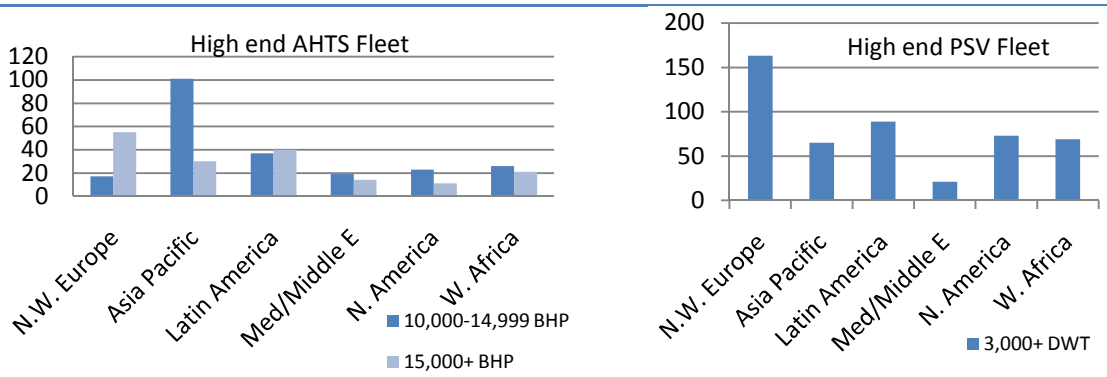
Source: ODS-Petrodata 2010

The composition of the subsea fleet is presented in figure 3-13. The ROVSV fleet is expected to increase to 43% the next few years and PLV fleet is expected to decrease to 35%.

Regional markets

The main geographical markets for high end AHTS is Asia-Pacific, and with the North Sea and South-America as the second largest markets. The main region for PSV is the North Sea, with Latin America as the second largest region.

Figure 3-14: High end supply



Source: ODS-Petrodata 2010

Figure 3-14 illustrates high end supply of OSV in different regions. South America (ultra deepwater region) and Asia-Pacific (deepwater region) is in an expanding phase and there are many AHTS operating in these regions. Ultra deepwater regions like South America, North America and West Africa will increasingly demand high end vessels. The North Sea is in shallow water compared to these, but with the harsh wheater conditions in this region, the demand for larger and strong vessels is increasing.

Brazil and West Africa are regions with high growth for subsea vessels and the supply will increase significantly in these regions. The Asia-Pacific is currently the largest region for Derrick pipelay vessels while Brazil, Nigeria and Angola are the regions with most reeled pipelay vessels. In general the outlook for subsea vessels looks promising in all regions, but the regions in shallow water has limited need for subsea vessels. This includes the North Sea, the mediteranian and the Middle East.

Fleet age

During the energy crisis in the mid seventies and early eighties the oil price and the market activity increased significantly. There was a newbuilding boom at this time. Vessels built in that

period are beyond the 25 year threshold and are soon passing the technical lifetime threshold for OSV of 30 years. These vessels will soon be obsolete and disappear from the market, easing the supply side.

The age profile presented by ODS-Petrodata divides the AHTS segments into combined tug and supply vessels and pure tug vessels. Table 3-3 illustrates the age profile for AHTS and shows a large number of old and new vessels under 15,000 BHP. The increasing demand for high end AHTS vessels (15,000+ BHP) can be seen through the large number of deliveries of high end vessels in recent years.

Table 3-3: Age-profile for AHTS fleet

Global AHTS-fleet age by BHP	0-5 years	6-10 years	11-15 years	16-20 years	21-25 years	26-30 years	31+ years
<10,000 BHP	404	76	24	10	49	242	191
10-15,000 BHP	106	23	19	7	17	54	6
15,000+ BHP	84	46	34	8	4	1	1
Total	594	145	77	25	70	297	198

Source: ODS-Petrodata 2010

The age profile for PSVs shows exactly the same development in table 3-4. High end PSVs are quite new while the smaller PSVs are divided into old and new vessels.

Table 3-4: Age-profile for PSV fleet

Global PSV-fleet age by DWT	0-5 years	6-10 years	11-15 years	16-20 years	21-25 years	26-30 years	31+ years
PSV <3,000 DWT	114	73	71	9	21	159	110
PSV 3,000+ DWT	284	113	58	20	1	8	3
Total	398	186	129	29	22	167	113

Source: ODS-Petrodata 2010

The age profile for subsea vessels in table 3-5 shows that many subsea vessels are old. 59% of DSV are older 20 years, but there are many new vessels built in recent years. The age profile for ROVSV shows a younger fleet where 72% was built during the last 10 years. There are also many old PLV, where 61% of the vessels are older than 25 years.

Table 3-5: Age-profile for Subsea fleet

Global subsea-fleet Age by segment	0-5 years	6-10 years	11-15 years	16-20 years	21-25 years	26-30 years
DSV	20	6	5	0	14	31
ROVSV	65	36	16	7	3	14
PLV	29	8	6	3	2	76
Total	114	50	27	10	19	121

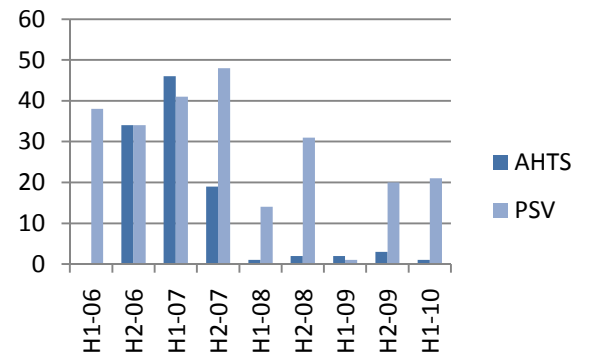
Source: ODS- Petrodata 2010

The age profile for subsea vessels illustrates that the subsea fleet has some very old vessels, but there have been many newbuildings in the last decade. There has been a high growth in subsea vessels since 1998 and vessel deliveries are expected to peak in 2010 with roughly 94 vessels being delivered into the market. If we divide the subsea vessels into size (small: <115 meters and large: >115 meters) and look at the age profile(Prospectus DOF ASA 2009), we can see that there is only a limited number of small subsea vessels older than 20 years and just a couple older than the 30 year economic lifetime threshold. Delivery of small subsea vessels has been relatively extensive for the last few years. The fleet of large subsea vessels is smaller, where 60% of the vessels are older than 20 years. There is currently an order-book for new subsea vessels that is 80% of the existing fleet. The numbers are from March 2009, but give a view of the age for large and small subsea vessels.

3.2.2 The newbuilding market

According to Arctic securities the net fleet growth of OSV is expected to be 18%, 4% and 2% in the period 2010-2012. This amounts to a total net increase of 24% in the coming years, assuming no attrition or cancelations, which is unlikely. Carnegie expects the net fleet growth to be 9%, 5% and 2% in 2010-2012 respectively. The Carnegie report is a newer report with deliveries in 2010 incorporated in the existing fleet. This can to some extent explain the differences.

Figure 3-15: OSV orders



Source: ODS-Petrodata 2010

Figure 3-15 illustrates high order activity in 2006 and 2007 for both AHTS and PSV. 2008 was a god year for PSV as well. Many of the orders were pushed back because of the financial crisis and are coming on stream in 2010 and 2011. This will increase supply and in turn put pressure on the offshore service companies.

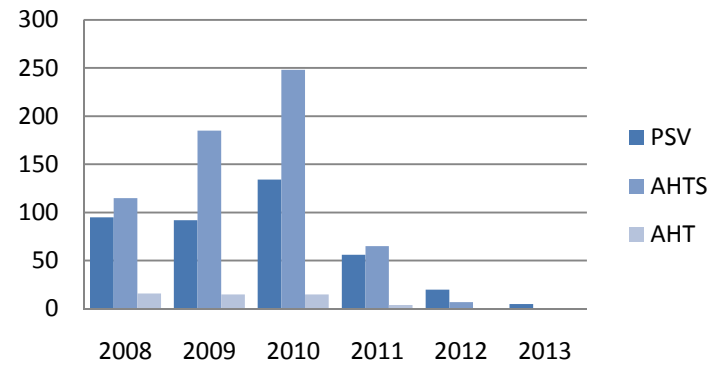
Scheduled deliveries of newbuildings are continuously sliding, shown in table 3-6. The Q2 estimate for delivery of OSVs for 2009 was 295, 265 for Q3 and ended up on 180 vessels delivered in 2009. This was due to the problem that OSV companies had with securing financing during the crisis. 2010 and 2011 show an increasing path of estimates for deliveries. Orders can be cancelled and deliveries can be pushed back. Estimates are therefore highly uncertain and vary along with the demand for vessels. Push-backs are quite common while cancelations are more rare, but cancellations do occur and especially during a crisis. 5 ROVSV were for instance cancelled because of the recent financial crisis (ODS-Petrodata 2010).

Table 3-6: Newbuilding estimates

Newbuilding estimates	2009	2010	2011
Q1/09	290	145	35
Q2/09	295	160	35
Q3/09	265	180	45
Q4/09	180	255	55

Source: Arctic Securities 2010

Figure 3-16: OSV deliveries by vessel type



Source: ODS-Petrodata 2010

From figure 3-16 we can see that expected total deliveries for 2010, 2011 and 2012 are 397, 122 and 27 respectively. ODS-Petrodata estimates are close to Arctic`s estimates.

Yards

Yards all over the world build OSVs, but offshore shipbuilding is more technological advanced, except for the vessels hull, compared to pure shipbuilding. Modern yards have to be used. Norwegian yards had the biggest market share for offshore service and subsea vessels which was 24% in 2007 (Ocean Shipping Consultants 2007).

There have been many OSV and subsea newbuildings in the last couple of years to meet the increase in demand, but supply has grown faster than demand. This has resulted in an overcapacity for offshore yards. Due to expected market improvements for rigs, the outlook for offshore yards looks better than for pure shipbuilding yards. The moratorium in the US Gulf however brings uncertainty around new rig orders.

Korean yards are mainly pure shipbuilding yards and do not construct advanced vessels like OSVs and subsea vessels, but they are now moving into the market. Korean yards are in the process of upgrading their yards which will increase their market share for offshore shipbuilding and put pressure on other offshore yards (DnB NOR Markets 2010).

Brazil is different due to the nature of the local requirements and has one yard which is capable of building advanced OSV and subsea vessels. Offshore service companies can import two times the DWT which is built in Brazil under Brazilian flag. The yard is quite new and there is a shortage of workforce that are capable of building these vessels and the vessels are therefore more expensive.

Arctic securities states that they expect 2010 to be the peak in the number of deliveries because orders have been reduced since 2008. They also expect 10-15% of the deliveries scheduled in 2011 and beyond to be cancelled

3.2.5 Attrition

Vessel attrition has increased during the last decade. We earlier looked at the age profile for OSVs and subsea vessels. Many of the OSV and subsea vessels are beyond or will soon pass the technical lifetime threshold for the vessels and are due for scrapping. Many of the scrapped and laid up vessels has come from GoM or the Asia-Pacific. In a market under pressure, old vessels

are laid up first and they are more likely to be scrapped. Scrapped and laid up vessels exceeded newbuildings in late 2009 which implies that the active fleet decreased (Deep Sea Supply Q2 2010). Historically the attrition rate has been 2% per year. It is common that old OSVs that are not strong enough or large enough are transformed into subsea vessels because the hull is still often in good condition.

Old vessels built during the oil crisis in the mid 70ies and early 80ies are scrapped unless they can provide short term profit that covers operating cost, cost of certification and cost of repair. We will in our sensitivity analysis in chapter 6.4.4 see how the utilization can be affected by attrition of older vessels.

3.2.3 Summary

OSV fleet

To summarize we will use figures from ODS-Petrodata and use average vessel supply each year. From table 3-7 we can see that the supply of high end AHTS vessels (15,000+ BHP) is expected to increase at a higher rate than the midrange AHTS (10-14,999 BHP) and the midrange AHTS is expected to increase at a higher rate than the smaller AHTS (<10,000 BHP). Similar development is expected for the growth rate in supply of high end PSVs (3,000+ DWT) in contrast to smaller PSVs (<3,000 DWT).

Table 3-7: OSV supply by vessel type

Segment	2009	2010	%	2011	%	2012	%	2013	%
AHTS 15,000+ BHP	142	165	16,2	220	33,3	242	10,0	245	11,4
10-14,999 BHP	190	218	14,7	266	22	277	4	279	0,7
<10,000 BHP	868	956	10,1	1113	16,4	1133	1,8	1133	0
PSV 3,000+ DWT	397	463	16,6	571	23,3	609	6,7	621	2
<3,000 DWT	554	566	2,2	591	4,4	598	1,2	600	0,3

Source: ODS-Petrodata 2010

Supply for OSV vessels has been high for some years now to meet the increase in demand. Larger and stronger vessels are increasingly entering the market. The supply of high end vessels has increased more than smaller vessels and is expected to do so in the future.

Subsea fleet

Many of the OSV companies are moving into the subsea market and have acquired subsea vessels to exploit the expected growing market. To combine the anchor handling operations and supply service with subsea services will diversify their operations and could create competitive advantages. It is possible to combine the two services. Many AHTSs and PSV are now equipped to support subsea operations. The existing fleet of subsea vessels is 343(June 2010) and had an order book of 157 vessels as of January 2010 (ODS-Petrodata).

From table 3-8 we can see that the number of vessels expected to enter the market in 2010 and 2011 are very high. Most of the subsea vessels were ordered in the economic upturn prior to the financial crisis.

Table 3-8: Subsea supply by vessel type

Subsea supply	2009	2010	%	2011	%	2012	%	2013	%
DSV	66	88	33,3	95	8	99	4,2	99	0
ROVSV	119	159	33,6	187	17,6	193	3,2	196	1,6
PLV	119	133	11,8	149	12	156	4,7	158	1,3
Total	304	380	25	431	13,4	448	3,9	453	1,1

Source: ODS-Petrodata 2010

When we discussed the age profile we saw that there were many new and many very old vessels. ROVSV had the youngest fleet and we notice that the supply will increase most for this segment. This is not surprising because of the high growth in demand for this segment which we mentioned in chapter 3.1. Newbuilds of DSV entering the market is also very high, while newbuilds of PLV is more moderate.

3.3 Investor sentiment

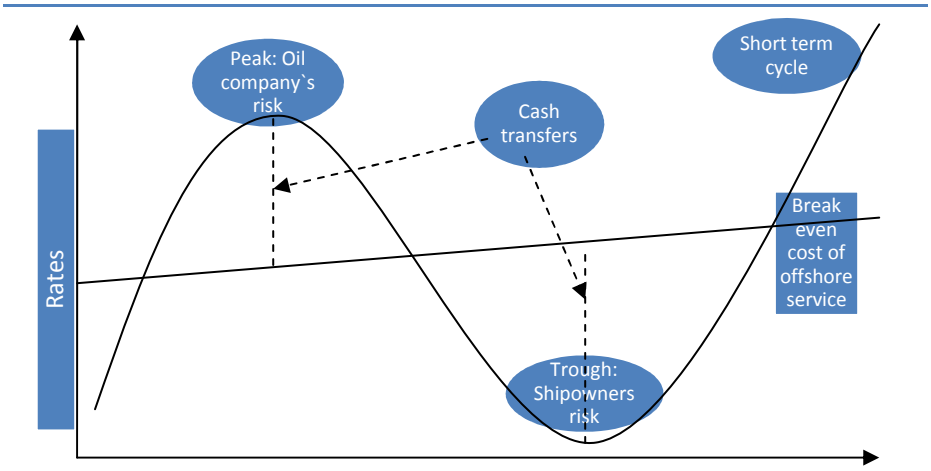
The supply of AHTS, PSV and subsea vessels is controlled by the decision-makers (Stopford 2009); Vessel-owners, vessel-operators, finance institutions and regulatory authorities. The two later decision-makers limit the investors to do as they see fit. Finance institutions lend money to the investor and they can put pressure on the investor. Regulatory authorities set the rules for HQSE through legislation for the offshore service market, and affect the offshore service companies. The supply side of the market model is therefore behavioral and is not easy to predict. Different strategies are used and the investors can interpret the market in different ways. The investor decides when it is economical lucrative to order and scrap vessels. The investors must analyze demand and supply, and the expected developments. How the investors react to the market by making decisions affects rates, asset prices and utilization. We will discuss this further in chapter 3.4, where we discuss the balance between demand and supply.

3.4 Balance between demand and supply

The balance chapter will address the balance between demand and supply. An important measuring tool for the offshore service market is the ratio of OSVs to rigs/installations. The ratio changes continuously as the total existing active fleet changes and the demand for oil service changes. The market consists of a dynamic relation, meaning that the demand-supply relationship affect the rate market, utilization and the asset prices which in turn affect the total existing active fleet through investor sentiment.

The offshore service market is influenced by the world economy and is characterized by continuing cycles which depend on the balance between demand and supply. The offshore service market is as for pure shipping characterized by cycles, where the negotiation power between oil companies and offshore service companies shifts. The balance is reflected through rates, but also through utilization and asset prices.

Figure 3-17: Short term cycles



Source: Stopford 2009, adjusted by authors

Figure 3-17 illustrate a short term cycle. A peak in the cycle implies that the balance between demand and supply favors offshore service companies. Rates are high and oil companies bear the risks and have relatively high costs attributed to the service provided by offshore service companies. In a trough the situation is opposite. Rates are low and the offshore service companies bear the risks. The break even cost of offshore service determines the long run cost for the oil companies. A reasonable return on investment for the oil service companies must cover long run costs which we discussed in chapter 3.1.2 under offshore service cost.

3.4.1 Development in demand and supply for OSV

Carnegie defines high end PSV to be 3,000+ DWT and high end AHTS to be 15,000+ BHP. DOF`s vessels are over these limits except one PSV which is slightly below 3.000 DWT and two AHTS vessels which are under the 15.000 BHP limit. The high end development is therefore the most important aspect of the market to analyze. Table 3-9 show historic development for demand and supply for OSVs, and Carnegie`s expectations for the future.

Table 3-9: Demand in regions and total supply

AHTS>15,000BHP	Jun-00	Jun-01	Jun-02	Jun-03	Jun-04	Jun-05	Jun-06	Jun-07	Jun-08	Jun-09	Jun-10	Jun-11e	Jun-12e	2010-2012e
SE Asia	4	5	8	5	10	11	7	15	18	20	30	33	40	33,3 %
South and central America	8	12	11	14	11	14	19	24	23	30	37	51	55	48,6 %
Mediterranean	1	1	1	4	5	5	6	4	7	13	14	15	17	21,4 %
Northwest Europe	12	16	13	18	14	18	22	18	22	24	18	20	21	16,7 %
Weat Africa	5	9	12	10	10	15	15	18	15	17	17	20	27	58,8 %
North America	3	3	4	5	9	7	8	11	9	11	15	15	15	0,0 %
Total demand	33	46	49	56	59	70	77	90	94	115	131	154	175	33,6 %
Growth		39 %	7 %	14 %	5 %	19 %	10 %	17 %	4 %	22 %	14 %	18 %	14 %	33,6 %
Total Supply	51	59	68	86	90	94	101	115	128	151	185	234	248	34,1 %
Growth		16 %	15 %	26 %	5 %	4 %	7 %	14 %	11 %	18 %	23 %	26 %	6 %	34,1 %
PSV>3.000DWT	Jun-00	Jun-01	Jun-02	Jun-03	Jun-04	Jun-05	Jun-06	Jun-07	Jun-08	Jun-09	Jun-10	Jun-11e	Jun-12e	2010-2012e
SE Asia	6	6	8	10	15	13	17	30	29	45	55	66	78	41,8 %
South and central America	7	10	13	19	24	27	29	41	41	56	92	97	107	16,3 %
Mediterranean	1	2	1	1	5	5	9	11	16	16	22	27	30	36,4 %
Northwest Europe	61	65	73	74	68	96	117	134	136	144	153	153	153	0,0 %
West Africa	1	4	8	13	22	28	36	42	43	58	58	68	80	37,9 %
North America	12	14	19	35	39	39	48	55	52	56	60	70	89	48,3 %
Total demand	88	101	122	152	173	208	256	313	317	375	440	481	537	22,0 %
Growth		15 %	21 %	25 %	14 %	20 %	23 %	22 %	1 %	18 %	17 %	9 %	12 %	22,0 %
Total Supply	93	102	128	174	202	219	270	322	356	424	502	602	631	25,7 %
Growth		10 %	25 %	36 %	16 %	8 %	23 %	19 %	11 %	19 %	18 %	20 %	5 %	25,7 %

Source: Carnegie 2010

The high-end AHTS development shows that forecasted growth in supply and demand for AHTS vessels are similar. We also notice that the expected growth in demand for South and Central America is high, mostly due to the deepwater fields in Brazil. High-end PSV development show high growth in demand for most regions except for the mature Northwest Europe region which currently has a declining production rate. Supply for high end AHTS and PSV are expected to increase at a slightly higher rate than demand which will put pressure on the high end market. It is currently pressure on the high end OSV market and we can see that the expected growth in demand will not surpass growth in supply before 2012.

3.4.2 OSV to Offshore installations ratio

The ratio of OSVs to rigs/installations indicates how much supply is needed for demand. The aggregate growth for drilling rigs which consists of drill-ships, jack-ups and semisubmersibles was 18% between 2005 and 2009, while the growth in OSV was 49%. From 2009 to 2012 the drilling rigs is expected to grow 19% and OSV 22%. DnB NOR Markets indicate that the accumulated ratio for OSV to rigs will be 3.0 for 2010 and 2011. It is expected to come down to 2.9 in 2012 and it is expected that the market can absorb the ratio at this time, but the pressure remains on the OSV market. Historical average ratio from 2000-2009 is 2.4 (DnB NOR Markets 2010).

Table 3-10 consist of numbers from the Arctic Securities and Carnegie. The growth ratio for 2009 and 2010 is very high (4.02 and 4.70), which correspond to the high number of vessel deliveries these years. The accumulated ratio is expected to hit its peak in 2010, and with a slight reduction in 2011. We can therefore relate expectations in the Arctic report to the same expectations in the DnB NOR Markets report. Two assumptions for the table are given. 1) current newbuilding orders are delivered on time and 2) no attrition. The two assumptions are highly unrealistic. Highlighted in light blue are Carnegie`s numbers. Carnegie did not foreclose any numbers for drilling rigs or floating production. Expected deliveries in 2010 seem to roughly correspond to Arctic`s numbers while Carnegie expects more deliveries in 2011.

