

1 Abstract

The purpose of this thesis is to estimate the intrinsic value of Siem Offshore. The main method is the discounted cash flows approach (DCF). This is complemented by a ratio analysis. The present value calculation gives a target share price of NOK 7.72.¹ The latest closing price was NOK 8.3.² The relative valuation based on peers on the Oslo Stock Exchange came up with a price of NOK 6.43. Siem Offshore is still struggling for profitability after the slump that hit the OSV business in 2008. The conclusion and recommendation in this thesis is to sell SIOFF.

2 Preface

The most important reason for writing a valuation as a final thesis – is to learn and get close to the real life of economics. Valuation has not been part of my curriculum, but I have followed the lectures in valuation at UiS. Valuation is a core discipline in my major field of study in graduate school – *applied finance*. It sums up and brings together several skills from the business education. Valuation is a complex and diverse economic exercise.

Like many other fields in economics, it is not an exact science, but it is nevertheless a necessary task to perform valuations to form a basis for informed economic decisions.

The goal was to take a stand and end up with a single number, and translate that into an unequivocally recommendation. In hindsight this has of course proven difficult.

One of the challenges in valuation is to find updated, unbiased information. In this respect I had hopes for more exact information from SIOFF, but it turned out that the restrictions on listed firms would not allow them to disclose information beyond annual reports, stock exchange releases and the likes.

The reason for choosing to write about a company in the offshore supply business is personal interest in shipping, the importance of shipping in Norway, and more recently the importance of energy for the increased wealth in my nation.

¹ NOK/USD 13 June 2014 is 6.0038 <http://www.norges-bank.no/no/prisstabilitet/valutakurser/usd/>

² http://www.oslobors.no/markedsaktivitet/stockOverview?newt_ticker=SIOFF

The reason for selecting Siem Offshore in particular among all the OSV players is that Kristoffer Stensrud, one of the founders and the manager of the mutual fund Skagen Kon-Tiki has expressed that SIOFF will be part of his portfolio at least to the end of 2014. As Skagenfondene are a value based mutual fund, I was hoping to find the stock to be undervalued.

I would like to extend my gratitude to those parties taking their time to supply me with information, data and guidance. This includes IHS, RS Platou, SR Bank and Mads Holm representing UiS. The list is not exhaustive.

I have tried, to the best of my ability to give appropriate credit to my sources. If there are any discrepancies, the bibliography should be exhaustive.

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3 Siem Offshore - a company overview

Siem Offshore was established as a stand-alone company in July 2005 following a spin-off from the company Subsea 7 Inc.

Siem Offshore is a Cayman Island-based (registered) shipping company engaged in marine services for the offshore oil and gas industry. Siem Offshore is organized as at parent

company with several subsidiaries and associates. The company is listed on the Oslo Stock Exchange, with the ticker SIOFF. The GICS³ code is 10101020 **Oil & Gas Equipment & Services 1 - Oil and Gas**. The headquarter is located in Kristiansand, Norway with subsidiary offices located in Brazil, Germany, the Netherlands, Ghana, USA, India, Canada, Poland and Australia.

The fleet operates in the North Sea, West Africa, the Middle East, the United States, India and Nigeria.

The company's primary activity is to own and operate offshore support vessels (OSV). According to the annual report 2013, Siem operated 42 vessels, with an additional 13 vessels under construction. The fleet comprised of 18 Platform Supply Vessels (PSV), 6 Offshore Subsea Construction Vessels (OSCV) and Multipurpose Field & ROV Support Vessels (MRSV), 10 Anchor Handling Tug Supply Vessels (AHTS). The AHTS vessels are operated in a pool, and 2 of the vessels are operated on behalf of a pool partner. The company has also entered the submarine power cable installation, repair and maintenance business aimed at the offshore wind farm market. Siem also operates a Scientific Drilling Vessel (SCDV) and part of a Well Stimulation Vessel (WSV). The Brazilian subsidiary operates smaller Fast Supply Vessels (FSV), Fast Crew Vessels (FSV) and Oil Spill Recovery Vessels (OSRV). In addition they provide combat management systems for vessels in the Brazilian navy. Siem WIS has designed and developed a pressure control device to improve managed pressure drilling operations. Siem expect a rising demand for this technology as demand for increased oil recovery and the increased number of deep sea and high pressure, high temperature reservoirs. Siem WIS has recently landed a contract for Statoil on the Gullfaks, Valemon and Gudrun fields and the prospects Romeo and Julius in the North Sea.⁴

The vessels under construction will expand the existing fleet type, in addition to Well Intervention Vessels (WIV) and Oil Spill Recovery Vessels (OSRV).

³ The MSCI Global Sector Indexes are constructed using the Global Industry Classification Standard (GICS®), a widely accepted industry analysis framework for investment research, portfolio management and asset allocation jointly developed and maintained by MSCI and Standard & Poor's. The MSCI Global Sector Indexes comprise regional and country sector, industry group and industry indexes based on the MSCI Global Investable Market Indexes. **10101020 Oil & Gas Equipment & Services**; Manufacturers of equipment, including drilling rigs and equipment, and providers of supplies and services to companies involved in the drilling, evaluation and completion of oil and gas wells. <http://www.msci.com/products/indexes/sector/gics/>

⁴ Siem WIS MPD http://www.offshore.no/sak/61261_gjennombrudd_for_boretknologi (09 May 2014)

Siem acquired 50% ownership in Secunda Canada LP in the third quarter 2013. Secunda operates six offshore support vessels.

Siem classifies their own fleet of PSV's and AHTS's as "high end". They also use the terminology "large" PSV and OSCV. The term "high end" for PSV's is based on usable cargo deck area measured in square meters. For AHTS's the pulling power is included measured by brake horse power (BHP) or pulling power in water measured as Bollard Pull. The distinction between high end and low end is not a universal measure. The vessels are divided in several steps depending on the above mentioned capabilities in addition to age, class of dynamic position systems (DP)⁵ and the level of technological specifications.

The majority of the fleet is on long-term contract. Even half the vessels under construction have long term contracts.

Siem Industries Inc. is the largest owner with 34.23 % of the shares. Siem Industries inc. is controlled by a trust whose beneficiaries include Kristian Siem's immediate family. Kristian Siem is a director of Siem Offshore and chairman for Siem Industries Inc. The second largest owner is the Hong Kong based Ace Crown International Ltd. with at 19.72 % share.⁶ Ace Crown is recorded as a "Local Company" in Hong Kong. Ace Crown keeps a low profile with no more information easily available.

Total employees are 1110 by year end 2013. CEO Terje Sørensen is explaining to Sunnmørsposten that Siem is planning to lay off 60 Scandinavian seamen. This is due to the competitive international market, but the opposite argument of increasing protectionism is another reason mentioned for the layoffs. The increasing protectionism in the global market is giving demand to a so called "Local Content".⁷

The peers used in this thesis on the Oslo Stock Exchange are Deep Sea Supply (DESSC), DOF (DOF), Farstad Shipping (FAR), Solstad Offshore (SOFF), Havila Supply (HAVI), Eidesvik Offshore (EIOF), REM (REM). The tickers for the peers and Siem Offshore (SIOFF) will for convenience be used interchangeably throughout this paper.

⁵ DP will be explained in the next chapter.

⁶ Annual report 2013

⁷ Sunnmørsposten <http://www.smp.no/nyheter/article7704395.ece> (07 June 2013)