Table 3-10: OSV to Offshore installations ratio

	Fleet as of 1.Jan-07	Fleet as of 1.Jan-	Fleet as of 1.Jan-	Newbuilds (actual 2009 and estimates 2010-11)						Percentage fleet growth					
				2009a		2010e	2010e	2011e	2011e	09-10	10-11	10-11	11-12	11-12	08-12
Drilling rigs															
Jakup	398	414	440	24		29		14		5,5 %	6,3 %		2,8 %		15,2 %
Semisubm,	166	167	172	15		21		9		8,7 %	11,2 %		4,3 %		26,2 %
Drillships	38	39	42	7		13		18		16,7 %	26,5 %		29,0 %		90,5 %
Sum	602	620	654	46		63		41		7,0 %	9,0 %		5,4 %		22,9 %
Foating prod,															
FPSO	108	123	144	13		9		14		9,0 %	5,7 %		8,4 %		25,0 %
FSO	81	88	88	4		9		1		4,5 %	9,8 %		1,0 %		15,9 %
TLP	19	22	24	0		0		0		0,0 %	0,0 %		0,0 %		0,0 %
Spar	14	15	16	1		1		0		6,3 %	5,9 %		0,0 %		12,5 %
Semi	35	37	40	2		1		0		5,0 %	2,4 %		0,0 %		7,5 %
Sum	257	285	312	20		20		15		6,4 %	6,0 %		4,3 %		17,6 %
Supply															
AHTS	1009	1166	1203	180	1424	255	136	56	68	15,0 %	18,4 %	9,6 %	3,4 %	4,4 %	40,8 %
PSV	860	850	913	85	1040	135	86	50	61	9,3 %	13,5 %	8,3 %	4,4 %	5,4 %	29,6 %
Sum	1869	2016	2116	265	2464	390	222	106	129	12,5 %	16,4 %	9,0 %	3,8 %	4,8 %	36,0 %
Growth ratio				4,02		4,70		1,89							
Acc. gr.ratio	2,18	2,23	2,19	2,31		2,49		2,46							

Source: Carnegie 2010, Arctic Securities 2010

2010 and 2011 has a high ratio because supply is expected to grow faster than demand and therefore the pressure will remain on the OSV companies. The accumulated ratio is expected to improve from late 2011. Note that DnB NOR Markets use rigs while Arctic Securities use total installations which gives a lower ratio.

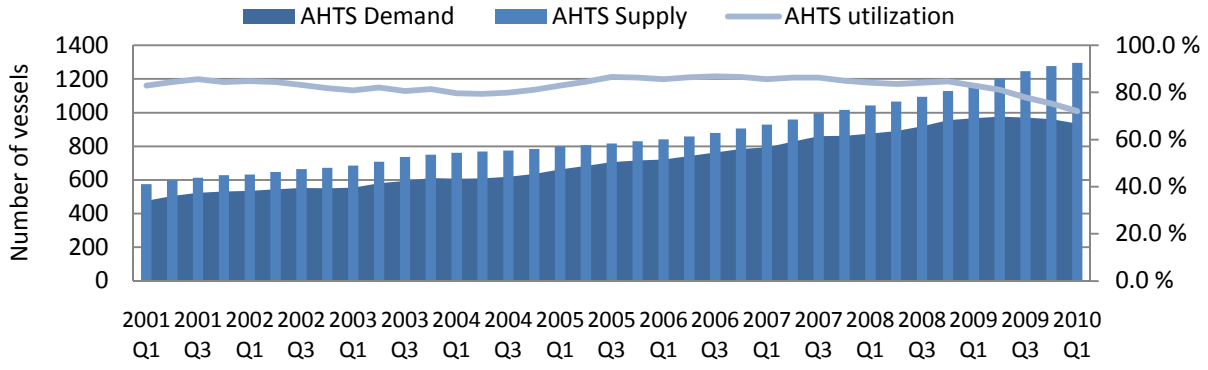
3.4.3 Utilization

Utilization is a result of the balance between demand and supply for vessels and is correlated with the development of rates and asset prices. Utilization provides information on the tightness in the offshore service and subsea market, whether there is over/undersupply of vessels in the markets. A company`s contract coverage provides information about expected utilization in the future and utilization provides information about how well the companies are utilizing their vessels.

The OSV market

Historical utilization for the total OSV fleet has been between 80-90% in the period 2001-2007. It started to decline and in Q1 2010 utilization reached 71%. The reason for the decline in utilization from the end of 2007 was du to the continuously growth in supply combined with a more moderate growth in demand. The financial crisis led to a decline in utilization. This is the case for most segments within the OSV market. The total AHTS fleet utilization reached 72.1% in Q1 2010 shown in figure 3-18.

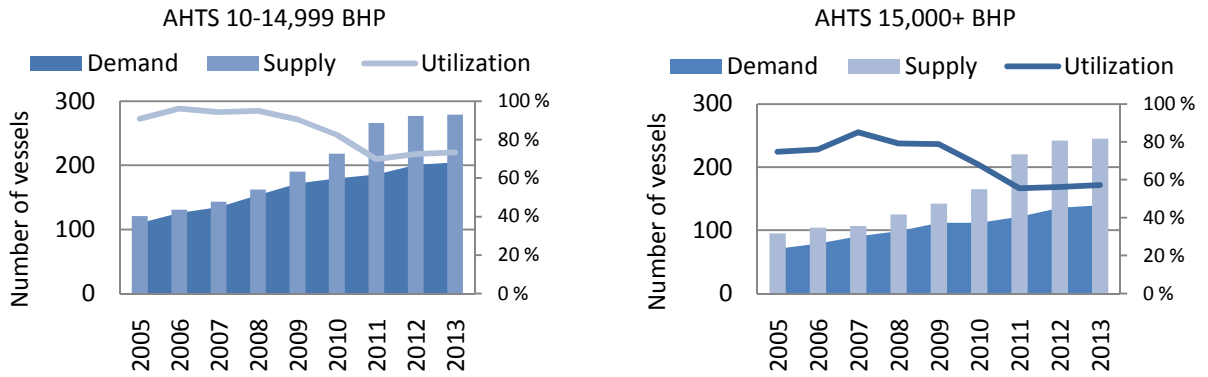
Figure 3-18: Total AHTS Utilization



Source: ODS-Petrodata 2010

Utilization for midrange and high end AHTS are illustrated in figure 3-19. Midrange AHTS utilization is higher than total AHTS utilization. The decline in utilization is expected to hit bottom in 2011 with 70%. Utilization is expected to improve with better market conditions. Utilization for high end AHTS is expected to bottom out at 55% before it starts to increase.

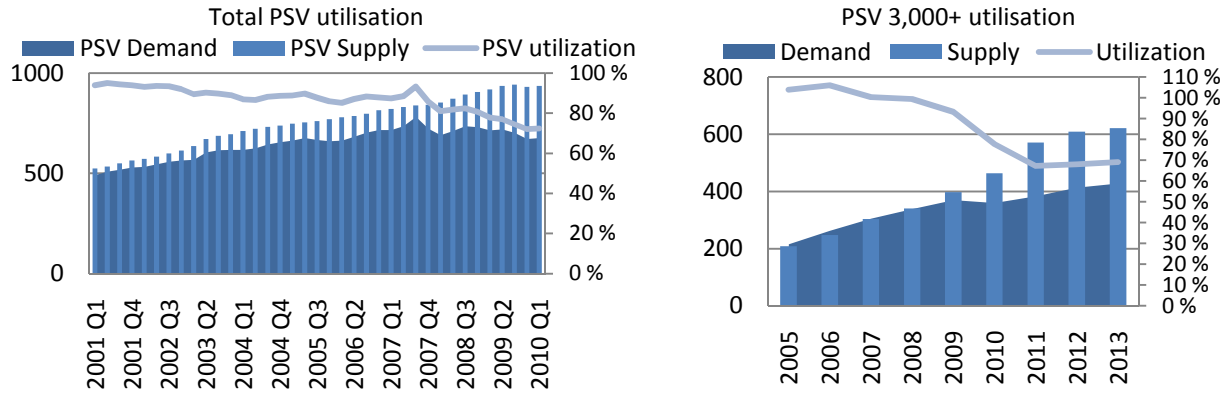
Figure 3-19: Midrange and high end AHTS utilization



Source: ODS-Petrodata 2010

Utilization for the total PSV fleet was 72.4% in Q1 2010 illustrated in figure 3-20. The high end PSVs is expected to bottom out at 67.3% in 2011 and then increase. Utilization for high end PSVs looks better than for the high end AHTS in figure 3-19 due to a more moderate increase in supply for high end PSVs.

Figure 3-20: Total and high end PSV utilization

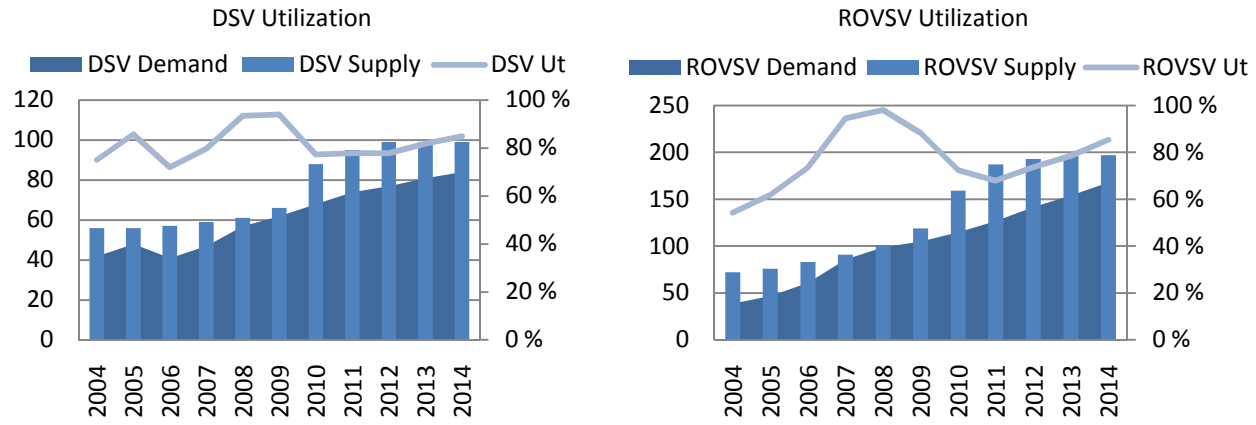


Source: ODS-Petrodata 2010

The subsea market

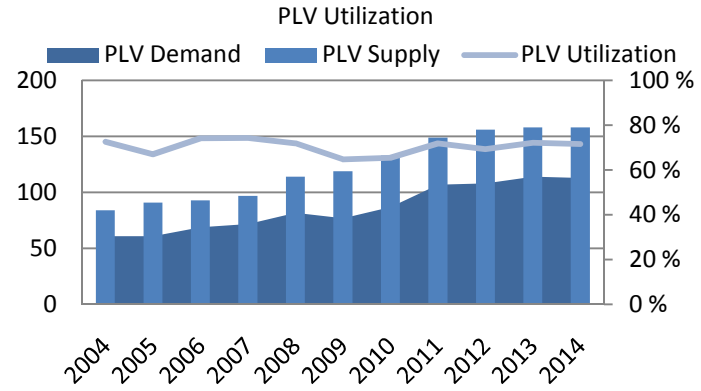
Subsea utilization is illustrated in figure 3-21. Utilization for DSVs dropped to 77% in 2010, but utilization from 2010 and onward is expected to improve. Utilization for ROVSV has been more volatile, and improvements are not expected before 2012. The growth in demand and supply has been especially high for ROVSV. From 2004 to 2014 the average expected growth rate in demand is 15.7%.

Figure 3-21: Subsea utilization, DSV and ROVSV



Source: ODS- Petrodata 2010

Figure 3-22: Subsea utilization, PLV



Source: ODS-Petrodata 2010

Supply for PLVs has continuously increasing over the recent years and is expected to stabilize at around 150. Utilization has been between 65-75% and is expected to be at the high end of this interval in the coming years.

3.4.4 Rate Market

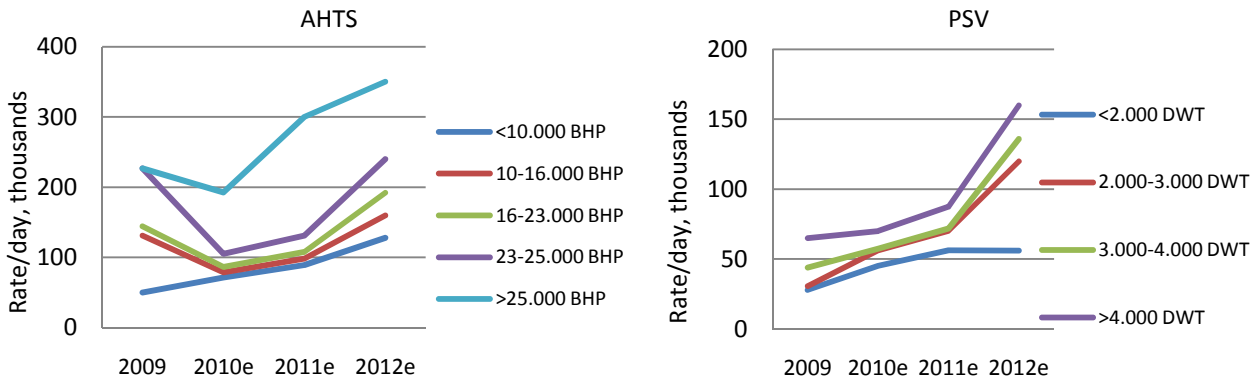
Rates reflects the balance between demand and supply (Stopford 2009) at any given time period and can be seen directly through the volatile spot day-rates. Spot day-rates reflect the marginal balance between demand and supply. Term day-rates are based on future expected spot day-rates for a given period which are reflected through the balance between demand and supply. This is explained in chapter 2.1.3.

The North Sea (NS) spot development is the only well functional spot market in world. The OSV companies aims to secure long term contracts, but they want to be exposed to the spot market in the NS to exploit spikes. Many vessels that have not secured contracts will operate in the NS spot market. The development in the NS provides information about international spot and term day-rates. The NS market have unanticipated spikes due to unanticipated tightening in the market. This applies mostly to AHTS vessels, but also to PSVs. Average day-rates for AHTS 20,000+ BHP was NOK 100,000 in Q4 2009 and reached NOK 1,000,000 in June 2010 and then plumped down to NOK 150,000 in July 2010 (DnB NOR Markets 2010). The NS spot day-rates have declined in line with the overall international rates and are expected to improve in line with better market conditions. Late 2009 and early 2010 are presumably were NS spot day-rates hit bottom levels (ODS-Petrodata 2010). ATHS term day rates were around NOK 100,000 for AHTS <18,000 BHP and around NOK 50,000 for PSV <3,000 DWT. Rates were higher for stronger and larger vessels. During 2010 the term day-rates for AHTS and PSV has improved. Many newbuilds entering the NS market has not secured contract and could lead to a slower upturn for the term and spot day-rates in the NS compared to international term day-rates.

Expected rates

Expectations for future day-rates have an upward trend, which correspond to improvement in the balance between demand and supply. In figure 3-23 we can see that there is a upward trend for every segment. For low range AHTS (<10,000 BHP) and low range PSV (<2,000 DWT) there is limited growth expectations in spot day-rates.

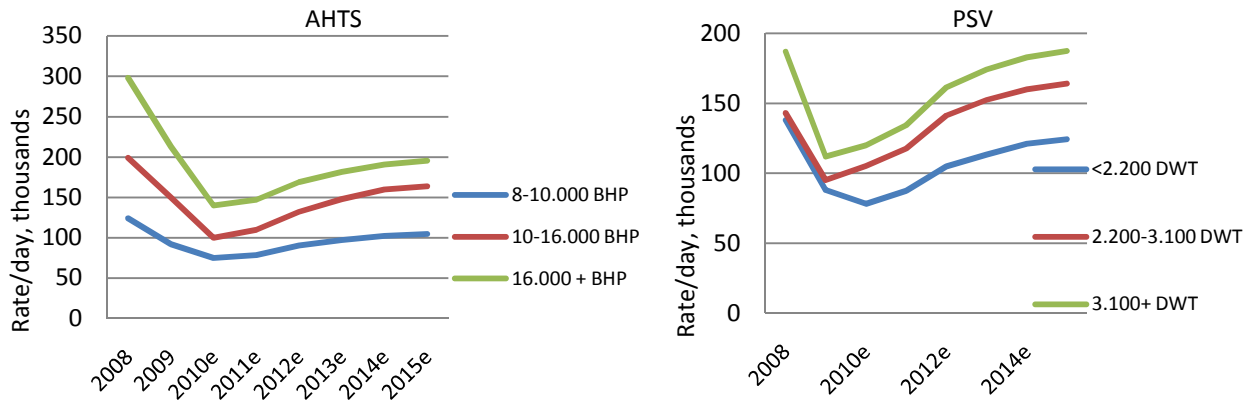
Figure 3-23: North Sea spot day-rates



Source: DnB NOR Markets 2010

In figure 3-24 we can see that growth in term day-rates are weaker. Significant improvements in the rates are not expected before late 2011.

Figure 3-24: North Sea term day rates



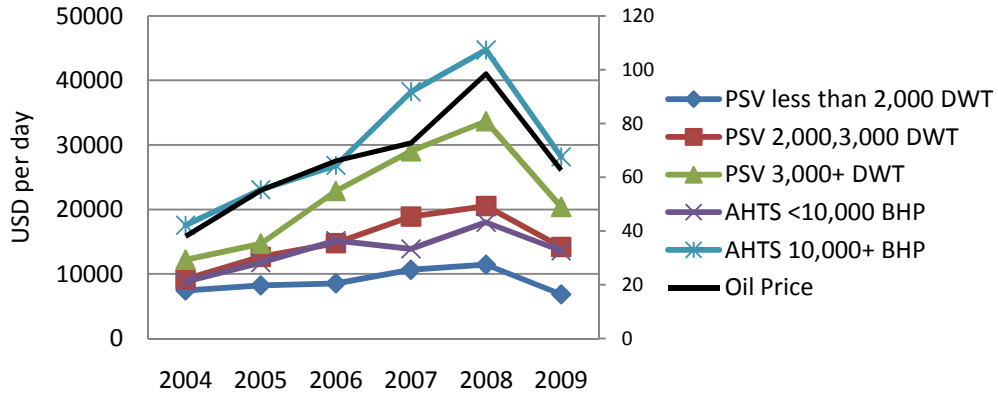
Source: Arctic Securities 2010

Term day-rates for different segments within AHTS vessels and PSVs varies in different regions. The rates in Brazil are higher than in the North Sea region. Reasons for the difference can be that demand has grown faster than supply and also the operating costs level is higher. Oil companies in the North Sea region indicate that they will implement cost control that will probably have a negative effect on spot and term day-rates. Demand and supply fluctuate, and

in some regions local content hinder offshore service companies to relocate vessels in the short term.

If we look at the average annual global day-rates illustrated in figure 3-25 we can see that rates started to decrease in 2008. Term day-rates came down significantly during the economic downturn, but are now showing an upward trend as discussed above. The development in rates is correlated with the oil price which is the most important contributor to E&P spending discussed in chapter 3.1.2. From figure 3-25 we can see the correlation between the oil price and rates. In 2010 the oil price and the rates have improved.

Figure 3-25: Global annual average oil price and day-rates by segments



Source: ODS-Petrodata 2010

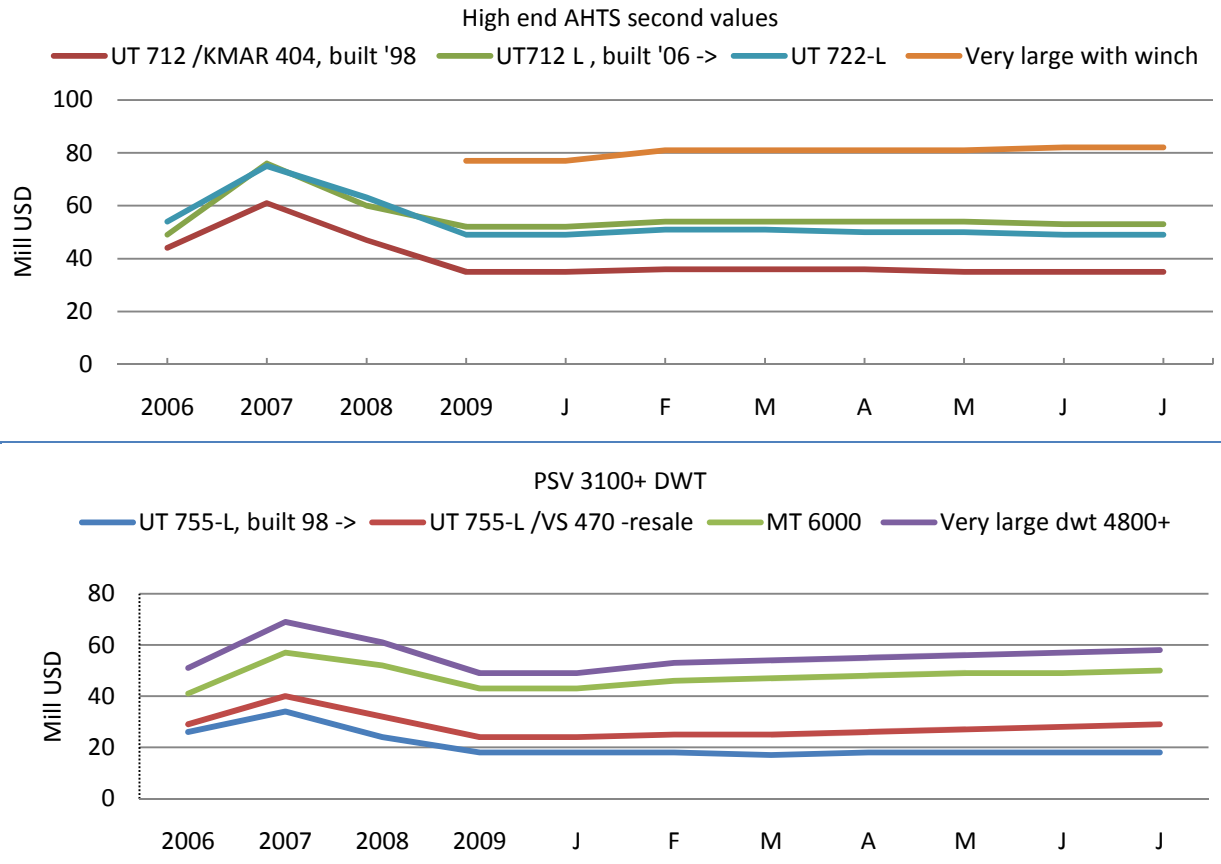
Demand has grown rapidly the last decade and supply has followed. The resent recession led to decrease in demand for the offshore service vessels while supply continued to increase. The supply increased because supply is difficult to adjust. The lagged effect of supply lead to an adjustment period before supply meets demand. We believe that rates will see improvement in most regions in late 2011 along with improved balance between demand and supply.

3.4.5 Asset prices

Asset price movements are correlated with rate movements and utilization. Rates and asset prices were relatively high around 2001(Arctic Securities 2010). Rates declined slightly during the next couple of years and then started to climb sharply in 2004. Rates were at their peak in late 2007 and early 2008. Asset prices followed this development and were high in the same

periods shown in figure 3-26. Rates have declined sharply since then along with asset prices, but has recently been flattening out and started to improve.

Figure 3-26: Second hand OSV values



Source: RS Platou 2010

3.4.6 Conclusion

If we relate to the short term offshore service cycle described in figure 3-18, the peak was in 2008 where offshore oil companies made large profits. Then the financial crisis came, where the oil price, rates, utilization and asset prices dropped sharply. There are still risks in the market, but it seems to be improving and that we are in an upward trend.

As we discussed earlier the OSV/Rig ratio is expected to see improvement late in 2011. An oversupply situation with pressure on utilization and rates are expected to continue for roughly

a year. Improvements are not expected before late 2011. Demand growth will then increase with rigs entering the market and the supply growth is expected to dampen.

Table 3-11: OSV to offshore rig ratio

Growth	OSV fleet	Rig fleet
05-09	49%	18%
2010e	17%	9%
2011e	4%	5%
2012e	1%	3%

Source: DnB NOR Markets 2010

Table 3-11 show DnB NOR Markets expectations for the coming years. The rig fleet is expected to have a higher growth rate than the OSV fleet from 2011.

Utilization for high end AHTS and PSV are expected to improve in 2011 with a slight increase. DSV and PLV utilization is also expected to have a slight increase in utilization, while ROVSV utilization is expected to increase at a higher rate. Day-rates have already seen improvement, and the trend is expected to continue. Asset values follow the development in rates.

The prospect for the market in which DOF operates looks promising. Rates, utilization and asset prices will see improvement after the large numbers of vessels ordered has entered the market and demand has picked up. Different segments within the OSV and subsea market have different prospects as we have discussed in this chapter. We believe the overall OSV and subsea market will improve in late 2011.

4 Competitor Analysis

A competitor analysis is important to show if DOF has any competitive advantages compared to the competitors in DOF's segments. The offshore supply market is a fragmented market, with 141 companies owning large supply vessels. There are 36 companies owning 10 vessels or more, including new builds, controlling around 75% of the total fleet. We have decided to limit the scope of our analysis and focus our attention to the main Norwegian peers listed on OSE. It will make it easier to compare market values, since they are traded at the same exchange. This will imply that the same investors are present and values should then reflect the differences between these companies if the liquidity of the stocks is high.

We will show the differences in the fleet, strategy, and financials to better understand the market structure. The market structure of the regions of operation is different and will affect the competition as described in chapter 2.1.1. The North Sea is the only well function spot market and the market structure can be described as monopolistic competition. There are many charterers and charters, and low barrier for entry or exit. The difference between the North Sea and for example Brazil where DOF has a strong presence is that the Brazilian market is more regulated. There are high barriers of entry because of the nature of local content, and there are fewer charterers. The Brazilian market structure is better described as an oligopoly, and we will show that DOF has a competitive advantage in Brazil.

4.1 Norwegian peer fleet

To start off a presentation of the Norwegian peer's fleet is presented below.

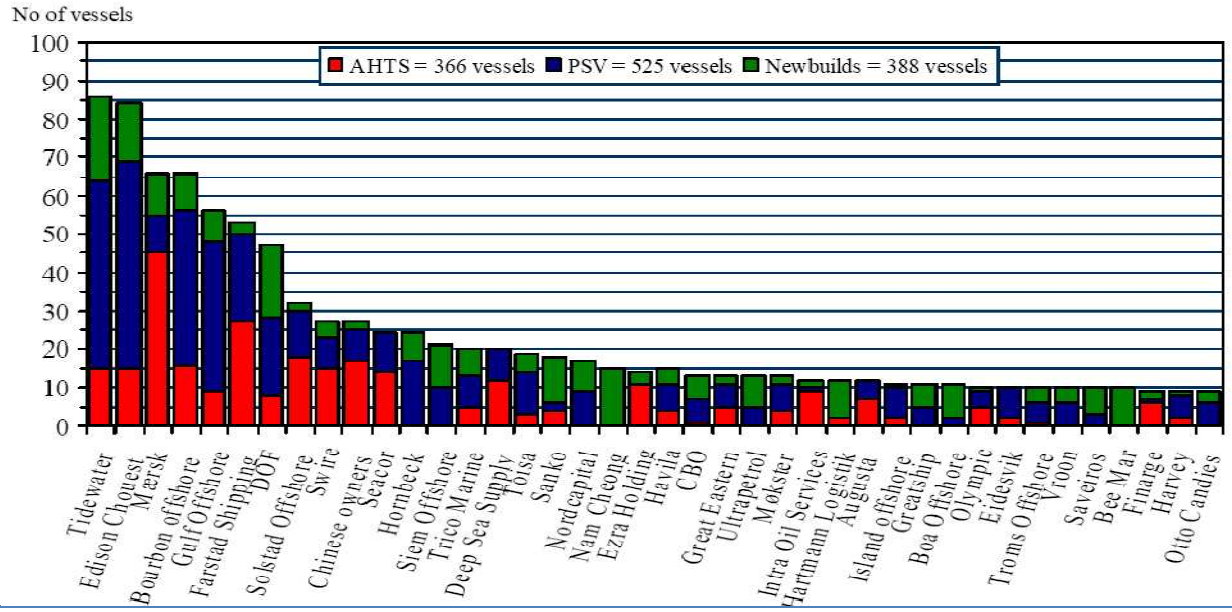
Table 4-1: Fleet composition

	Farstad	Havila	Solstad	Deep Sea	Siem	Eidesvik	DOF
PSVs	24	13	8	9	14	12	20
AHTSs	32	10	23	21	10	0	23
Subsea vessels	2	4	18	0	6	4	25
Others	0	2	0	0	15	8	0
Total	58	29	49	30	45	24	68
Of which are new builds	0	4	3	6	11	2	17
Contract Coverage 2010	68%	86%	72%	61%	74%	93%	95%
Contract Coverage 2011	58%	69%	57%	41%	72%	40%	68%

Source: Company reports, compiled by authors

From table 4-1 we get a clear picture of the fleet owned and operated by DOF and the Norwegian peers. In the OSV segment, Farstad is the largest with a fleet of 56 vessels under operation. DOF has a fleet of 43 OSVs and is the second largest, with Solstad Offshore and Deep Sea Supply trailing behind. DOF is the 7th largest high end OSV operator in the world as of today, as shown in figure 4-1.

Figure 4-1: Companies controlling PSV > 2,000 DWT, AHTS > 10,000 BHP

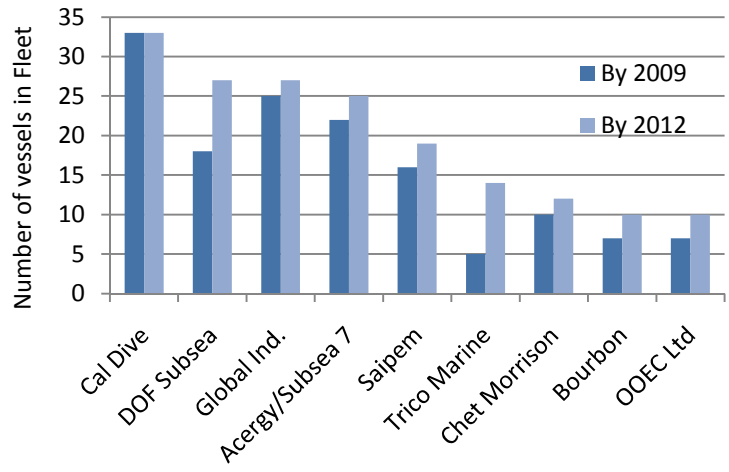


Source: Prospectus DOF ASA 2009

All of the main Norwegian OSV operators have a fleet composition which is classified in the high end segment, and figure 4-1 displays the worldwide high end OSV fleet by each company. We can see that Tidewater and Edison Chouest are the largest operators with around 85 high end OSV vessels, which is twice the size of DOF's OSV fleet.

In the subsea market, DOF is the one of the leading operator with a fleet of 25, including newbuilds. The only Norwegian OSV operator that is close to this scale is Solstad Offshore with a subsea fleet of 18. However the subsea vessels in DOF's fleet are more highly specialized and newer.

Figure 4-2: Top 10 Subsea Vessel Owner by Fleet size



Source: DOF ASA Overview 2010

Figure 4-2 shows that by number of vessels, DOF will be the second largest operator of subsea vessels in the world by 2012. We can however not classify the pure subsea companies in the same scale as DOF because they are operating as large independent subsea operators, with a wider aspect. DOF has started to take on more subsea project work, and the projects are more in line with the operations of these companies. DOF is trying to diversify itself from the other Norwegian OSV operators, with its large extended focus on subsea.

The current average age of DOF's fleet is only 6.5 years, which is very low. The average age for the OSV world fleet is approximately 13 years and the subsea fleet is 19 years. The Norwegian peers also have a relatively new fleet, but with an average that is slightly higher than DOF's. One of the advantages with new vessels is that they are more fuel efficient, larger and stronger in terms of brake horse power, decks pace and accommodations. This is very important because new vessels will soon be operating in deeper waters, requiring more BHP and bigger cranes. It is

also important to have large deck space for equipment, and accommodations for crew and engineers.

4.2 Strategy differences

DOF`s strategy is to secure long term contracts for their OSV and subsea fleet. This is important to service their high debt levels. DOF has the majority of their vessels on long-term contracts with major clients such as StatoilHydro, Shell, Total, Halliburton, Chevron, Petrobras, Technip, and Acergy/Subsea7.

The contract coverage for DOF is the highest in the industry, with a historic rate of utilization of 95%. The contract coverage presented in table 5-1 includes options for peers, while for DOF the contract coverage only include firm contracts. We can see that the contract coverage is even higher when we have not included options for DOF in 2010. With next to no spot exposure, DOF has focused on long term contracts, which differs from some of the competitors. Deep Sea Supply is one of the companies with the highest spot exposure amongst the peers, and will at times profit from peaks in rates, but certainly derive higher risk from the spot exposure.

All the Norwegian OSV operators charter out vessels with full marine crew to the charterers, while Deep Sea Supply has decided to outsource their crew. Deep Sea Supply can hire crew when needed, but they lose the opportunity to train their own crew. This can be a cost advantage because Deep Sea Supply has no crew expenses when the vessels are not in operation.

We have mentioned that Solstad Offshore is the closest competitor to DOF in the Subsea market for Norwegian peers, but they differ. While Solstad charters out vessels with marine crew, DOF has the ability to offer engineering capabilities with the vessels. Engineering capabilities involve highly qualified personnel like ROV operators, divers, and geologists. This can serve as an advantage when competing for a contract. DOF can charge higher rates when engineering capabilities are involved.

The area of operations is mostly the same for all of the Norwegian peers. DOF has the largest fleet of Brazilian built offshore vessels, which is considered a major benefit when operating in

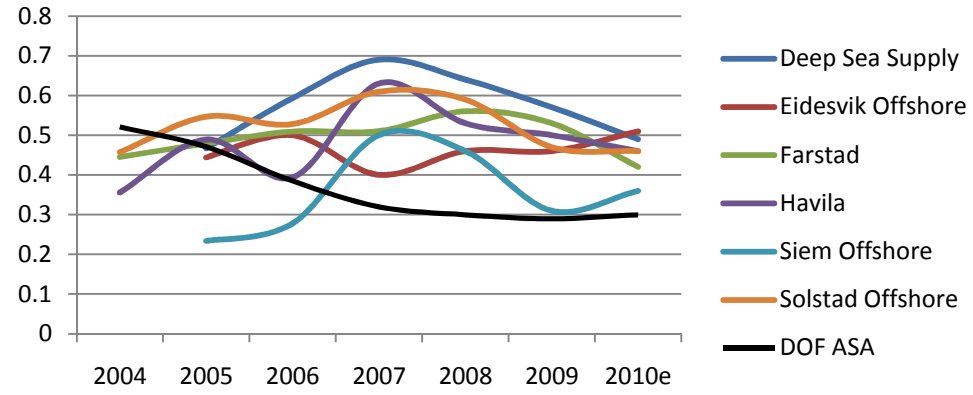
the growing Brazilian market driven by the preference for local built tonnage. DOF has a competitive advantage due to the circulation rules, as described in chapter 1.5.2. Petrobras offers long-term contracts with high rates, and DOF has already received several large contracts with Petrobras. The announced large projects in Brazil will form a solid platform for further growth.

4.3 Financials

By focusing our attention to the financial aspects of the competitor analysis we will see that there are large differences between DOF and their Norwegian peers.

4.3.1 Operating margins

Figure 4-3: EBITDA margin Norwegian peers



Source: Company reports, compiled by authors

The EBITDA margin of the OSV operators, presented in figure 4-3, show that DOF has had a falling EBITDA margin and that that they have a considerable lower margin compared to their Norwegian peers. While most of the operators have a margin of about 50%, DOF's margin has dropped to around 30%. The reason for this is because much of the operation costs are contributed to the subsea operations. While DOF's OSV operations return an EBITDA margin of around 40%, the subsea operations has a lower return. An illustration on the operational elements of subsea operations and the returning EBITDA levels are presented in the table to the right. The illustrated levels show that while

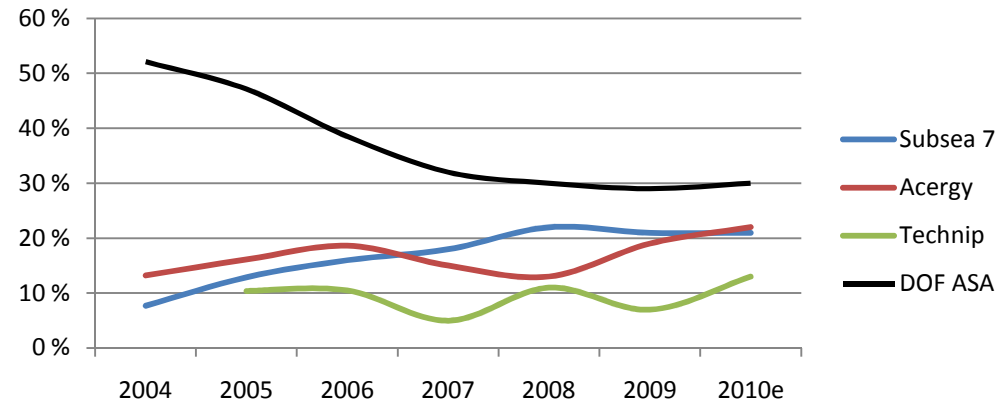
Operation elements	EBITDA level
Vessel charter	50%
ROV rental	10-15%
Engineers	10-15%

Source: Compiled by authors

the vessel charter has a 50% EBITDA, the other operating elements only return 10-15%, which will in turn give a total EBITDA margin of around 30%.The subsea segment accounted for 67% of DOF's revenues in 2009, and will therefore press down the total EBITDA for DOF.

Another aspect of the lower EBITDA levels, are that DOF has a large share of their fleet operating in Brazil, where OPEX levels are higher. This will be discussed in chapter 5.

Figure 4-4: EBITDA margin large subsea operators



Source: Company reports, compiled by authors

If we compare the EBITDA level of DOF to the larger subsea operators, we can from figure 4-4 see that DOF operates with a higher EBITDA margin than these operators. In the subsea segment the margin is not higher than 20% for Subsea 7/ Acergy, while Technip has around 14%.

4.3.2 CAPEX and Debt

DOF has a large newbuilding program with 17 vessels to be delivered, mostly AHTSs. Other operators that also have a large new building program are Siem Offshore and Deep Sea Supply. It is common practice to finance newbuildings with debt. DOF has with the newbuildings in Brazil, secured very attractive financing at low fixed rates over 17 years. The Brazilian loans can be seen as a competitive advantage, and constitute a large part of DOF's debt.

Table 4-2: Remaining CAPEX and debt to EBITDA ratio for main Norwegian peers

As of Q2 2010	Farstad	Havila	Solstad	Deep Sea	Siem	Eidesvik	DOF
NIBD/EBITDA	2.62	7.90	4.49	7.42	8.03	7.01	7.90
Remaining CAPEX (MNOK)	0	600	450	2 960	3 920	440	9 971*

Source: Company reports, compiled by authors

Table 4-2 illustrates the remaining CAPEX levels and the net debt to EBITDA ratio for DOF`s Norwegian peers. This ratio can tell us something about the ability to service loan obligations. We can see that Farstad has a very low ratio, and no remaining CAPEX. While most of DOF`s Norwegian peers have a ratio of around 7-8, the CAPEX is quite different. DOF has the largest newbuilding program, and also one of the largest debts to EBIDTA ratios. We know that the contract coverage is very high, and even newbuilds have secured long term contract coverage. DOF has a backlog of 21 billion as of Q2 2010, not including options. DOF should have no problem servicing the debt. The growth in debt due to the remaining CAPEX will be compensated with growth in EBITDA, and the NIBD/EBITDA ratio will fall already in 2011 if our expectations are correct.

4.4 Conclusion on competitor analysis

DOF has a younger fleet than their Norwegian peers, and have secured the highest contract coverage in the industry. DOF has with their large subsea exposure tried to diversify themselves from their peers. This will make the peer view less relevant, since none of the companies that we have mentioned have the same fleet composition.

DOF has the largest fleet of Brazilian built offshore vessels, which is considered a major benefit when operating in the growing Brazilian market, driven by the preference for local built tonnage. With many vessels under construction, DOF will be able to import more tonnage under Brazilian flag. They will be able to take on new long term charters expected to be tendered in near future. DOF has high debt and remaining CAPEX compared to their peers but has long term contract coverage secured.

The competitive advantage in Brazil is “short term”, since competitors can build in Brazil over time. Deep Sea Supply has 1-2 vessels under construction in Brazil. Farstad Shipping and Deep Sea Supply have both received lucrative deals with Petrobras in Brazil recently. But it take 2-3 years to construct a vessel after ordering it, if there is capacity at yards, and we know that the current yard capacity in Brazil is limited. Brazil have however plans to expend their yard capabilities.

Regulations in Brazil can also shift, and the benefit from local content can be lifted. This will open for more international companies to enter the market, and DOF will lose their advantage.

5 Financials

To perform a valuation we need to analyze DOF's financials which will serve as the basis for our forecast for future values. Chapter 5 will provide readers with a thorough discussion on issues related to DOF's financial position and to the right is a summary of issues that will be discussed.

First we will present an analysis of past reported income statement (P&L) and balance sheets, and then we will forecast the progress for the next 4-5 years. With DOF`s resent high growth, going back further than 2-3 years will not be relevant for analysis of the future. In shipping the past return and accounting results may be of limited use for future projections, because of high volatility in earnings and values.

Revenues
OPEX
Depreciation/write downs
Net financial
Taxes
Net Profits
EBITDA projection for Cash Flow
Assets
CAPEX
Debt
Working Capital
Cash flow projections
Risk management
Adjustments to accountings

Table 5-1: Recent developments in 2010 for DOF

Date 2010	Announcements
23.feb	**Extension of contracts with Shell UK - 1 year - Skandi Foula and Rona**
23.feb	**Charter contract 1+1 year with OGX - Skandi Emerald**
07.apr	Private placement DOF Installer - 150 million
10.mai	**Long term bareboat charter with Seaforce in Australia - 4 to 6 years - Skandi Bergen**
18.mai	**3 year contract with Subsea7 - 3x 1 year option - Skandi Neptune**
21.mai	DOF Subsea Norway awarded Diverless Frame agreement and First call-out by ConocoPhillips
10.jun	**Two 4 year contracts with Petrobras in Brazil - Skandi Giant and a similar vessel**
25.jun	DOF Subsea acquires Subsea engineering and construction business in Australia - SWG Offshore
12.jul	New unsecured bond issue for DOF ASA - NOK 950 millon, maturity July 2013, bought back old bond loans
02.aug	**Four 8 year contracts for 4 large AHTS with Petrobras - estimated gross revenue of NOK 5.2 billion**
11.aug	Two new AHTS to be built in Brazil - AH11 design
25.aug	**Long term contract with Total in Argentina - 15 year duration - Skandi Patagonia**
26.aug	**Geotechnical Survey for Shtokman - Geobay**
29.sep	**Extension of contract withStatoil - 2 years - Skandi Stord**
01.okt	New unsecured bond issue for DOF Subsea - NOK 750 millon, maturity April 2014, bought back old bond loans
18.okt	**3 long term charter contracts with Petrobras, ROV support - 5 years, estimated gross revenue of NOK 2 billion**
18.okt	Norskan listing postponement until 2011
19.okt	**DOF Subsea Norway awarded a survey contract by Statnett, survey of Hardanger Fjord**

Source: Compiled by authors

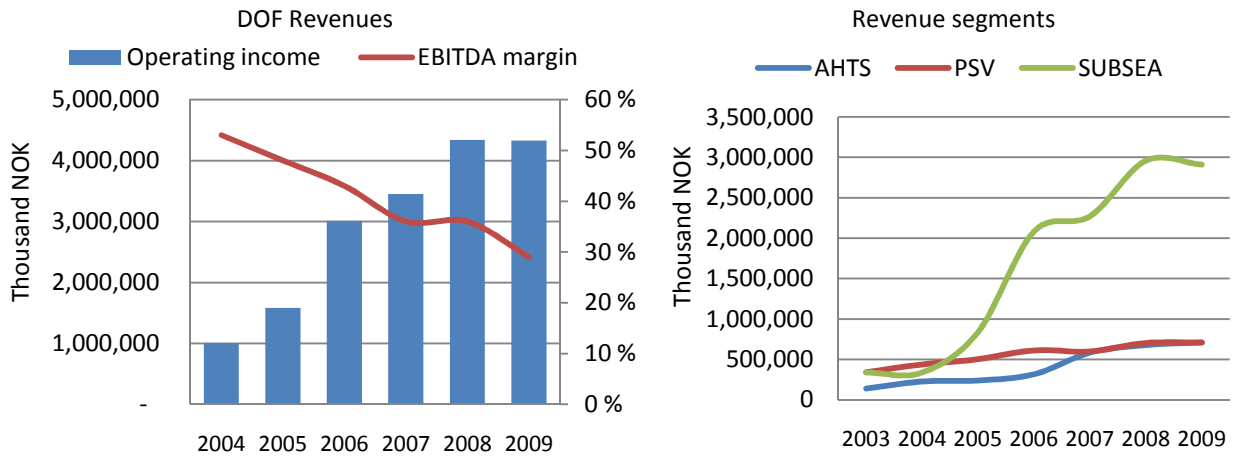
Table 5-1 is presented to show news released to the market from DOF ASA in 2010. Highlighted in bold, we would like the reader to get a picture of recent contract renewals and new contracts

that were obtained during 2010. The contracts will illustrate recent growth in DOF through contracts that will be the driver for future growth. We have also included news that relates to financing of the recent growth in DOF`s fleet, refinancing of bond debt and sale of vessels.

5.1 Revenues

Revenues have over the last couple of years grown significantly. DOF`s historical revenues and revenues per segments of operations is presented below.

Figure 5-1: DOF ASA historical revenue and revenues pr segment



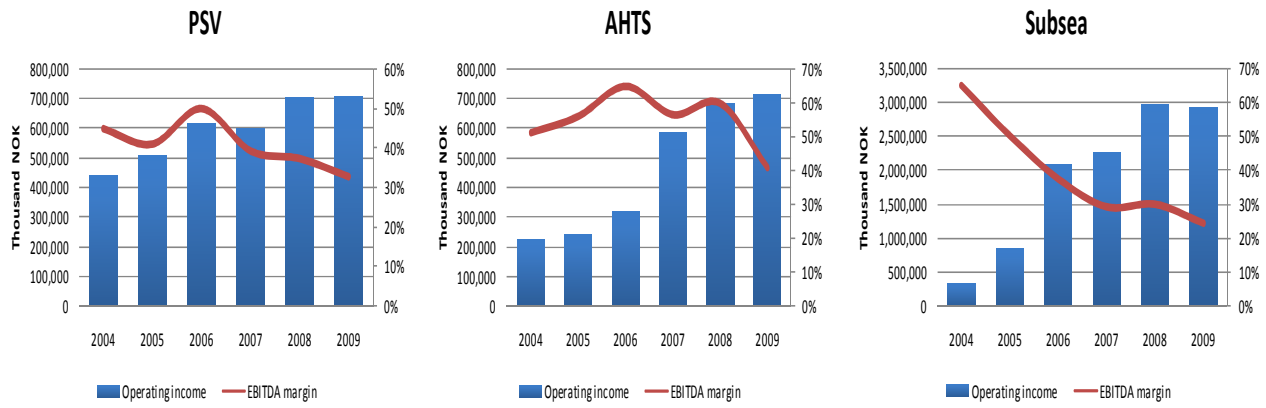
Source: DOF ASA annual reports

Figure 5-1 shows growth in revenues for DOF from 2004 to 2009. We can see that revenues have more than quadrupled over 5 years, and while the PSV and AHTS revenues have been relatively stable, revenues from subsea operations have increase significantly and represent most of the revenues contributed to DOF. EBITDA margins for DOF have in the same period fallen dramatically, from 54% in 2004 to 29% in 2009.

5.1.1 Segments

Figure 5-2 illustrates the developments in revenues and EBITDA margins contributed by OSV`s and subsea vessels to DOF. We will now analyze the developments in historical revenues for each segment and indicate developments for the future.

Figure 5-2: Revenues and EBTIDA margin DOF segments

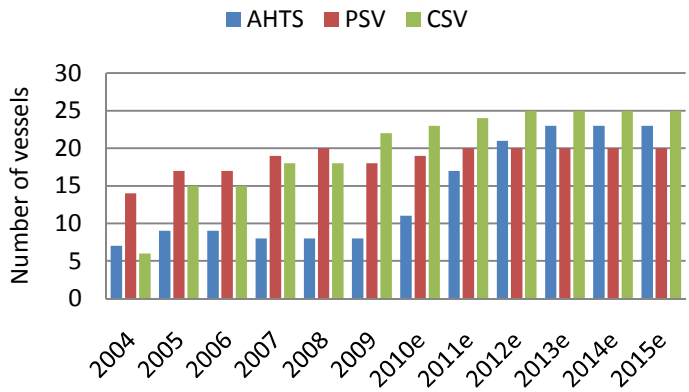


Source: DOF ASA annual reports

PSV

Revenues from PSVs have almost doubled from 2004 to 2009, and the number of PSVs in operations has varied from 14 to 18 as illustrated in figure 5-3.

Figure 5-3: Number of vessels in operation, end of year



Source: DOF ASA annual reports, compiled by authors

PSV rates reached an all time high in 2007 and have declined significantly since. The reasons are mainly the financial crisis and the increasing newbuildings entering the market. DOF has 2 newbuilds to be delivered in 2011 and they have secured long term contracts at very good rates. Vessels already in operation have very good contract coverage which is presented in appendix B. DOF has next to no spot exposure with only one vessel in the spot market.

AHTS

The number of AHTS vessels in operation has been steady at 7-9 vessels since 2004 as illustrated in figure 5-3. Rates increased leading up to the financial crisis in 2007, and have since declined.

DOF has a large newbuilding program for high end AHTSs which will create an increase in revenues from the AHTS segment. DOF has long term contract coverage for all AHTS vessels in operation. Norskan's 4 newbuildings in Brazil have secured 8 years contracts with Petrobras, at significant levels as shown in table 5-1. DOF just ordered one new AHTS with the same design as two of the vessels already under construction in Brazil and we can expect day rates at same levels. With newbuilds under construction in Brazil DOF will be able to import more DWT under Brazilian flag.

Rates for AHTS vessels and PSVs have recently showed signs of improvement as discussed in chapter 3.4.4. In chapter 3.4.3 we found that utilization for high end vessels in the OSV segment will fall until the end of 2011 as more vessels are delivered. This will put pressure on rates in most areas of the world, but as mentioned, DOF has secured many long term contracts beyond 2011.

Subsea

Revenues from the subsea segment have increased extremely, and constitutes of 67% of total revenues for DOF in 2009. The increase in revenues is attributed to many vessels coming into operation. From 6 vessels in operation in 2003, the number has increased to 22 at end of 2009 as presented in figure 5-3. Rates from subsea operations are more difficult to analyze, since the contracts differ from the PSV and AHTS term charter contracts. Subsea vessels operate on term charter contracts or on project basis. As described in chapter 4.3.1, the project base contract is paid with a day-to-day rate depending on what operations are undertaken. An example is illustrated to the right and show that the vessel charter might count for only 50% of revenues earned with the project, and the remaining revenue earned is based on what equipment and workforce is used. DOF can provide engineers, ROVs, and dive teams according to the charterers requirements. DOF also charterers out vessels with crew at standard term-charter contracts, and the charterer provide the remaining crew and equipment at own costs.

	Day rate (TNOK)
Vessel charter	500.000
ROV rental	300.000
Engineers	200.000
Total day rate	1.000.000

Source: Compiled by authors

Chapter 3.4.3 showed that the utilization for subsea vessels will not be impacted in the same way as the OSVs. Attribution of old vessels can help to improve the utilization further. We therefore believe that rates from the subsea segment will be promising.

5.1.2 DOF`s contract coverage

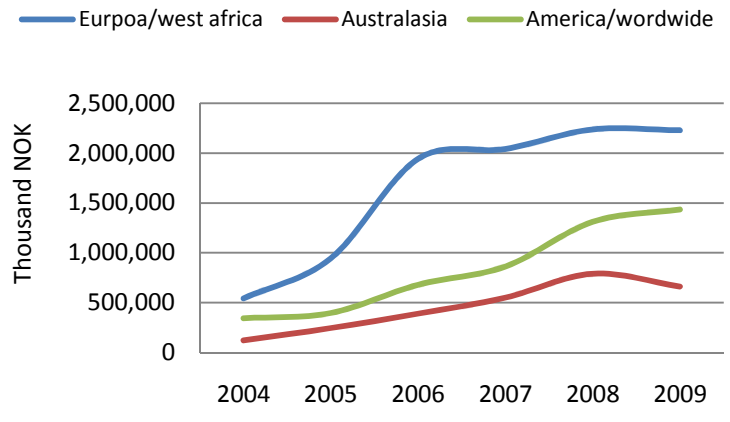
The contract coverage of DOF`s fleet is presented in appendix B. Specifications and classification for each vessel, the charterers and areas of operation are also presented in appendix B.

From the fleet coverage we find that most of the operational fleet has long term contract coverage through 2010 and will not have to renew contracts before the end of 2011. In addition, the firm contracts have extendable options added. Historical utilization for DOF's fleet has been very high, around 95% on average. Vessels under construction in DOF's subsidiaries Aker DOF Deepwater and DOF Installer have not secured contracts yet, but we assume that contracts for the high end newbuilds will be in place before construction is finished.

5.1.3 Geographical areas

The geographical area of operations, based on the location of charterers, will impact day-rates for vessels. While the North Sea is often used as an indicator for spot rates and term charter, operations in Brazil have showed higher day-rates and OPEX levels. DOF operates the largest OSV and subsea fleet in Brazil through the Brazilian company Norskan.

Figure 5-4: DOF's revenue by operating areas



Source: DOF ASA annual reports, compiled by authors

Figure 5-4 illustrates that the North Sea and West Africa operations have contributed most to total revenues in the past, but the Brazilian operations have increased its contribution over the years. The trend will increase significantly as newbuilding are delivered and as DOF might transfer more vessels

from operations in the North Sea to Brazil. The signaled increase in E&P in Brazil by Petrobras will contribute to increase the revenues from this area of operations. Petrobras have announced tenders with an increase of 146 vessels over the next 5 years.

5.1.4 Revenue projection

Based on recent massive growth in DOF's fleet and vessels to be delivered we can expect a high growth in revenues over the next years. DOF has a contract backlog of NOK 21 billion, and NOK 34 billion including options. Combining DOF's current situation with the market projections in chapter 3 and competitor analysis in chapter 4, we will have a solid basis for making forecast on revenues for the next five years.

In appendix A we have outlined a model for revenue projections over the next 5 years. A summary of results from the model is presented below in table 5-2. The model will be applied to incorporate factors that contribute to the revenue developments.

Table 5-2: Revenue projection model summary

		Revenue Projections						Effects on Revenue					
95%													
AHTS		**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
	Market Utilization	68%	55%	56%	57%	59%	63%						
	DOF Utilization	99%	95%	93%	84%	77%	75%	1.92%	2.02%	4.44%	-0.70%	-0.27%	-0.16%
	Index inflation	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%
	Rate development	0%	-1%	1%	1%	1%	1%	0.00%	-1.00%	1.00%	1.00%	1.00%	1.00%
	new vessels	1	3	7	3	1	0	12.50%	33.33%	58.33%	15.79%	4.55%	
		17.92%	37.85%	67.27%	19.59%	8.77%	4.34%	17.92%	37.85%	67.27%	19.59%	8.77%	4.34%
95%													
PSV		**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
	Market Utilization	78%	67%	68%	69%	71%	75%						
	DOF Utilization	98%	96%	94%	90%	86%	86%	0.86%	0.37%	-0.12%	-0.18%	-0.19%	-0.02%
	Index inflation	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%
	Rate development	0%	-1%	1%	1%	1%	1%	0.00%	-1.00%	1.00%	1.00%	1.00%	1.00%
	new vessels	1	1	0	0	0	0	5.56%	5.26%				
		9.91%	8.13%	4.38%	4.32%	4.31%	4.48%	9.91%	8.13%	4.38%	4.32%	4.31%	4.48%
90%													
Subsea		**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
	Market Utilization	71%	71%	73%	77%	80%	84%						
	DOF Utilization	91%	94%	94%	93%	93%	94%	0.56%	0.76%	0.37%	-0.05%	0.04%	0.02%
	Index inflation	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%
	Rate development	1%	1%	1%	1%	1%	1%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%
	new vessels	1	1	1	0	0	0	4.55%	4.35%	4.17%			
		9.61%	9.61%	9.03%	4.45%	4.54%	4.52%	9.61%	9.61%	9.03%	4.45%	4.54%	4.52%

Source: Compiled by authors

The model shows that deliveries of new vessels coming into operation will be the main driver for growth in revenue. DOF has 17 newbuildings that will be delivered over the next 3 years.

Many of the vessels under construction have secured long term contracts at lucrative rates. The vessels will certainly boost the revenue stream when vessels start operating. For vessels already in operation the contract coverage is very high. DOF will not need to renew contracts before well into 2011. Chapter 3 showed that in 2011 utilization is assumed to start rising, and rates have already showed some improvements.

For DOF's OSV fleet the high contract coverage is expected to be maintained for years to come. The worldwide utilization is expected to decrease with only 56% utilization for AHTS in 2011, but DOF has contract coverage for most of their OSV vessels beyond this and will need to renew contracts when market is expected to improve. DOF can transfer more of their vessels working in the North Sea, and other regions, to Brazil. DOF will benefit from the import rules applied to vessel owners building vessels in Brazil.

In the subsea market we expect that utilization will be very high for the entire world fleet in years to come. Many new projects that were put on hold due to the financial crisis are starting up again, and more subsea installations will be needed due to findings at higher depths. We therefore believe that DOF has a unique opportunity to secure future subsea contracts.

We have to take into consideration the index regulated adjustments to term charter rates as mentioned in chapter 1.3. The index regulations will usually vary in line with cost inflation assumptions, but will not fully compensate the charter. In the North Sea region the cost inflation is estimated to be around 3% p.a., but in Brazil cost inflation assumptions are as high as 4-5% p.a. We have input 3.5% p.a. in our revenue projection model. Applying the revenue model we end up with a result that is presented in table 5-3.

Table 5-3: Revenue projection 2010-2015

Mil NOK	2009	2010	2011	2012	2013	2014	2015	Total
AHTS	710 995	838 438	1 155 787	1 933 273	2 311 976	2 514 750	2 623 971	
PSV	708 954	779 244	842 613	897 552	917 508	957 069	999 985	
Subsea	2 907 327	3 186 592	3 474 450	3 788 312	3 956 815	4 136 581	4 323 492	
Total	4 327 276	4 804 274	5 472 851	6 601 136	7 186 299	7 608 401	7 947 448	39 620 409

Source: Compiled by authors

Projections for the next 5 years will represent an estimated doubling of revenues. The revenue stream will sum to NOK 39.6 billion over 5 years, and if we compare this to the present backlog including options, of NOK 34 billion, we believe that our estimates are a good indicator of the massive growth in revenues over the next years.

5.2 Operating Expenses

Operating expenses have increased significantly in recent years from NOK 1.7 billion in 2006 to NOK 3.1 billion in 2009, and represents almost a doubling of operating expenses. Meanwhile, revenues have increased around 44%. OPEX accounted for 57% of revenues in 2006, and increased to 71% in 2009. The main driver for growth in expenses was the large increase in payroll costs where costs have grown 165% from 2006 to 2009 illustrated in table 5-4.

Table 5-4: Historic payroll costs and number of man years employed

	2004	**2005**	**2006**	**2007**	**2008**	**2009**
Payroll cost (TNOK)	274 564	497 883	739 470	1 282 683	1 636 825	1 960 483
% of income	27.8%	32.1%	26.4%	39.0%	41.2%	46.0%
Number of man years employed	525	750	984	1 027	2 300	2 722

Source: DOF annual reports, compiled by authors

The number of employees has increased due to the large increase in DOF's fleet in past years. We assume that the number of employees will continue to increase as vessels under construction are delivered.

Operations in the subsea segment has, as mentioned, contributed to a very large part of operating expenses with an average of 73% of operating expenses. Subsea operations often require the use of expensive equipment and engineers. The costs of these services are very high compared to service costs contributed by the OSV fleet. Of the vessels under construction, only

3 out of 17 vessels are subsea vessels. This will contribute to lower operating expenses from subsea operation as part of total operating expenses.

In Brazil, where DOF has increased its fleet presence, operating costs are higher than in other regions. Due to local content in Brazil, DOF's Brazilian flagged vessels will have to be operated by Brazilian crew. There is a shortage of qualified personnel, and they therefore require higher wages and training. Many of DOF's vessels under construction are chartered to operate in Brazil, and will contribute to higher operating expenses. Wage inflation is expected to be higher in Brazil than other regions, with an expected annual wage increase of 4-5%. Compared to other regions where projections are as low as 2-3%. Wage inflation will impact DOF's operating expenses more than their Norwegian peers because of DOF's large concentration of their fleet under operation in Brazil.

Other operating expenses are mostly contributed to operation of vessels, and costs are expected to decrease relative to revenues. When vessels are delivered the average age of the fleet is only 6.5 years, and newer vessels are more cost effective to operate.

Table 5-5: Estimated OPEX levels

OPEX levels							
	2009	2010	2011	2012	2013	2014	2015
AHTS	59%	58%	57%	57%	57%	57%	57%
PSV	67%	65%	64%	63%	63%	63%	63%
Subsea	76%	72%	72%	72%	72%	72%	72%
Total	71%	68%	68%	66%	66%	66%	66%

Source: Compiled by authors

Table 5-5 illustrates the OPEX levels that form the basis for future projections. In total we assume that operating expenses will remain at very high levels of revenues over the next 2 years, and then start to decrease as revenues will grow more than costs. We assume that the percentage OPEX level will stabilize at 66% beyond the forecasted period.

5.3 Depreciation

Depreciation will not, in general, give a correct picture for the falling value in the period, because the accounting lifetime of a vessel is different for the economical lifetime of vessels. Vessel values are also very volatile as discussed in chapter 3.4.5. Therefore the book value of

vessels is different from the market value. According to accounting rules a vessel should be depreciated straight over 30 years. The actual lifetime of the vessels hull is longer, as shown under fleet age in chapter 3.2.1 where vessels have been in operation for longer periods. Many of the old vessels have been rebuilt using the existing hull, to perform other operations. The value of the vessels will not decrease much over time which will be shown in the NAV valuation in chapter 6.2.3.

Depreciation also includes maintenance which is activated when performed. Activated maintenance is depreciated over 2.5 years straight in DOF's accounting. The total maintenance has historically been around 1-1.5% of vessel values for the existing fleet. As vessels get older they usually require more maintenance and maintenance should in general increase as vessels values decrease with time. DOF has indicated that they will continue to order new vessels, and the attribution for old vessels will cancel out the effect.

5.4 Net financials

Net financials consist of interest income and costs, gain and loss on financial activities, and income from minorities. One of the largest financial costs for DOF is naturally the interest costs relating to their high debt. In 2008 the interest costs were 633 million and 566 million in 2009. The reason for the reduction in interest costs, even though debt increased, was the falling levels for 3M NIBOR. DOF has a large floating debt, and the interest costs will be dependent on NIBOR. DOF tries to uses interest rate swaps to convert their floating interest bearing debt to fix interest. Financial risks will be discussed later in chapter 5.12. We assume interest costs for DOF to rise as debt will increase in line with the delivery of their new vessels under construction.

DOF reports accounting in NOK and a large agio/disago effect has occurred in resent years. Agio/disagio is a phenomenon which affects many shipping companies since they report their accounting in different currencies than what currency is earned or paid. In 2008 the agio/disagio effects led to an unrealized cost of 655 million, and in 2009 an unrealized profit of 758 million. DOF has mentioned that they consider USD reporting, which could help to dismiss these effects, but DOF has at this point not implemented USD reporting. DOF's competitors Deep Sea Supply

and Siem Offshore reports in USD, and they have no agio/disagio effects on their P&L statements.

5.5 Taxes

The general tax rate for Norwegian companies is 28% of profits, but shipping companies rarely pay 28%. Accounting standards imply that vessels should be depreciated over 30 years straight, while the tax authorities use a different approach which leads to differences in the actual tax cost. This is referred to as deferred tax differences. Due to deferred tax the actual tax paid is sometimes very different from 28%.

In 2007 a new Norwegian tax tonnage regime was introduced (Ernst & Young, April 2010). Companies that qualify include ASA, AS or SE companies. DOF ASA is such a company and the qualifying vessels are primarily vessels in international trade carrying passengers and/or cargo. In addition, Norway allows auxiliary vessels, such as AHTS, PSV, Seismic etc. The new tax tonnage regime includes tax exemption on operating profits and gains on sales. Net financials will however be taxed. Tax tonnage will be levied as an object at following rates presented in table 5.6.

Table 5-6: Tax tonnage levies

	NOK per day
First 1000 net DWT	0
For 1000 up to 10 000 DWT	18
For 10 000 up to 25 000 DWT	12
For per 1000 DWT above	6

Source: Ernst & Young 2010

In 2009 DOF paid extra tax due to the new tax law because the rules concerning income settlements in connection with entry to the regime imply that the difference between market values and taxable values is taxed, but the extra tax is assumed to be returned later.

In Brazil where DOF has received highly lucrative deals with Petrobras, tax authorities have decided to reinterpret the time charter contract. The ruling was that the contracts did not meet the requirements for entering Repetro, a program which suspends federal import tax on vessels entirely, and also reduce stat tax levies. Based on this, charters have to pay proportional tax on import of 50% of the vessels value, and also pay 1% of that pr month for the duration of the

contracts. Market sources are expecting that taxes will be partly compensated by Petrobras, until final legislations are in place (Tradewinds 24.9.2010).

To conclude, there are many tax issues that are not yet resolved and it could impact the tax to be paid in the future substantially. We will use 15% as an effective tax, but due to uncertainty regarding the effective tax we have also performed a valuation based on pretax cash flow to show the final value without tax.

5.6 Net profits

Based on discussions above, the reported net profits varies widely mostly due to the net financials and taxes. Agio/disagio effects have made a large impact on net profits in the resent years. We have therefore decided that we will base our cash flow projections on EBIDTA. Estimations on net financials and taxes will only lead to more uncertainty to the valuation.

Table 5-7: Projected EBITDA 2010-2015

Mil NOK	2010	2011	2012	2013	2014	2015
Revenue	4 804 274	5 472 851	6 601 136	7 186 299	7 608 401	7 947 448
OPEX	3 287 149	3 699 675	4 383 667	4 744 763	5 014 700	5 238 568
EBITDA	1 517 125	1 773 175	2 217 469	2 441 536	2 593 701	2 708 880

Source: Compiled by authors

Table 5-7 summarizes the results of our analysis and projections of EBITDA. EBITDA increases almost 80% over a five period due to high growth in revenues. Consensus amongst leading investment houses are that OPEX is lower than our estimates. We will show the impact of changes to our estimates in the scenario analysis in chapter 6.4.

5.7 Assets

DOF has one of the highest book values of companies listed on OSE. The high book value is attributed to DOF`s large fixed assets. The real value of the assets are however quite different. The NAV valuation in chapter 6.2 will discuss the real value of the vessels. In theory the value should equal the possible cash generated over the vessel`s lifetime or the transaction value in the second hand market.

DOF's balance sheet has grown with the resent growth in vessels. In 2007 DOF bought a controlling share of DOF Subsea AS and consolidated it 100% into DOF ASA which increased the balance sheet significantly.

5.8 Capital expenditure

In an analysis of CAPEX it is important to distinguish between replacement and expansion investments because replacement investments usually does not increase the possible income for the company compared to expansion investments. Expansion investments also indicate a different company risk than replacement investments. The separation is important to show if fixed or variable cost jumps will occur, and is therefore important for an investor who estimates future cash flows.DOF has a large remaining CAPEX for its newbuilding program of 17 vessels.

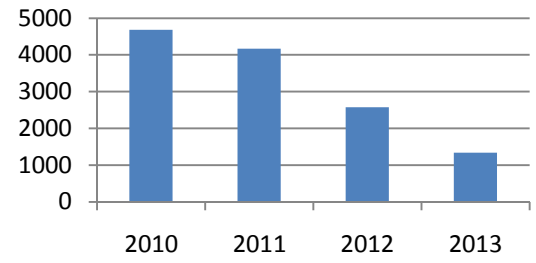
Table 5-8: DOF ASA CAPEX program

New builds DOF ASA Group 01.08.2010 (NOK '000)	**Project Price**	**Paid in**	**Remaining CAPEX**	**Financing**	**Equity needed**
Sum new builds DOF ASA Group	12 923 638	2 953 059	9 970 579	9 527 920	442 659
Relative share new builds DOF Group	10 505 716	2 165 999	8339 717	7 752 620	587 097
DOF ASA owned	553 870	106 890	446 980	420 000	26 980
Norskan	4 682 275	665 013	4 017 262	3 718 320	298 942
Aker DOF Deepwater (50%)	855 903	119 560	736 343	582 500	153 843
DOF Subsea AS (100%)	942 677	272 679	669 998	600 000	69 998
DOFSUB (50%)	1 562 020	667 500	894 520	1 192 800	-298 281
DOF Installer (67%)	1 908 971	334 357	1 574 614	1 239 000	335 614

Source: DOF ASA Overview 2010

Table 5-8 shows that DOF has remaining CAPEX of NOK 10 billion, of which NOK 9.5 billion is planned to be financed by debt, and NOK 443 million with equity. Remaining CAPEX is actually smaller since DOF Subsea is only owned 51%, and DOF Installer is 67% owned by DOF Subsea. The actual CAPEX is NOK 8.4 billion, but since these companies are 100% consolidated into DOF ASA, 100% will be shown on DOF's balance sheet.

Figure 5-5: Distribution of Remaining CAPEX



Source: DOF Q2 report, compiled by authors

The distribution of remaining CAPEX shown in figure 5-5 is important for valuation. The risk of delay in delivery will push the remaining CAPEX into the future, and will impact the cash flow. Cancelations of newbuilds might occur, but is highly unlikely. Based on the present projections, DOF will pay the majority of their CAPEX in 2010 and 2011. DOF has indicated that they will continue to order new vessels to benefit from the Brazilian import regulations. We have not incorporated this indication into our projections, since it would only be speculation on the cost and financing of the vessels.

In addition to the newbuild related CAPEX, DOF's fleet will require maintenance, repair and upgrade CAPEX. Historical maintenance has been around 1-1.5% of the vessel's book value, and we have projected 1.5% in CAPEX maintenance in our estimates.

5.9 Debt

DOF has a very high debt because of debt financing of their major newbuilding program. DOF has been able to finance most of their vessels with up to 80-85% in debt financing, and therefore have a much higher gearing than their Norwegian peers. Despite DOF`s high debt, they have been able to secure long term financing at fixed rates for the newbuilds in Brazil. DOF`s Barzilian loans are 17 year loans at a comforting fixed rate of only 5.5% (4.5% + 1 % commission rate). The Brazilian loans compromise much of DOF's debt. Besides the lucrative Brazilian loans, DOF has a large part of their loans with commercial banks and loans guaranteed by Norwegian Exportfinans. ExportFinans offers guarantees in connection with Norwegian export and investments abroad.

Bond issues serve as the most expensive financing, and DOF has currently around NOK 3 billion in bond loans. DOF is in a process of refinancing bonds with maturity in 2011 with new bonds issues at lower rates.

Table 5-9: DOF ASA bond issues

	Interest	Issued	Maturity	Coupon spread	Security	Currency	Amount	Remaining
DOF05 PRO	FRN	20.12.2007	21.06.2010	NIBOR 3M + 200	SR Unsecured	NOK	300 000 000	Matured
DOFSUB01 PRO	FRN	09.03.2007	09.03.2011	NIBOR 3M + 130	SR Unsecured	NOK	500 000 000	289 500 000
DOF06	FRN	15.06.2009	10.06.2011	NIBOR 3M + 900	SR Secured	NOK	975 000 000	312 500 000
DOF04 PRO	FRN	13.06.2006	13.06.2011	NIBOR 3M + 105	SR Unsecured	NOK	400 000 000	400 000 000
DOFSUB03 PRO	FRN	09.07.2009	09.07.2012	NIBOR 3M + 1150	SR Unsecured	NOK	500 000 000	500 000 000
DOF07	FRN	01.10.2010	01.07.2013	NIBOR 3M + 700	SR Unsecured	NOK	950 000 000	950 000 000
DOFSUB04 PRO	FRN	01.10.2010	14.03.2014	NIBOR 3M + 700	SR Unsecured	NOK	750 000 000	750 000 000

FRN = Floating Rate Note
*Bought back with new loan at NOKm 750. Bought nominal NOKm 206,5 at price 100
*Bought back with new loan at NOKm 950. Bought nominal NOKm 662,5 at price 104,33

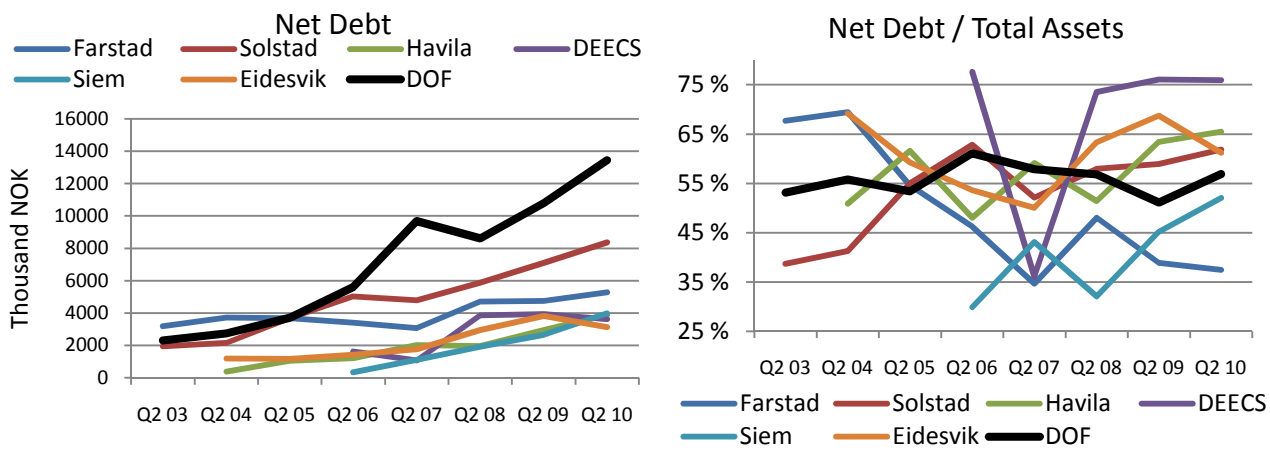
Source: OSE 2010, compiled by authors

Table 5-9 show DOF`s current outstanding bond loans and we notice that bond loans issued during 2009, in the aftermath of the financial crisis, are at very high rates with up to 1150 basis points over 3 month NIBOR. The bond loans were issued at a time when companies had difficulty getting financing, and if they did, they would have to pay a very high return to the lenders. If we compare bond loans issued after the crisis to the bonds issued before the crisis, we see that bonds were issued at very comfortable rates of around 100-200 basis points. In contrast, the 3M NIBOR was higher before the crisis than what is a reality now, and rates are expected to be low until world inflation start to rise.

The complicated structure of DOF ASA does not show the correct debt level. Subsidiaries are 100% consolidated on DOF's balance sheet and DOF actually has a lower leverage and risk attributed than what is shown. DOF has secured financing for most of their remaining CAPEX program. Unsecured financing is low and with the cash that DOF posses, we believe that DOF will have no problem to cover the remaining CAPEX. At end of Q2 2010, DOF had a cash balance of NOK 1.8 billion. When vessels are delivered the debt will increase, as the loans are transferred over to DOF on delivery. Debt is expected to peak in 2013 with the termination of their current CAPEX program, and then decrease. The lucrative contracts secured by DOF for some of their newbuildings will generate a cash flow which will cover the debt financing of the building cost (80%) after just 4-5 years. This will create a large cash stream when the vessels come into service for DOF.

Development in interest bearing debt is interesting to evaluate against expansions in investment activity to analyze what kind of financial risk the investments will bring.

Figure 5-6: Net debt and debt to asset ratio main Norwegian peers



Source: Company Q2 reports, compiled by authors

Figure 5-6 illustrate the increasing debt for DOF compared to Norwegian peers. DOF's net debt has increased at a higher rate than their peers. If we look at the net debt to total assets, DOF's ratio has been fairly stable at around 55% which implies that the extra risk from debt financing of the resent growth has not shifted the risk on the creditors entirely.

Factors that could help DOF with their "leverage problem" are the listing of Norskan, DOF's Brazilian company, at the Brazilian stock exchange. However, DOF recently announced to postpone the listing until 2011 (DN 19.10.2010). DOF waits until newbuildings are delivered because they want to show strong and stable earnings. The listing of Norskan can lead to significant de-leveraging of DOF ASA. Also DOF Installer recently had a private placement of shares to cover building costs which will reduce the need for more loans to finance the newbuilding program.

5.10 Working Capital

Working capital represents bounded capital that is needed to handle daily operations. Short term liabilities require liquid positions that fast can be converted to cover costs. Accounts

receivables and payables usually increase in line with revenues, and when revenues increase there will be an increasing need to bound more cash. We therefore have to incorporate the change in working capital into the cash flow because an increase in working capital will reduce the free cash flow.

5.11 Cash Flow projections

Free cash flow represents the flow of cash generated by a company each year. We have based on discussions earlier in this chapter, projected the cash flow for DOF for 2010-2015. Table 5-10 is a summary of our results.

Table 5-10: Cash flow projections 2010-2015

Million NOK	2010	2011	2012	2013	2014	2015
Revenue	4 804 274	5 472 851	6 601 136	7 186 299	7 608 401	7 947 448
OPEX	3 287 149	3 699 675	4 383 667	4 744 763	5 014 700	5 238 568
EBITDA	1 517 125	1 773 175	2 217 469	2 441 536	2 593 701	2 708 880
CAPEX	4 425 000	4 172 000	2 573 000	1 341 000	0	0
CAPEX Maintenance	211 010	240 690	252 470	251 230	238 110	225 860
Change in WC	-406 030	-108 651	-147 587	-62 232	-48 812	-35 571
Free Cash flow	-3 524 915	-2 748 165	-755 588	787 074	2 306 778	2 447 448
Tax	528 737	412 225	113 338	-118 061	-346 017	-367 117
Free Cash after tax	-2 996 178	-2 335 941	-642 250	669 013	1 960 762	2 080 331

Source: Compiled by authors

DOF's high remaining CAPEX program results to a negative cash flow the first three years, and it is important to draw projections further. We have therefore calculated a cash flow for the next 5 years, and when all vessels are in operation from 2013 we get a more steady state for revenues and OPEX. We have not projected new orders of vessels beyond the remaining program.

5.12 Financial risks

DOF makes use of financial derivatives in order to hedge certain types of risks to secure their cash flow. Risk management is used to control specific areas such as currency risk, interest rate

risk, credit risk, and the use of financial instruments in addition to investment of surplus liquidity.

DOF's income is mainly in USD, GBP and NOK, while the majority of their operating cost is in NOK. DOF is therefore exposed to changes in foreign exchange rates. DOF's accounting is as mentioned in NOK, and changes in exchange rates will affect the reported income as well as accounts receivables and accounts payables. In 2009 income in USD and GBP constitute 40% of reported turnover. To handle the exchange rate risks DOF attempts to reduce the risk by entering into forward contracts and adapting long term liabilities to earnings in the same currency. DOF also take out forward cover for future income and commitments.

Interest risk is attributed to the liabilities with floating rates. To hedge the risk DOF use interest rate swaps, where they convert floating rate liabilities into fixed interest rates, and the hedge provides more security to the cash flow. DOF`s 2009 report states that an increase/decrease of 1% in the basic interest rate would represent an increase/reduction in interest costs of NOK 132 million (DOF 2010). DOF's Brazilian loans have no interest rate risk as the loans are secured with long term financing at fixed rates for the entire duration of the loans.

Credit risk is assumed to be quite low since the majority of their charterers are national oil companies and large caps, and they have sufficient financial capability to meet their obligations. Liquidity risk involves the ability to draw on sufficient reserves to meet DOF`s daily operations and liabilities. This is handled by securing drawing rights through share issue and marketable securities as well as cash. At end 2009, DOF had authority to increase the capital of up to 37.5 million shares at nominal value of NOK 2. DOF also had cash and cash equivalents of NOK 1.8 billion in Q2 2010.

To secure commitments for the newbuilding program DOF has secured bank guarantees and guarantees from governments in Norway and Brazil to handle payments to shipyards. We therefore conclude that the financial risk and DOF's capacity for own financing of investments are handled satisfactorily.

5.13 Adjustments to profit and loss statement

Based on the numbers incorporated in the P&L statement, we will have to make some adjustments, because we only want to use accounting numbers relating to DOF's operations, and not financial accounting numbers. We therefore present the adjustments made in table 5-10, which we have corrected to get the accounting numbers presented in the above chapters.

Table 5-11: Adjustments to accounting

				Million NOK				
Notes	**Items**	**Adjustments**		2005	2006	2007	2008	2009
5	Operating income	Gain / Loss on sale of vessels for 2008 gains consist of sales of skandi navica hercules and geofjord		-29	-163	-88	-317,8	7,9
6	Intangible assets	Writedown of goodwill related to CSL LTD						41,5
7	Operating income	Writedown on Vessels Geosunder 9 mill and newbuilding in DOFI 128 mill. Based on broker values, which was smaller than book values.						137
17	Pensions	Remove fiancial posts	Capital costs	-2,4	-2,5	-4	-4,6	-5,4
			Estimated return	2,4	2,9	3,1	4,2	5,7
			Estimated variance	-0,4	-0,6	-0,9	-1,5	-1,7
28	Payroll costs	Payment to auditor: very high in 2009, due to assistance with restructuring						-2

Source: DOF annual reports, compiled by authors

Accountings have been removed from the past reported earnings to give a clearer picture of the operational side of DOF's business. We have adjusted revenues by removing gain and loss on vessels sold because revenues from these transactions do not represent a normal happening. OPEX numbers are adjusted by removing financial items related to pension costs. In total the changes are minimal and will not affect the historical analysis.

5.14 Summary of DOF's Financials

DOF has shown high growth in revenues in recent years, and we assume high growth in revenues for the next 5 years. Two important reasons for the high growth will be the delivery of new vessels and strong contract backlog.

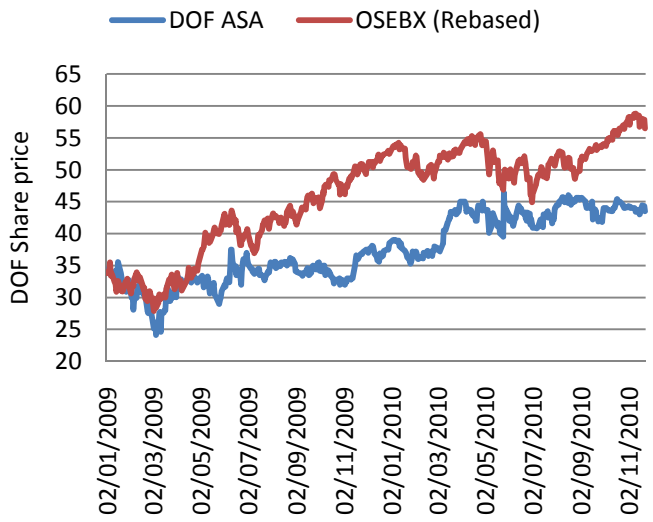
OPEX have grown massively with the expansion of the fleet and we assume that high OPEX levels will continue, but with a declining rate. Debt financing of the CAPEX program have led to

high gearing. DOF have been able to secure the majority of the newbuilding program, and we believe that they will have little problem covering the remaining CAPEX program.

6 Valuation

The purpose of a valuation is to find the fundamental value of the company. The fundamental value often differs from the value presented in the market through the share price. Reasons for the differences can be many things. Low liquidity in the stock, a major share holder, and behavioral biases impact how the stock is perceived in the market. The value of the future cash flows should represent the "correct price", but rarely do so.

Figure 6-1: DOF share price vs. rebased OSEBX, January 1 2009 – November 23 2010



Source: OSE, compiled by authors

Figure 6-1 illustrates that DOF's share price has from the start of 2009 performed worse than the OSEBX index. DOF's share is traded on small volumes. DOF has recently announced several lucrative new contracts, but the share has not performed accordingly. The financial crisis changed investor biases and investors now look for investments with high liquidity. Investors want to buy instruments that provide the possibility of fast liquidation. The change in investor biases can help explain why DOF's share has not performed in line with the OSEBX index. By performing valuations, we will try to uncover why the fundamental values are not represented in the share price, i.e. trade at a discount or premium.

6.1 Discounted Cash Flow Valuation

By discounting the cash flow forecast from chapter 5.11 we will arrive at a value for the equity, know as market cap, after deducting interest bearing debt. First we have to discuss the discount rate that will be used. The discount rate, WACC, represents expected return for the different investors based on the capital structure. The WACC rate will also incorporate the time value of money.

6.1.1 Weighted Average Cost of Capital

WACC is the weighted average cost of capital which the shareholders and creditors demands on invested capital.

$$\text{WACC} = r_e * \frac{\text{MVE}}{\text{EV}} + r_d * \frac{\text{MVD}}{\text{EV}} * (1 - t)$$

To calculate WACC we need r_e (cost of equity), r_d (cost of debt), t (tax rate), market value of equity (MVE) and the value of debt (MVD).

Cost of equity

The capital asset pricing model (CAPM) is used to estimates the cost of equity, but has some weaknesses.

$$\text{CAPM}: \ r_e = r_f + (\text{RP}) * \beta$$

The beta (β), the risk free rate (r_f) and the risk premium (RP) have to be estimated. RP is the risk premium in the market and is found by taking the expected return in the market less the risk free rate. Through extensive studies Damodaran have calculated a geometrical risk premium of 4.29% based on US Stocks less US Treasury Bonds. The risk premium from Damodaran is based on historical premiums from 1928 to 2009 (Damodaran 2010). The risk premiums vary from which assumption one makes and the period used. In the period 1900-2006 the average premium was 4.7% for the Norwegian stock exchange. The international average premium in the same period was about 7% and at NHH it is common to use between 5-7% (Kinserdal 2010). We will use a risk premium of 6%.

Beta reflects the systematic risk of the company and represents the risk which cannot be diversified. Systematic risk is dependent on the fluctuations of the market. A company`s theoretical beta is therefore the covariance between the return of the company and the return of the market (Kinserdal 2010). Beta could in theory be obtained using a regression model and regress the daily return on the market against the daily return on the company. This alone does however not explain the true systematic risk due to the weaknesses of the model. The model does not account for liquidity, changes in capital structure and unforeseen risks. These weaknesses can explain some of the discrepancies when estimating a company beta. Since the

beta is not 100% reliable when calculating the systematic risk based on historic returns we will use a subjective approach where we use an industry beta and adjust for illiquidity, capital structure and unforeseen risks. Damodoran derived an unlevered beta of 1.27 and a levered beta of 1.45 for the oil fields service and equipment sector (Stern School of Business 2010). We will use a beta of 1.4 due to DOF's high debt.

For the risk free rate we will use a 10 year perspective. The 10 years Us Treasury bond is as of 10.11.2010 at 2.66% (Yahoo Finance 2010). The yield curve has a concave structure and is expected to reach 4.25% in 2030. The historic risk free rate has been higher and the 10 year US Treasure Bond is expected to increase because of higher inflation expectations. The average of the last 10 years US risk free rate has been around 4%. The Norwegian 10 year government bond is currently at 4%. The rate has been slightly higher in previous years. We will use 4% for the risk free rate. When implementing these numbers we arrive at a cost of equity of 12.4%

Cost of debt

The average rate of interest for DOF was 6.2% in 2008 and 5.66% in 2009. The cost of debt for DOF is dependent on the interbank rates. The rates have fallen in the aftermath of the financial crisis. We believe that the present interbank rates represented in the market will increase, but due to the lucrative rates on the Brazilian loans, we will use 7% as the cost of debt for DOF.

Capital structure

The market capital was NOK 3.85 billion as of 30 June 2010 and the book value of net interest bearing debt was NOK 13.18 billion. The market capital is then 22.6% of the EV value of the company. We believe that this is not the ratio that is best reflected for DOF when we use the WACC for discounting future cash flows. The WACC changes continuously as the capital structure changes. Because of the high current level of debt we will adjust the market cap ratio up to a level that we believe would be more normal for DOF. This is done to base the WACC on a fixed level that best reflects DOF in the long run. We will use a market value of equity equal to 40% of the enterprise value.

In chapter 5 we discussed the use of an effective tax rate of 15%, but we will also calculate pretax WACC to show the effects on the pretax cash flows.

WACC

Based on the discussion above we arrive at a WACC of 8.53% after tax and a pretax WACC of 9.16%. There is as mentioned much uncertainty surrounding the WACC, and we will perform scenario analysis on the changes in WACC in chapter 6.4.1.

6.1.2 Discount Cash Flow valuation results

WACC will be used to discount the cash flows which will give us an Enterprise Value. We also have to consider a future growth rate in the terminal value that should represent DOF's ability to grow beyond the projection period. To estimate a growth rate above inflation will imply that the company will grow eternally and eventually take over the world. We have therefore calculated with a growth rate of 3.0%, which would be in line with world inflation.

Table 6-1: Discount cash flow model results, after tax

		Million NOK							
			2010	**2011**	**2012**	**2013**	**2014**	**2015**	
		Revenue	4 804 274	5 472 851	6 601 136	7 186 299	7 608 401	7 947 448	
		OPEX	3 287 149	3 699 675	4 383 667	4 744 763	5 014 700	5 238 568	
		EBITDA	1 517 125	1 773 175	2 217 469	2 441 536	2 593 701	2 708 880	
		CAPEX	4 425 000	4 172 000	2 573 000	1 341 000	0	0	
		CAPEX Maintenance	211 010	240 690	252 470	251 230	238 110	225 860	
		Change in WC	-406 030	-108 651	-147 587	-62 232	-48 812	-35 571	
		Free Cash flow	-3 524 915	-2 748 165	-755 588	787 074	2 306 778	2 447 448	
		Tax	528 737	412 225	113 338	-118 061	-346 017	-367 117	
		Free Cash after tax	-2 996 178	-2 335 941	-642 250	669 013	1 960 762	2 080 331	
WACC	8,53 %							37 619 007	Terminal value
Growth rate	3,00 %		-2 996 178	-2 335 941	-642 250	669 013	1 960 762	2 080 331	Cash flow
			-2 996 178	-2 335 941	-642 250	669 013	1 960 762	39 699 339	Total cash flow
Enterprise value		20 831 311							
NIBD		(14 154 000)							
Market Cap		6 677 311							
Share price		73,38							
Share price at discount		58,70							

Source: Compiled by authors

Table 6-1 shows that discounted cash flows returns an Enterprise Value of approximately NOK 20.7 billion. With the current net interest bearing debt of NOK 14 billion, the market cap based

on fundamental analysis comes to approximately NOK 6.5 billion. Outstanding shares of 91 million shares imply that the price per share comes out to be NOK 71.72.

Table 6-2: Discount cash flow model results, without tax

		Million NOK						
			2010	**2011**	**2012**	**2013**	**2014**	**2015**
		Revenue	4 804 274	5 472 851	6 601 136	7 186 299	7 608 401	7 947 448
		OPEX	3 287 149	3 699 675	4 383 667	4 744 763	5 014 700	5 238 568
		EBITDA	1 517 125	1 773 175	2 217 469	2 441 536	2 593 701	2 708 880
		CAPEX	4 425 000	4 172 000	2 573 000	1 341 000	-	-
		CAPEX Maintenance	211 010	240 690	252 470	251 230	238 110	225 860
		Change in WC	(406 030)	(108 651)	(147 587)	(62 232)	(48 812)	(35 571)
		Free Cash flow	(3 524 915)	(2 748 165)	(755 588)	787 074	2 306 778	2 447 448
							39 731 305	Terminal value
WACC	9,16 %		(3 524 915)	(2 748 165)	(755 588)	787 074	2 306 778	2 447 448	Cash flow
Growth rate	3,00 %		(3 524 915)	(2 748 165)	(755 588)	787 074	2 306 778	42 178 753	Total cash flow
Enterprise value			20 855 738					
NIBD			(14 154 000)					
Market Cap			6 701 738					
Share price			73,65					
Share price at discount			58,92					

Source: Compiled by authors

Table 6-2 illustrates the result of cash flow valuation without tax. The end result is very similar and return a share price of NOK 71.92 compared to NOK 71.72 when we include tax in our calculations.

From table 6-1 and 6-2 we notice that the terminal value, which represents the eternal value of the last year projection, is much higher than the enterprise value. The terminal value approach represents one of the biggest flaws to the discounted cash flow model, and will be highly sensitive to changes in estimates. Scenario analysis of the estimates in the DCF model is performed in chapter 6.4.

The share price that is presented in table 6-1 represents the fundamental value of the discounted future cash flow, but since DOF has low liquidity we will have to a apply a discount to the share price. Low liquidity and a controlling share holder will represent a discount to investors because low liquidity represents a barrier if investors suddenly want to close their

positions. A share holder with a controlling stake in the company can hinder other investors to affect the company's decisions. We have implied a discount of 20% from the fundamental valuation, and the target price of our DCF valuation will be a share price of NOK 57.38.

6.2 Net Asset Value Valuation

Value expectations on vessels will depend on expectations to rates and construction cost developments. Values will on the other hand be affected by the balance between demand and supply. Over time market participants will not order new vessels unless the market provides an expected risk adjusted return on the investment. Vessels don not live eternally and it is important to order new vessels. Long term supply will over time adjust to underlying demand through investor sentiment. An oversupply situation will in general reduce second hand turnover of vessels and therefore increase the uncertainty attributed to vessel values.

There are many reasons to use NAV valuation with caution. This implies especially to companies like DOF who is operating in markets with few vessel transactions and where vessels technical specifications and conditions are of crucial significance to vessel values. Vessel value should in theory reflect the possible cash flows generated over the vessel`s lifetime, but estimates would be highly uncertain with this method. We have therefore used vessel values that were presented in chapter 3.4.5 for high end AHTSs and PSVs. By categorizing DOF's OSV vessels by design we can use the second hand transaction values to value the OSV fleet. Age will play a role since newer vessels will have better technical specifications, but we do not have enough information to incorporate age into our estimates.

Table 6-3: Newbuilding cost of subsea vessels after classification

Building cost	USD Mill.	Number of vessels in DOF
MSV	150-200	13
DSV	150-225	6
Well intervention	200-300	2
Seismic/survey	75-125	4

Source: DOF ASA Overview, Compiled by authors

The value of the subsea fleet is more difficult to assess since there are next to no transactions. We have obtained newbuilding cost for various classifications of the subsea fleet presented in table 6-3 (DOF ASA Overview 2010). We will use building costs to value the vessels at CAPEX. Vessel values can be adjusted to represent the real value of the vessels because

vessel values are often higher than building costs. We have not incorporated this into our estimates.

6.2.1 NAV results

Based on estimates of second hand values and building costs we have estimated a total vessel value for DOF's fleet to be NOK 31 billion, including vessels under construction.

Table 6-4: NAV valuation results

Million NOK			
DOF Supply	5 493	Vessels	31 143
DOF Installer	1 566	Cash	1 835
Aker DOF Deepwater (50%)	943	Working capital	417
DOF Subsea	16 182	Other assets	696
Norskan	6 960	**Assets**	**34 091**
Vessel value, incl new builds	**31 143**	Debt	15 274
		Remaining CAPEX	9 971
		Minorities	2 726
		Liablities	**27 971**
		NAV	**6 120**
		Shares outstanding (mill)	91
		Nav pr share	**67**

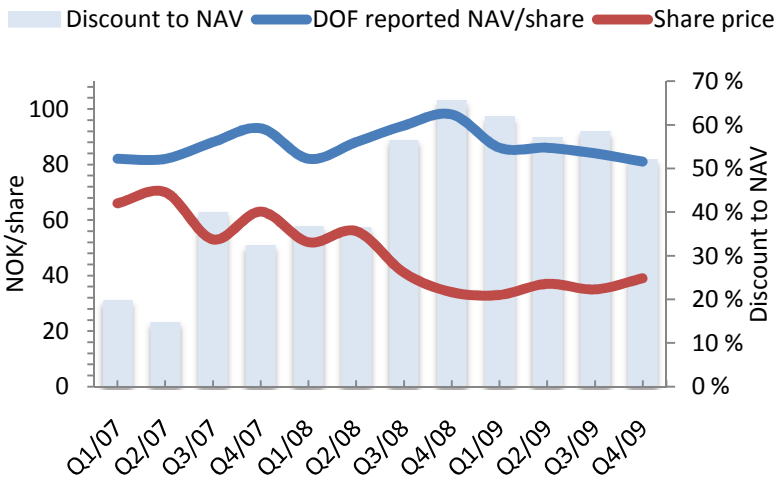
Source: Compiled by authors

Table 6-4 show the result of our NAV valuation, and the NAV is calculated to be NOK 6.1 billion. NAV per share is calculated to be NOK 67. DOF's own estimate on the fleet value, without newbuilings, is NOK 20 billion (DOF Q3 2010). This is not far from our estimate if you add the remaining CAPEX to their numbers. Investment houses have very different NAV per share for DOF: Carnegie - NOK 68, Nordea - NOK 82, and Arctic - NOK 75. Our values are in the lower range of these estimates, and we might have been too pessimistic in our estimates. Vessel values obtained are based on present assumptions, and vessel values can be very volatile. Vessel values declined about 25% from a peak at the end of 2007, but have started to show improvements in line with rates. In the scenario analysis in chapter 6.4.5 we will show how our vessel values will affect the NAV per share value if the vessel values changes.

6.2.2 NAV discount

The share price will usually not represent NAV values, but will trade at a discount as presented in figure 6-2. The NAV discount varies widely and peaked in Q4 2008, with a discount of as much as 65%. Our NAV estimate represents a discount on current share price of 45%.

Figure 6-2: DOF's share price discount to NAV



Source: Arctic securities 2010, compiled by authors

Stock prices do not reflect the NAV because the stock market might not add more value than what is in the steel prices of the vessels. The stock market might expect falling or rising values, and because the stock market is more liquid than the second hand market, it might better reflect the underlying changes in vessel values in the short run. Stock prices might therefore be above (below) NAV in the short term when vessel values increase (decrease) (Dahl et al. 1997).

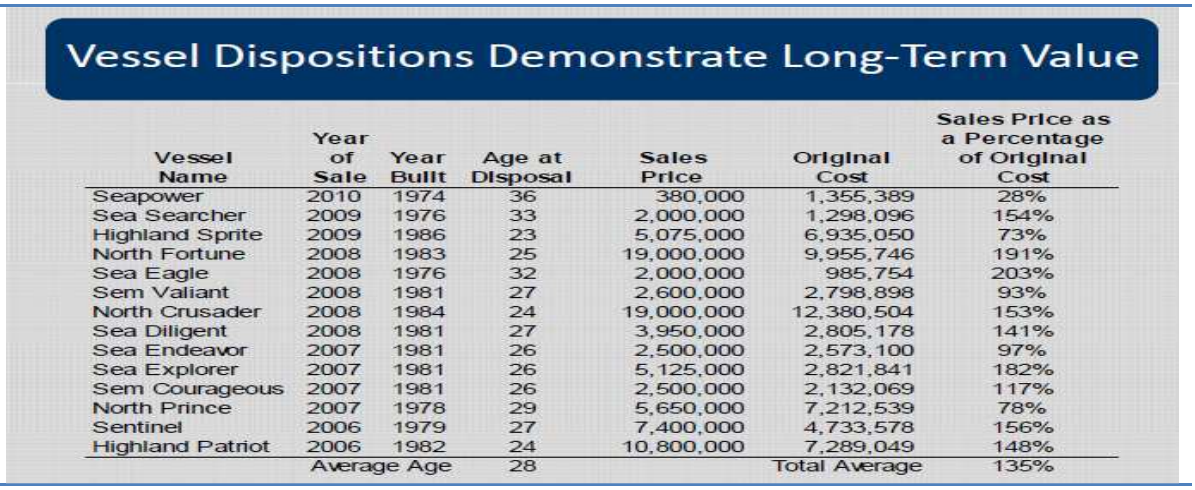
Other factors that can explain the NAV discount is agency costs. Many shipping companies are controlled by one investor or a group of investors who might operate with other agendas than the value maximization of investors return. This could prevent that short term returns are realized, and that long term cash flows do not reflect second hand values.

If a company is priced at NAV, it will not automatically imply that it is a bad investment. It only implies that there are no possibilities for arbitrage transactions by buying a controlling stake in the company and liquidate the company.

6.2.3 Long term vessel values

Supply vessels have over time demonstrated long-term values, and a presentation of second hand transaction of old vessels is given in figure 6-3.

Figure 6-3: Demonstration of long-term vessel values



Vessel Dispositions Demonstrate Long-Term Value

Vessel Name	Year of Sale	Year Built	Age at Disposal	Sales Price	Original Cost	Sales Price as a Percentage of Original Cost
Seapower	2010	1974	36	380,000	1,355,389	28%
Sea Searcher	2009	1976	33	2,000,000	1,298,096	154%
Highland Sprite	2009	1986	23	5,075,000	6,935,050	73%
North Fortune	2008	1983	25	19,000,000	9,955,746	191%
Sea Eagle	2008	1976	32	2,000,000	985,754	203%
Sem Valiant	2008	1981	27	2,600,000	2,798,898	93%
North Crusader	2008	1984	24	19,000,000	12,380,504	153%
Sea Diligent	2008	1981	27	3,950,000	2,805,178	141%
Sea Endeavor	2007	1981	26	2,500,000	2,573,100	97%
Sea Explorer	2007	1981	26	5,125,000	2,821,841	182%
Sem Courageous	2007	1981	26	2,500,000	2,132,069	117%
North Prince	2007	1978	29	5,650,000	7,212,539	78%
Sentinel	2006	1979	27	7,400,000	4,733,578	156%
Highland Patriot	2006	1982	24	10,800,000	7,289,049	148%
	Average Age		28		Total Average	135%

Source: Gulfmark Offshore Q2 2010

Figure 6-3 shows that vessels that are at the threshold of their economical lifetime threshold (30 years) still possess value. The value is attributed to the condition of the hull and the equipment onboard offshore service vessels. Vessels might have undergone extensive maintenance, and we know that many old OSV vessels are sold to be rebuilt as subsea vessels. DOF has rebuilt one old PSV to operate as a subsea vessel.

6.3 Peer view valuation

A peer view valuation will not provide an exact target price like NAV and DCF valuation. Peer view valuation will use findings of these valuation methods and other key financial numbers to compare the price of a company to their peers. In chapter 4 we discussed that we cannot compare DOF to pure OSV operators 100% due to significant subsea content in DOF. A peer view valuation will therefore be less relevant. Table 6-5 shows the result of our peer view valuation. We have obtained consensus estimates for DOF's Norwegian peer from various investment house reports.

Table 6-5: Peer view valuation

	EV / EBITDA		Price / Earnings		Price / Book		Price / NAV
	2010e	2011e	2010e	2011e	2010e	2011e	2010e
Farstad	6.8x	6.1x	10x	8x	0.9x	0.9x	0.67x
Havila	8.0x	7.7x	13x	4x	0.6x	0.5x	0.54x
Solstad	7.7x	6.9x	11x	9x	0.8x	0.8x	0.57x
Deep Sea	11.3x	7.4x	n.m	5x	1.3x	1.1x	0.65x
Siem Ofshore	11.6x	7.8x	18x	9x	0.8x	0.8x	0.60x
Eidesvik	6.8x	5.5x	9x	5x	0.6x	0.5x	0.63x
DOF ASA	**13.6x**	**10.1x**	**n.m**	**9.4x**	**0.6x**	**0.5x**	**0.65x**
Sector	9.1x	6.8x	10.1x		0.8x		0.6x

	EV / EBITDA			Price / Earnings		
	2010e	2011e	2012e	2010e	2011e	2012e
DOF ASA, consensus estimates	10.0x	8.0x	7.1x	18.8x	7.5x	5.4x

Source: Arctic Securities 2010, Carnegie 2010, compiled by authors

6.3.1 EV/EBITDA

DOF is priced very high on the EV/EBITDA multiple because they have a very large part of their EV value based on future growth, DOF's EBITDA does not reflect their potential at the current time. DOF`s EV/EBITDA is expected to come down in 2011, shown in table 6-5, and we assume that the multiple will fall further once EBITDA increases in 2012 because their EBITDA will increase at a higher rate than EV. The same is expected for DOF's Norwegian peers, but not to

the same extent. We believe that the 2012 multiples will show a much more reasonable EV/EBITDA for DOF.

EV/EBITDA consensus for DOF amongst leading investment houses is lower than our estimates. We differ from consensus multiples because we are less optimistic to DOF`s EBTIDA margins. While we operate with an EBTIDA margin of 34% in 2012, the consensus is 40%. We have built in large OPEX for subsea operations and high OPEX from operations in Brazil.

6.3.2 Price/Earnings

Price/Earnings (P/E) is not a god multiple to use when performing a peer view valuation, because it is does not take into consideration capital structure, depreciation and financial differences between companies.

DOF is expected to deliver a negative result in 2010 due to large agio/disagio differences. The consensus P/E estimate for DOF is 18.8, which is much higher than the sector average. Estimates for 2011 and 2012 are more reasonable with 7.5 and 5.4. The entire OSV peer group currently trades at high earnings multiples reflecting the expectations of higher future growth.

6.3.3 Price/Book

Price/Book (P/B) show the difference between value of book equity and value of equity presented through the share price. DOF is priced low on P/B, implying that the equity retained on the balance sheet is priced lower than what is presented through the share price. Compared to the sector, DOF has a low P/B multiple.

DOF has a capital structure that is highly leveraged, if unforeseen risks would occur, the remaining equity can become worthless. This might explain why DOF is priced low on P/B multiples compared to Norwegian peers.

6.3.4 Price/NAV

Price/NAV (P/NAV) reflects the discount that we discussed in chapter 6.2.2. The sector is now trading at a NAV discount of 40%. Our NAV estimates for DOF showed a current discount of 35% for DOF, but as we discussed, our estimates are low compared to DOF's consensus NAV. A consensus NAV for DOF of NOK 75 per share implies a discount of 40% compared to today's

share price of NOK 45 (15 December 2010). The consensus corresponds to the sector average presented in table 6-5.

6.3.5 Conclusion of Peer View analysis

We note that DOF's current multiples are high compared to their Norwegian peer due to strong growth following a significant newbuilding program. The multiples that we have used are higher than the sector average which in general implies overpricing of a company. The relevance of our peer view valuation should not impact our conclusion on the target price too much, because DOF cannot be compared 100% to these companies. Unless DOF orders many additional newbuilds, we believe that DOF's multiples should come down over time.

6.4 Scenario analysis

Values that were discussed above in this chapter are based on estimates, and our estimates might not be correct. It is therefore important to perform a scenario analysis to capture changes in values by changing our estimates. We will perform a sensitivity analysis of our estimates and discuss the results with a range in a 95% confidence interval.

Table 6-6: Scenario analysis results

	Original DCF	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
Share price NOK	71.72	-21 to 320	33 to 110	53 to 92	72.81	-38 to 160

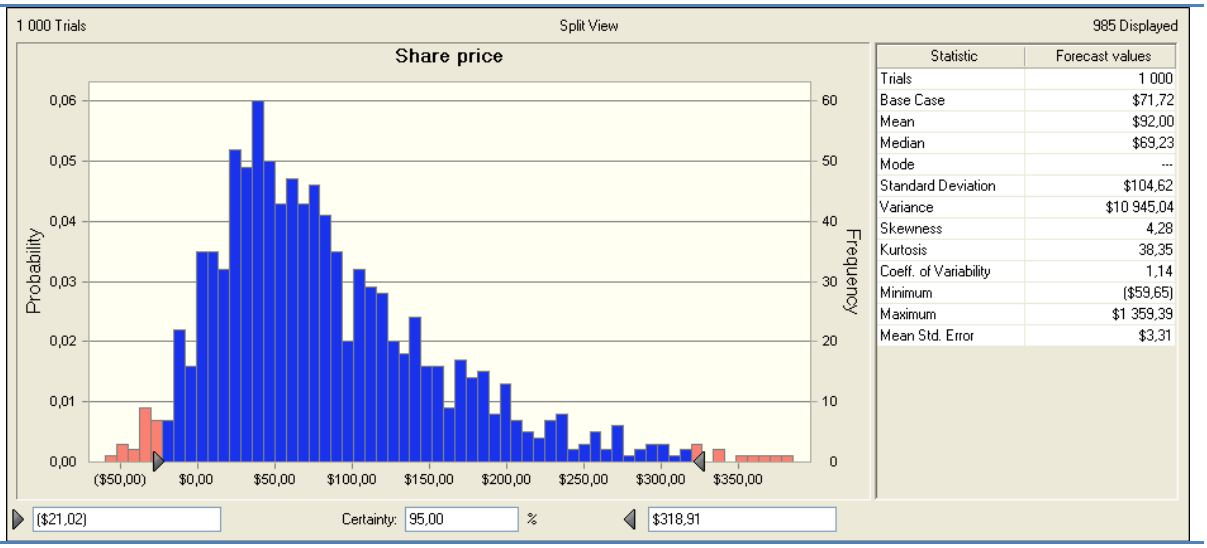
Source: Compiled by authors

Table 6-6 shows the result of the different scenarios, and a discussion on each scenario will be presented in this chapter. We notice that the range of the intervals is high which explains how sensitive the valuation models are to changes in estimates.

6.4.1 Scenario 1: WACC and growth rate

To show what impact WACC and the growth rate have on the calculated share price from the DCF valuation we have performed a scenario analysis where we implement a range of 6-11% for WACC, and 0-6% for the growth rate.

Figure 6-4: Result of scenario on WACC and growth rate



Source: Compiled by authors

We can read from the output illustrated in figure 6-4 that with a 95% confidence interval the share price will be between NOK -21 and NOK 320. The range is very wide and shows that when implying the WACC to discount future cash flows we will have to be cautious. We note that the mean is NOK 92 which is higher than our original estimate. The sensitivity output to the right shows us that WACC impacted the share price negative and the growth rate impacted positively. Figure 6-5 illustrates the share price if we only implement changes to WACC.

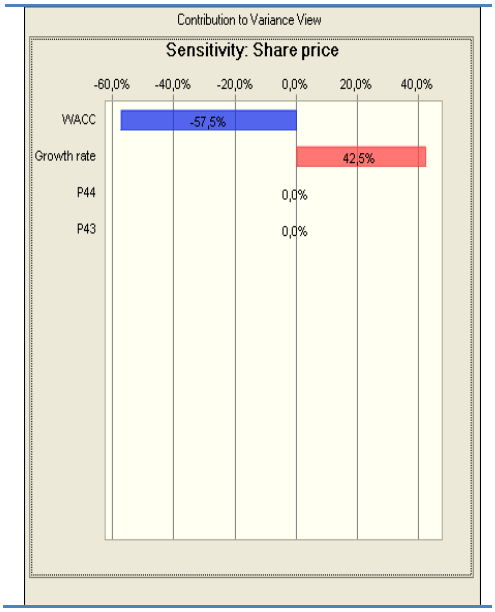
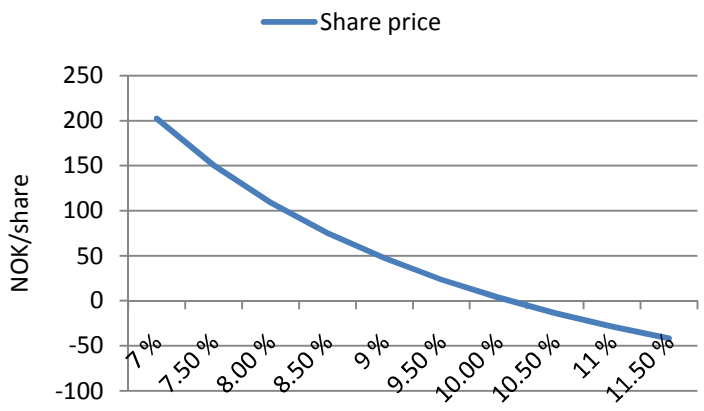


Figure 6-5: WACC's impact on the share price



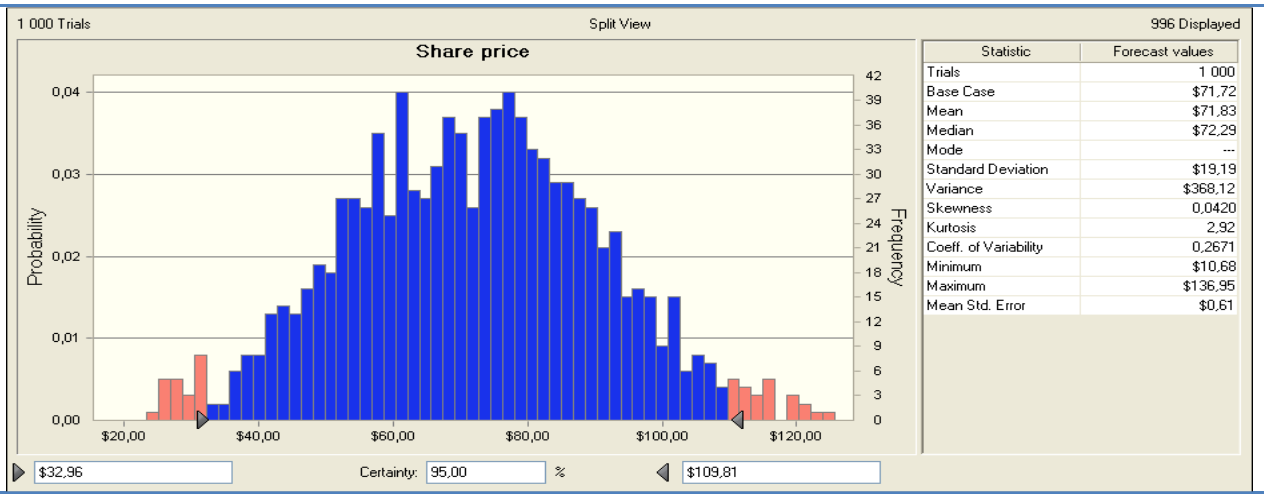
Source: Compiled by authors

From figure 6-5 we can read that if we input a WACC of 10.25% we get a share price of 0 which would imply that the company is bankrupt, and there is no more equity left in the company.

6.4.2 Scenario 2: Change in OPEX levels

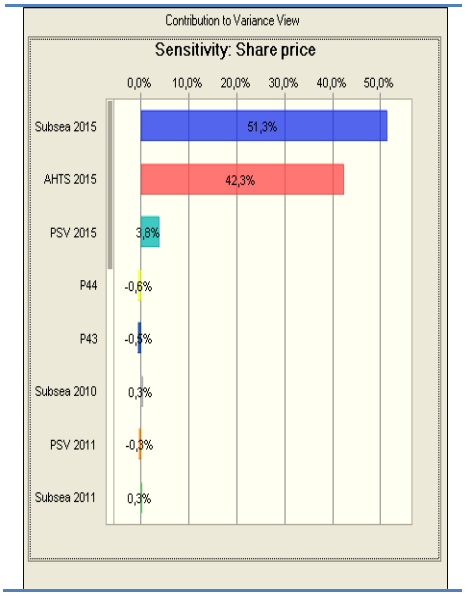
By changing the OPEX percentage relative to revenues we can show how OPEX changes affect the calculated share price. For AHTS and PSV we have input a range in OPEX levels of 40-70%, and in subsea we have a range of 60-85%. The wide range will show the extreme sides of DOF`s operations and how it will affect the share price. The results in figure 6-6 show that scenario 2 does not impact the share price in the same extent as scenario 1. Scenario 2 returns a share price range of NOK 33 to NOK 110 with a 95% confidence interval. The mean is NOK 71.83, which is just slightly above our estimate in the DCF valuation.

Figure 6-6: Result of scenario on OPEX levels



Source: Compiled by authors

The factors that affected the share price the most was the changes to the final year of our projections, as shown to the right. The reason is that the final year will serve as the basis for the terminal value. This is where the whole value of the DOF lies with the DCF method since they have negative cash flows the first 3 years due to the large CAPEX program.

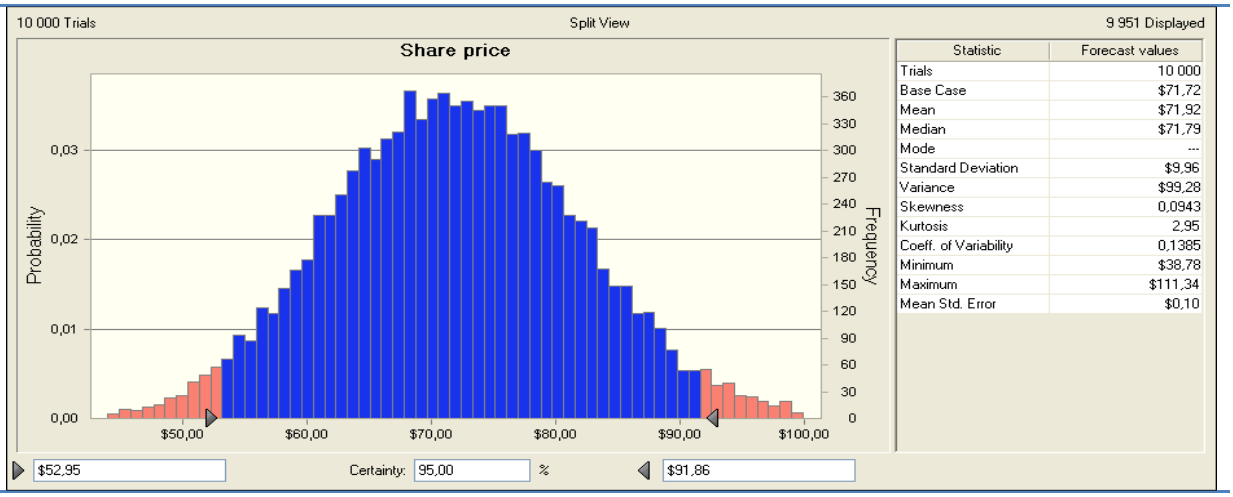


Change in subsea OPEX levels impact the analysis the most because revenues from subsea contribute most to the total revenue. By changing the OPEX percentage of revenues from the subsea segment will impact the share price significantly.

6.4.3 Scenario 3: Rate development and index regulations to TC

Scenario 3 is performed to show changes to our revenue projection model, discussed in chapter 5.1.4. We have performed a scenario analysis on rate development and index regulations to TC to see how changes will affect our revenue projections, thereby the share price. We have input a range of 2-5% for the index regulations to TC, and a range of -6% to +6% for the rate development. The development in rates can be higher, but we believe in a more stable rate development than in recent turbulent times.

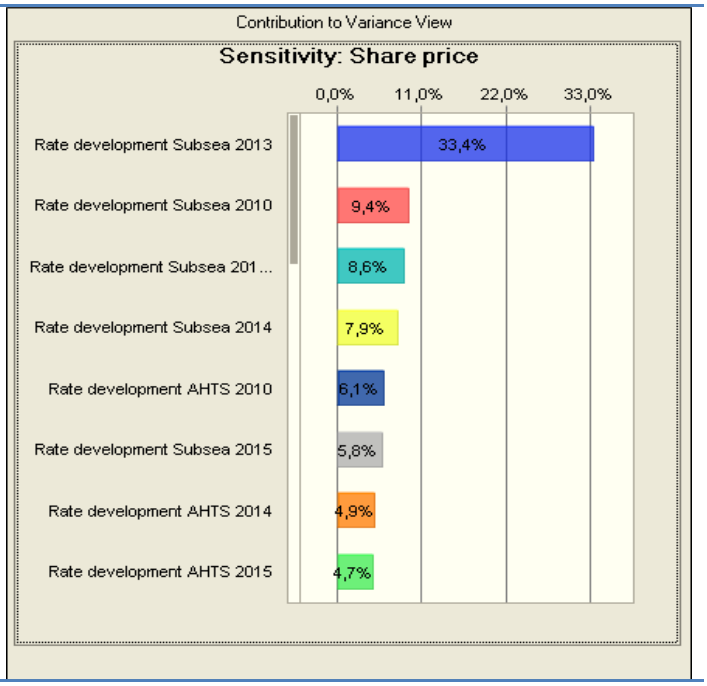
Figure 6-7: Result of scenario on Rate development and Index regulation to TC



Source: Compiled by authors

The result of scenario 3 provides a share price range of NOK 53 to 92 with a mean of NOK 71.92. The mean is very close to our findings in the DCF valuation. The range is narrower than scenario 1 and 2, which can imply that our model might have a flaw. Changes in rates can impact revenues for a shipping company significantly year to year, and our revenue projection model should have inflicted a larger change in our calculations. DOF's vessels are however on long term contracts and will not be affected by the rate developments in the short run.

Figure 6-8: Sensitivity of inputs on Rate development and Index regulation to TC



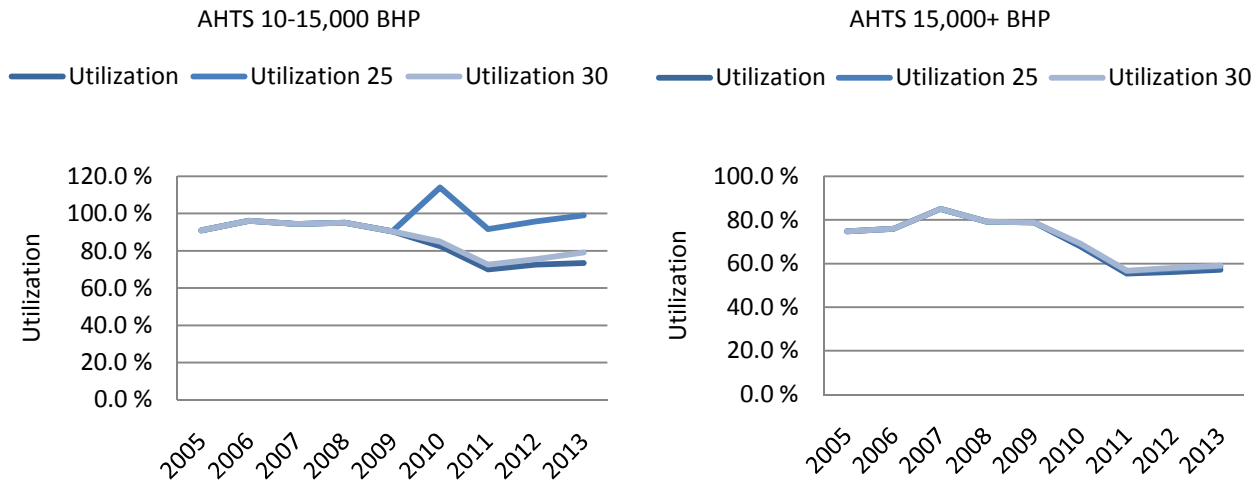
Source: Compiled by authors

Figure 6-8 illustrates that change to the rate development for subsea 2013 is most affected by this scenario analysis. The reason is because 2013 is the first year where there is no new subsea vessels delivered in our estimates, shown in table 5-2. With an input of changes from -6% to 6% in rates, the rate will be the single most important factor in 2013 for subsea revenues.

6.4.4 Scenario 4: Scraping of old vessels

In scenario 4 we will show what impact scrapping of old vessels have on utilization. We will illustrate the removal of vessels over 25 years and vessels over the technical lifetime threshold of 30 years. This is applied for the high end OSV segment and total subsea fleet to indicate how it changes utilization and thereby the calculated share price based on our revenue projection model.

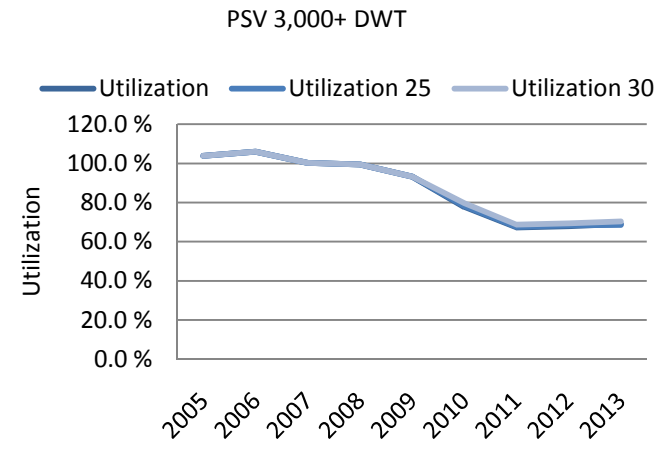
Figure 6-9: Scrapping of midrange and high end AHTSs



Source: ODS-Petrodata 2010

From figure 6-9 we can see that eliminating midrange AHTS vessels over 25 years from total supply have a big impact on utilization for the AHTS segment. DOF however have just a few vessels in the midrange segment. Elimination of high end AHTS vessels over 25 years have limited effect. The need for the high end segment is growing with the development with the demand for deeper water service.

Figure 6-10: Scrapping of high end PSVs

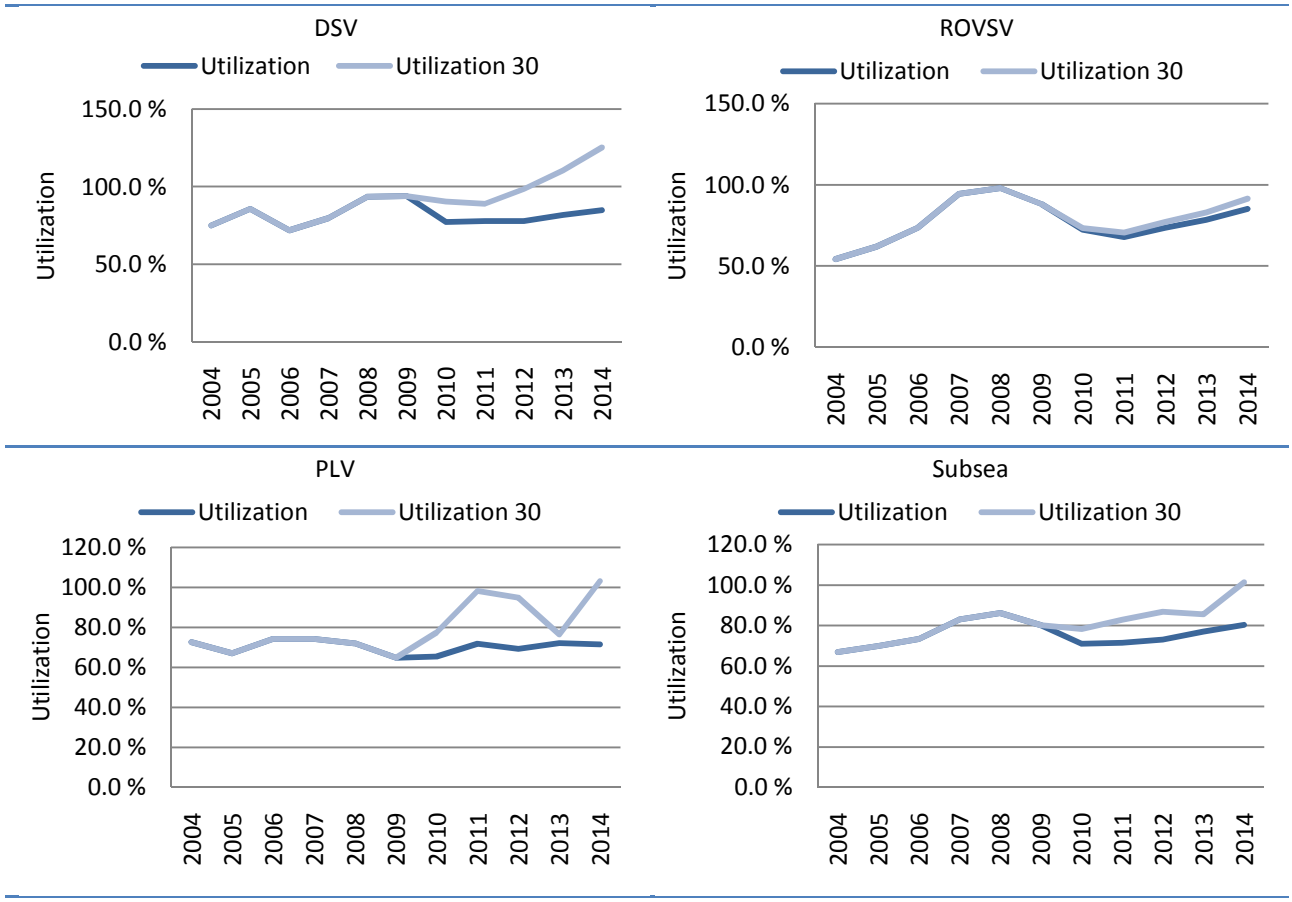


Source: ODS-Petrodata 2010

Figure 6-10 show the same results as for the high end PSVs. Eliminating high end PSV vessels over 25 years have limited effects on utilization for this segment.

Figure 6-11 show that elimination of subsea vessels over 30 years old from total supply have an impact on utilization for total subsea supply. ROVSVs are new compared to DSV and PLV. There are many old DSV vessels, mentioned in chapter 3.2.1, that are past the 30 year threshold.

Figure 6-11: Scrapping of subsea vessels



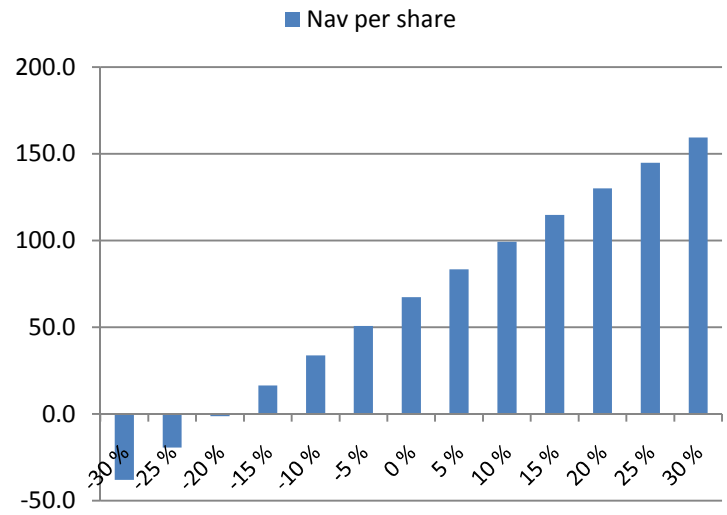
Source: ODS-Petrodata 2010

We have incorporated the changes in market utilization into our calculation when applying the revenue projection model (Appendix A). The new forecasted market utilization we get when eliminating old vessels and everything else being equal, is used to find the share price. The result returns a share price of NOK 72.81 which is similar the to our DCF estimate. This again implies that our revenue projection model might have flaws, but the changes to market utilization for the different segments are not large enough to impact our calculation.

6.4.5 Scenario 5: NAV

Changes in vessel values will have a significant impact on the NAV valuation. As mentioned in chapter 6.2.1, vessel values fell up to 25% during the financial crisis from the peak in the end of 2007. According to our scenario illustrated in figure 6-12, a decrease of 20% from today's vessels values will lead to a negative NAV per share.

Figure 6-12: Result of scenario on vessel values



Source: Compiled by authors

A 20% decrease imply that the underlying values for DOF is less than DOF`s debt, and they would be in conflict with their creditors. An increase in vessel values of approximately 15% will bring vessel values back to levels shown before the financial crisis. DOF's NAV per share would then be NOK 110 according to the scenario results. The NAV valuation is based on current values and the scenario illustrates that if vessel values suddenly changed, it will impact our valuation significantly.

6.4.6 Other Scenarios

There are also other scenarios that we have not considered but can have an impact on our valuation. We will present a discussion on scenarios that might be interesting for readers to consider.

- We have not incorporated the order of new vessels beyond the current newbuilding program. If DOF orders new vessels, the CAPEX program will increase and the need for extra financing might arise. Revenues and operating expenses from the operation of the new vessels will have to be estimated. The cash flow will change because of changes to CAPEX, revenues, OPEX and maybe the capital structure effect on WACC.

- More subsea project work will increase revenues from the subsea segment. We have not incorporated this in our projections because DOF need to secure long term contracts to handle the current CAPEX program. Project work is often for shorter periods and will therefore not bring the same stability to earnings as long term contracts.
- The possibility to pay dividends in the future might increase the perception of DOF's stock value and increase the liquidity. Stocks that pay dividends have shown higher total return to investors than stocks that don't pay dividends (DN 16.10.2010).
- We believe that DOF is currently not a Merger and Acquisition (M&A) target because of their large CAPEX program and high debt. When DOF start to generate high positive cash flows, DOF might become an M&A target. The process surrounding an M&A process will help to realize the underlying values imbedded in DOF.
- A new financial crisis might occur. A financial crisis will again lead to difficulty acquiring financing, and might affect the estimated E&P spending which is the main driver for demand in the offshore service sector.
- "Currency war". A currency war where USA tries to devalue their currency to make them more competitive against China and other Asian countries will affect DOF through the exchange rate between USD and NOK. DOF uses NOK as an accounting currency and have large revenues in USD.

6.5 Conclusion on valuation

We have used 3 different approaches to find the fundamental value of DOF. The valuation methods resulted in different values, and the sensitivity analysis showed that the results can change dramatically when we change the inputs to the models. The results of the different methods are presented in table 6-7.

Table 6-7: Results of valuation approaches

	DCF Valuation	NAV valuation	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
Share price NOK	71.72	67	-21 to 320	33 to 110	53 to 92	72.81	-38 to 160

Source: Compiled by authors

The result of the different valuation approaches seem to settle on a share price around NOK 72. This share price represents our fundamental value of DOF's share price today. Today`s share price is NOK 45 (15 December 2010). Reasons why there is a discount to the share price might be because of low liquidity in the share, and that DOF is owned by one investor with a controlling stake in the company. There can also be other reasons why DOF's share price is traded at a discount. Investors might be scared of DOF's high debt levels. The NAV valuation showed that with a drop of 20% in vessel values, DOF's equity would be worthless. Also investor bias affects stocks with low liquidity which we discussed in the start of chapter 6.

In chapter 6.1.2 we discussed our view of a discount that we will apply to DOF`s fundamental value. A discount of 20% gives us a target share price of NOK 58. Compared to today's share price, the result of our valuation implies an upside potential of 29%.

We believe that DOF's share price is mispriced at current levels. The stock might be perceived as a risky investment because of DOF's high debt and large CAPEX program. The counterpart to the high debt is a large contract backlog, long-term financing for many of the newbuilds and solid counterparties.DOF also has a leading position in Brazil through their subsidiary Norskan, and extensive subsea exposure. We have a buy recommendation on DOF.

References

Articles:
Aas, Bjørnar et al. (2009): The role of supply vessels in offshore logistics. Maritime Economics & Logistics, Vol. 11, 3, p. 302-325.

Dyrnes, Sverre (2004): Verdsettelse ved bruk av multiplikatorer, Norwegian School of Management BI, Oslo.

Ernst & Young (2010): New Norwegian tonnage tax regime – synopsis, Special edition Shipping, No. 5, April 2010

Books:
Benninga, Simon (2008): Financial Modeling, 3rd Edition. The MIT Press, Cambridge.

Bodie, Zvi et al. (2008): Investments, 7th Edition. McGraw-Hill, New York.

Brealey, Richard A. et al. (2008): Principles of Corporate Finance, 9th Edition. McGraw Hill, New York.

Dahl, Gunnar et al (1997): Verdsettelse i teori og praksis. Cappelen Akademisk Forlag, Oslo.

Grammenos, Costas Th. (2010): The handbook of Maritime economics and business. LLP, London

Hannesson, Rögnvaldur (1998): Petroleum Economics. Issues and strategies of oil and natural gas production. Quorum Books, Westport.

Koller, Tim et al. (2005): Valuation: Measuring and managing the value of companies, 4th Edition. Wiley, New Jersey.

Mun, Johnathan (2003): Real Options Analysis Course: Business Cases and Software Applications. John Wiley & Sons, New Jersey.

Pugel, Thomas A. (2009): International Economics, 14th Edition. McGraw-Hill/Irwin, Boston.

Samuelson and Nordhus (2005): Microeconomics, 18th Edition. McGraw-Hill/Irwin, Boston.

Stopford, Martin (2009): Maritime Economics, 3rd Edition. Routledge, New York.

Schhlosser, Michel (2002): Business Finance: Applications, Models and cases. Prentice Hall, New York.

Reports:
Arctic Securities: DOF - Prime Brazilian exposure and subsea (20 April 2010)

Carnegie Securities: Deepwater Support Vessels - Sirens of the seas (August 2010)

Deep Sea Supply 2 Quarter 2010 Presentation: <http://www.deepseasupply.no>

DnB NOR Markets: E&P spending report - Not putting a cap on it (12 August 2010)

DOF ASA Annual Report 2009: <http://www.dof.no>

DOF ASA Overview report (2010): Challenging the world seas since 1981. <http://www.dof.no>

DOF ASA 2nd Quarter 2010 Presentation: <http://www.dof.no>

DOF ASA 3rd Quarter 2010 Presentation: <http://www.dof.no>

Eidesvik Offshore 2 Quarter 2010 report: <http://www.eidesvik.no>

Farstad Shipping 2 Quarter 2010 report: <http://www.farstad.no>

Gulfmark Offshore 2 Quarter 2010 Presentation: <http://www.gulfmarkoffshore.com>

Havila Shipping 2 Quarter 2010 report: <http://www.havila.no>

International Energy Agency: Medium-Term Oil Market Report, <*http://www.iea.org/papers/2008/mtomr2008.pdf*> (July 2008)

ODS-Petrodata: The Global Supply Vessel Forcast, Vol. 6, Nr 1 (April 2010)

ODS-Petrodata: Offshore market outlook - Turning the Corner (12 October 2010)

Pareto Securities: Market Report Norway (August 2010)

Prospectus: FRN DOF ASA Senior Secured Bond Issue 2009/2011 - ISIN NO 0010518400, <http://www.ose.no> (29 October 2009)

RS Platou: Supply Vessel Monthly Report (September 2010)

Siem Offshore 2 Quarter 2010 report: <http://www.siemoffshore.no>

Solstad Offshore 2 Quarter 2010 report: <http://www.solstadoffshore.no>

Online Discussion Papers:
Damodaran, Aswath (2010). Equity Risk Premium: Determinants, Estimation and Implications – The 2010 Edition. Stern School of Business.

Online Newspaper:
End in sight for Brazilian tax impasse. Tradewinds 24.9.10 <http://www.tradewinds.no> (24. September 2010)

Enskildas brassespark. Dagens Næringsliv 9.9.10 <http://www.dn.no> (9 September 2010)

High Day Rates Remain For Offshore Support Vessels. Ocean Shipping Consultants Limited <http://www.osclimited.com> (November 2007)

Kjøp utbyttemaskiner. Dagens Næringsliv 16.10.10,<http://www.dn.no> (16. October 2010)

Moratorium takes toll on deepwater Gulf of Mexico. Offshore Magazine 1.10.10 <http://www.offshore-mag.com> (1. October 2010)

MUA wins big gains in offshore industry. Direct Action 20.03.2010 <http://www.directaction.org.au> (20. March 2010)

New GoM regulations released. Offshore Magazine 1.10.10 <http://www.offshore-mag.com> (1. October 2010)

New safety hurdles to block Gulf of Mexico drilling into 2011: BP. Platts 2.11.2010 <http://www.platts.com> (2. November 2010)

Statoil satser på modne felt. NRK online 27.9.2010 <http://nrk.no/nyheter/okonomi/1.7311177> (27 September 2010)

Venter med Børs. Dagens Næringsliv 19.10.10 <http://www.dn.no> (19 October 2010)

Lecture Notes:
Hannesson, Rögnvaldur (2010): Petroleum Economics. Lecture Notes, SAM 460. NHH, Bergen

Kinserdal, Finn (2010): Valuation. Lecture notes, BUS 425. NHH, Bergen

Homepages:
DOF ASA, <http://www.dof.no>

Oslo Stock Exchange (OSE): <http://www.ose.no>

Stern School of Business, <http://www.stern.nyu.edu>

Yahoo Finance, <http://yahoo.finance.com>

Others:
Enhanced oil recovery technologies. International Energy Agency, World Energy Outlook, <www.worldenergyoutlook.org/docs/weo2008/WEo2008.pdf> *(2008)*

Long-term oil-supply curve. International Energy Agency, World Energy Outlook, <www.worldenergyoutlook.org/docs/weo2008/WEo2008.pdf> *(2008)*

Oil Price shocks since 1947, WRTG: <*http://www.wtrg.com/oil_graphs/oilprice1947.gif*> (September 2009)

The Principal Steps in the E&P Sector. The Oil and Gas Forum <http://www.oilandgasforum.net/oefonline/module1_eandpsector.htm>

Appendix A: Revenue projection model

We have produced a model for the revenue projections to incorporate factors that will affect the revenues in the future. Factors that contribute to the projections are the market utilization, DOF's utilization, rate development, index regulations to TC, and new vessels coming into operations. Projections on these factors will be presented for each of DOF's segments.

In order to produce a model on DOF's utilization we have taken the current utilization, represented by contracts in place at end of Q2 2010 for the period 2010-2015, and incorporated the market utilization to find the expected total utilization for DOF's vessels each year in the projection period.

$$\text{DOF`s Utilization}_t = \text{Current utilization}_t + ((1 - \text{Current utilization}_t) * \text{Market utilization}_t * (1 + \text{DOF benefit}_t))$$

We have also incorporated a benefit factor, implying that DOF has a benefit based on their vessels specifications and strategic position compared to the overall market utilization. This benefit will however not be for eternity, and we have incorporated a falling "benefit" factor for DOF over the projection period.

DOF Benefit	2010	2011	2012	2103	2014	2015
AHTS	0%	25%	20%	15%	10%	4%
PSV	0%	20%	16%	12%	8%	4%
Subsea	0%	12%	10%	8%	6%	4%

Source: Compiled by authors

The projected utilization for DOF each year will affect the revenue stream based on changes in utilization from the previous year. To make this possible we have to state DOF's utilization in 2009 of each segment. Historical utilization have shown that for PSVs and AHTSs the utilization has been around 90-100%, and we have therefore incorporated that revenues for 2009 are based on 95% utilization for these segments. We have likewise based 2009 revenues from subsea operations on a utilization of 90%.

The rate development is dependent on the balance between supply and demand. Negotiation power will shift between charter and charterer depending on the balance. When the market utilization decreases this implies that the rate development will be negative.

Index regulations on TC contracts will lead to an increase in rates each year equal to the developments in operating costs. The developments in operating costs vary depending on operational areas. While in the North Sea and the rest of the world, costs have increased around 3-3.5% pr year, we know that in Brazil these levels are higher. We operate with an operational cost development of 5% each year. We have therefore incorporated 4% each year for the projection period.

Vessels coming into operations will, as discussed, be the main driver for growth for DOF. Many of these vessels have secured long-term contracts upon delivery. We have incorporated new vessels in operation by this formula:

$$\text{New vessels contribution}_{\,t}\,(\%) = \left(\left(\frac{\text{Total revenue}_{t-1}}{\text{Number of vessels}_{t-1}}\right) * \text{new vessels coming into operation}_t * 1.10\right)/\text{Total revenue}_{t-1}$$

Some of the new vessels have secured contracts at much higher levels than contracts that are already in place. Because of this and the fact that the new vessels might be more attractive and then contribute to higher day rates, we have incorporated a 10% benefit.

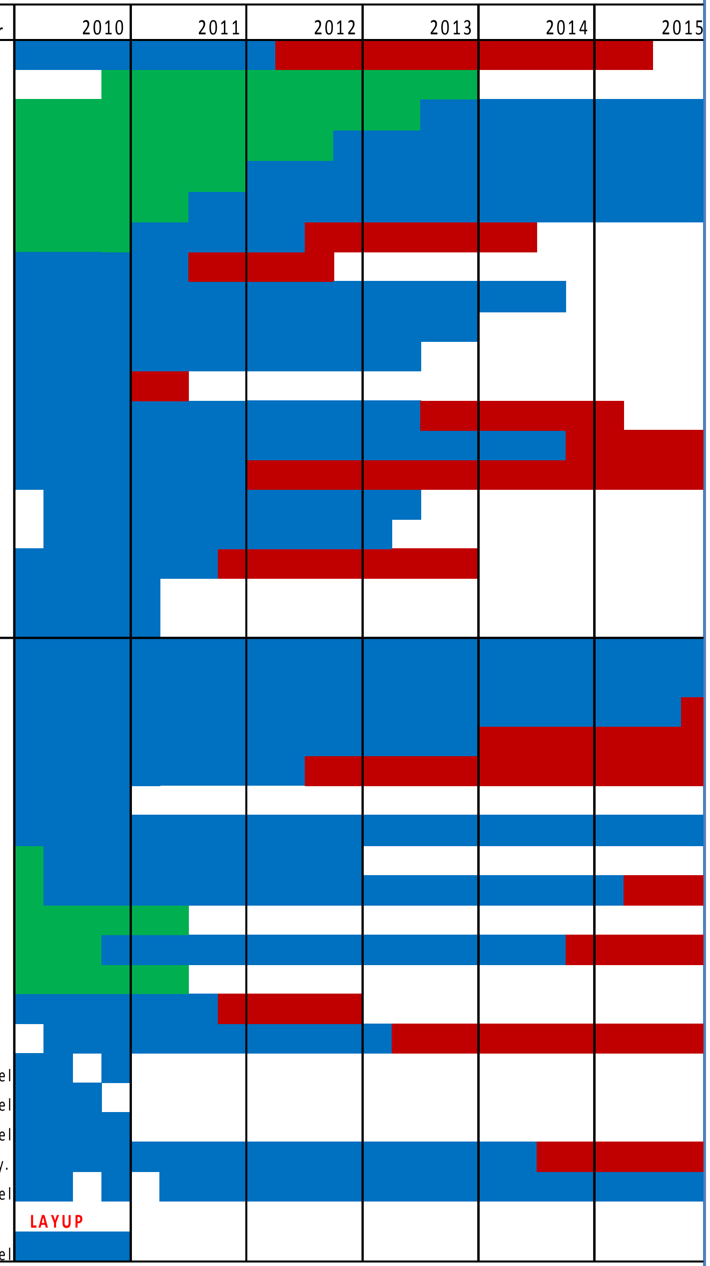
Discussions above lead us to a final formula that will show the development in revenues each year:

$$\text{Revenue development}_t\,(\%) = \frac{\text{DOF utilization}_t}{\text{DOF utilization}_{t-1}} * (\text{Rate development}_t + \text{Index regulations } \text{TC}_t + \%\text{ new vessels}_t)$$

The model implies that rate development, index regulated TC rates, and contribution from new vessels will make up the revenue stream developments. The change in utilization will impact the revenue development depending on utilization from the previous year.

Appendix B: DOF ASA contract coverage 2010-2015

	Vessel name		Built	BHP	DWT	Design	Area of operations	Charterer
Norskan	Skandi Chieftain	PSV	2005	6474	3300	MT 6009	Brazil	Petrobras
	STX AH 11	AHTS	2013	23000		Aker AH 11		
	STX AH 11 hull 31	AHTS	2012	23000		Aker AH 11	Brazil	Petrobras
	STX AH 11 hull 30	AHTS	2012	23000		Aker AH 11	Brazil	Petrobras
	Skandi Iguacu	AHTS	2011	31000			Brazil	Petrobras
	Skandi Amazonas	AHTS	2011	31000			Brazil	Petrobras
	Skandi Ipanema	AHTS	2010	13000			Brazil	OGX
	Skandi Møgster	AHTS	1998	15020	2750	KMAR 404	Brazil	OGX
	Skandi Giant	AHTS	2002	16320	3800	VS 480	Brazil	Petrobras
	Skandi Flumense	AHTS	2006	9615	2600	UT 722 L	Brazil	Petrobras
	Skandi Rio	AHTS	2006	16810	2600	UT 722 L	Brazil	Petrobras
	Skandi Botafogo	AHTS	2006	16524	2660	UT 722 L	Brazil	Petrobras
	Skandi Copacabana	AHTS	2005	16823	2400	UT 722 L	Brazil	Petrobras
	Skandi Hav	PSV	1983	7303	3550	MTV 4000	Brazil	Petrobras
	Skandi Yare	PSV	2001	5522	3000	UT 755L	Brazil	Petrobras
	Skandi Captain	PSV	2004	6555	3300	MT 6009	Brazil	Petrobras
	Skandi Stolmen	PSV	1997	5522	3100	UT 755L	Brazil	Petrobras
	Skandi Waveny	PSV	2001	5454	3246	UT 755L	Brazil	Statoil
	Norskan Flamengo	PSV	2003	5454	3250	UT 755L	Brazil	Petrobras
	Skandi Leblon	PSV	2003	5454	3250	UT 755L	Brazil	Shell
DOF Subsea	Skandi Arctic	CSV	2009	27418	13000			Technip
	Skandi Achiever	CSV	2007	13427	4000			Technip
	Skandi Acergy	CSV	2008	27200	11500			Acergy
	Skandi Neptune	CSV	2005	14158	5090			Subsea 7
	Skandi Carla	CSV	2001	13763	4400			Fugro
	Skandi Inspector	CSV	1999	4869	2419			Fugro
	Skandi Patagonia	CSV	2000	14158	3722		S. America	Total
	Skandi Santos	CSV	2010	16157	5500		Brazil	Petrobras
	Skandi Aker	CSV	2009	25432	11000			AKOFS
	Skandi Niteroi	CSV	2011	24860				
	Skandi Vitoria	CSV	2011	25860			Brazil	Petrobras
	Skandi Singapore	CSV	2011	5000				
	Skandi salvador	CSV	2009	16200			Brazil	Chevron
	Skandi Seven	CSV	2008	18986	5500			Subsea 7
	Geoholm	CSV	2006	8323			Asia	Project vessel
	Geosea	CSV	2002	6637			Asia	Project vessel
	Geosund	CSV	2006	6528			North sea	Project vessel
	Ocean Protector	CSV	2007	14800			Australia	Seaforce Pty.
	Geograph	CSV	2007	9411			West-Africa	Project vessel
	Geosounder	CSV	2006					
	Geobay	CSV	1999	9564			Asia	Project vessel



	Vessel name		Built	BHP	DWT	Design	Area of operations	Charterer	2010	2011	2012	2013	2014	2015
Aker DOF Deepwater	Skandi TBN Vietnam	AHTS	2012	16000										
	Skandi TBN Vietnam	AHTS	2012	16000										
	Skandi TBN Vietnam	AHTS	2011	16000										
	Skandi TBN Vietnam	AHTS	2011	16000										
	Skandi Peregrino (VN)	AHTS	2010	16000			Brazil	Statoil Brazil						
DOFFI	Skandi Bergen	AHTS	2011	20300										
	Skandi Hercules	AHTS	2010	20300										
	Skandi Skolten	AHTS	2010	20300										
DOF supply	Skandi Olympia	CSV	2009					Fugro						
	Skandi Fjord	CSV	1985	7303	1951		Worldwide	Halliburton						
	Skandi Vega	AHTS	2010	20890	5750	Aker AH 04	North sea	Statoil						
	Skandi Admiral	AHTS	1999	23800	4541		Brazil	Petrobras						
	Skandi Stord	AHTS	1999	16048	2750	KMAR 404	North sea	Statoil						
	Skandi Gamma	PSV	2011	10649	5000	Aker PSV 06	North sea	Statoil						
	Skandi Flora	PSV	2010	10771	5150	Aker PSV 06	North sea	Statoil						
	Skandi Mongstad	PSV	2008	4352	4600	PSV 495	North sea	Statoil						
	Skandi Commander	PSV	2007	5984	3300	MT 6009	North sea	Shell						
	Skandi Texel	PSV	2006	6854	2946	MT 6009	North sea	Peterson						
	Skandi Barra	PSV	2005	8323	4150	MT 6000	North sea	Total						
	Skandi Caledonia	PSV	2003	8323	4200	MT 6000	North sea	MOG						
	Skandi Sotra	PSV	2002	10500	4092	MT 6000	North sea	Statoil						
	Skandi Buchan	PSV	2002	8432	4100	MT 6000	North sea	Total						
	Skandi Rona	PSV	2002	8432	4263	MT 6000	North sea	Shell UK						
	Skandi Foula	PSV	2002	8432	4100	MT 6000	North sea	Shell UK						
	Skandi Marstein	PSV	1996	8106	4169	MT 6000	North sea	Shell UK						
	Skandi Falcon	PSV	1990	6691	3118	UT 705	North sea	Spot						

Source: DOF ASA Q2, compiled by authors

Appendix C: Historical Profit and Loss Statement

(Thousand NOK)	Historic Profit and Loss Statement					
	2004	2005	2006	2007	2008	2009
Sales income	986 207	1 553 188	2 796 410	3 285 576	3 969 672	4 258 507
Other operating income	18 998	30 379	214 468	168 805	370 050	68 769
Operating income	**1 005 205**	**1 583 567**	**3 010 878**	**3 454 381**	**4 339 722**	**4 327 276**
Payroll expenses	274 564	497 883	739 470	1 282 683	1 636 825	1 960 483
Other operating Expenses	197 614	323 744	979 277	942 472	1 147 178	1 133 137
Operating Expenses	**472 178**	**821 627**	**1 718 747**	**2 225 155**	**2 784 003**	**3 093 620**
EBITDA	**533 027**	**761 940**	**1 292 131**	**1 229 226**	**1 555 719**	**1 233 656**
Depreciation	275 710	356 421	417 010	529 791	643 265	837 214
Write offs						178 501
EBIT	**257 317**	**405 519**	**875 121**	**699 435**	**912 454**	**217 941**
Investemets in subsidiaries /affiliated companies		2 479	64 890	42 681	124 834	191 749
Finance income	107 160	149 451	340 807	694 309	479 719	485 122
Unrealized gain/loss on currencies					(655 382)	757 611
Finance costs	(205 174)	(300 040)	(554 384)	(773 745)	(984 747)	(647 904)
Net financial items	**(98 014)**	**(148 110)**	**(148 687)**	**(36 755)**	**(1 035 576)**	**786 578**
Profit before taxes	**159 303**	**257 409**	**726 434**	**662 680**	**(123 122)**	**1 004 519**
Taxes	**6 223**	**16 530**	**69 252**	**440 786**	**(222 983)**	**201 478**
Profit for the year	**153 080**	**240 879**	**657 182**	**221 894**	**99 861**	**803 041**
Other comprehensive income						
Currency translation differences					842	86 771
Other income and costs	172	20 936	207 712	47 953	122 300	(16 405)
Other comprehensive income	**172**	**20 936**	**207 712**	**47 953**	**123 142**	**70 366**
Total comprehensive income for the year	**153 252**	**261 815**	**864 894**	**269 847**	**223 003**	**873 407**

Source: DOF ASA annual reports

Appendix D: Consolidated Balance Sheet

Consolidated Balance Sheet

(Million NOK)	2004	2005	2006	2007	2008	2009	2010e	2011e	2012e	2013e	2014e	2015e
Intangible assets	50	366	375	538	628	476	476	476	476	476	476	476
Fixed assets	4 041	5 631	7 446	11 881	14 788	17 287	21 101	24 069	25 247	25 123	23 811	22 586
Financial assets	17	4	327	1 410	146	89	89	89	89	89	89	89
Receivables	249	668	754	1 053	1 436	1 720	1 754	2 048	2 447	2 615	2 747	2 843
Cash and cash equivalent	928	1 357	1 739	1 860	2 832	2 214	1 424	1 471	1 492	1 850	1 800	2 523
Total Assets	**5 285**	**8 025**	**10 641**	**16 742**	**19 831**	**21 785**	**24 844**	**28 153**	**29 751**	**30 153**	**28 923**	**28 517**
Debt to credit institutions (short term)	-	473	814	826	1 795	2 128	2 128	2 128	2 128	2 128	2 128	2 128
Interest bearing debt (other long term)	3 828	5 003	5 646	9 927	10 728	11 371	14 500	17 838	19 182	19 354	18 386	17 467
Provisions for commitment	189	84	231	636	602	603	590	600	600	600	-	-
Current liabilities	133	405	659	797	1 206	874	1 105	1 290	1 541	1 647	1 731	1 791
Equity, incl minorities	1 135	2 060	3 291	4 555	5 499	6 809	6 521	6 297	6 298	6 423	6 678	7 131
Total Equity and liabilites	**5 285**	**8 025**	**10 641**	**16 742**	**19 831**	**21 785**	**24 844**	**28 153**	**29 750**	**30 152**	**28 923**	**28 517**

Source: DOF ASA annual reports, compiled by authors