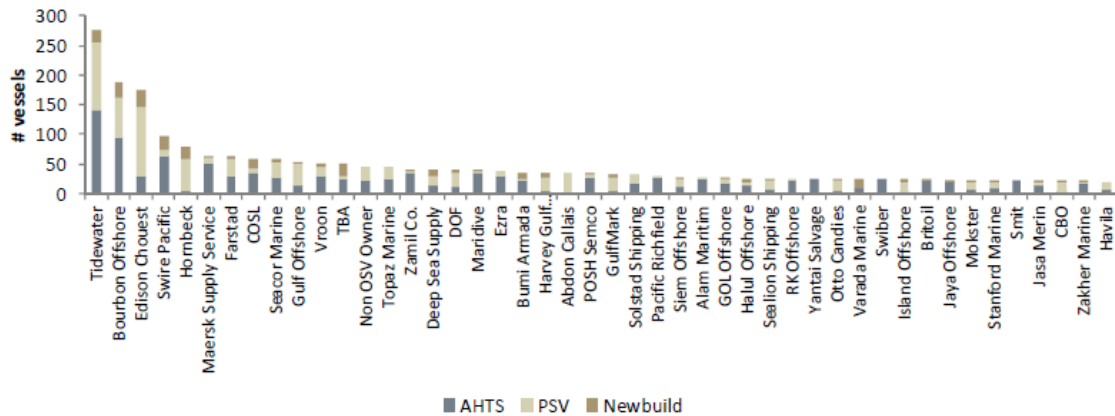
4 The OSV Industry

The Offshore Supply Vessels (OSV) offers a wide array of services to the offshore oil and gas industry, (and to a smaller extent to offshore wind-parks). The main demand drivers are field support and drilling activity. Due to an increase complexity in operations and regulations, the market is divided. Newer and high spec tonnage obtains better rates and utilization. The OSV industry is part of a global market, but there are significant regional differences in market structures, numbers of vessels required per rig or field and the levels of cost. The slump after late 2008 has been followed by a significant drop in utilization and rates.



The supply vessel industry is highly fragmented with more than 95 companies controlling a fleet of 10 vessels or more. The listed Norwegian Supply names are all mid-sized companies, controlling AHTS and PSV fleets totaling ~20 to ~70 vessels.

⁸ Norges Rederiforbund/Norwegians Shipowners Association - Norske Offshore rederier. This is in Norwegian and visualizing the phases of involvement for the OSV players; Preliminary survey, exploration, construction, production, offshore supply, transportation and closing down fields.



Source: ABG Sundal Collier, ODS Petrodata

As there are few dominant participants, market discipline is hard to exercise in the OSV market. This is illustrated by high newbuilding activity in cyclical upturns, low levels of attrition and significant variance in utilization across cycles.

Despite the fragmented market, consolidation activity has been lackluster, a trend that ABG fear may continue. Many of the companies within the supply industry are typically family-owned companies in which the ownership has been inherited over generations.⁹

4.1 Vessels and segments¹⁰

The OSV market consists of three main segments; Anchor Handling Tug Supply Vessels (AHTS), Platform Supply Vessels (PSV) and Construction Support Vessels (CSV). These vessels offer tugging of drilling units, anchor handling, cargo runs, construction services, ROV and diver support, recovery and firefighting. The global fleet comprised by the end of Jan 14 2014, of 1926 AHTS's and 1314 PSV.

AHTS vessels are designed for towing and anchoring of drilling rigs and FPSO's (Floating Production Storage and Offloading units). The vessels are high performance with regard to the power (versus) size ratio, with an open stern for handling of anchors and mooring chains weighing several hundred metric tonnes. These vessels are typically classified by brake horsepower output (BHP). Smaller AHTS (>10k BHP) work with jack up rigs, while larger AHTS work with semi-submersibles.

PSV transport goods and crew to and from oil platforms, oil rigs and other installations or vessels. PSV's have a large open deck space used for dry cargo like food supplies and

⁹ ABG Sundal Collier (2013) Offshore Supply & Subsea, **Credit Research – Sector report**, (Oct. 29 2013)

¹⁰ Overview of the OSV Industry by – Clarkson. Norges Rederiforbund. RS Platou Global Support Vessel Monthly Feb 2014 and Shipbroker Andre Rostant. ABG Sundal Collier Offshore Supply & Subsea (29 Oct 2013). First Securities, Norwegian OSV companies and OSV overview (June 2012)

equipment, and several different cargo tanks used for the transportation of fluids like fuel, water, drilling mud, chemicals and cement, drill-pipe, casing etc. These vessels are also used as standby vessels and are often equipped with firefighting and oil recovery capabilities.

PSV's are typically classified by deadweight tonnage (dwt) and/or total deck space (square meters) and are relatively uncomplicated vessels compared to other OSVs

Large PSV's have more than 900 m² available deck area. Medium size PSV's have 700-800 m². ("High end" is also common terminology about modern tonnage, maybe built or outfitted in Norway.)

CSV's perform tasks related to subsea activities and general field construction operations. This includes pipe laying, well stimulation, diving, ROV (remotely operated vehicle), IMR (inspection, maintenance and repair) and seabed mapping and surveying. The CSV are significantly more diversified than the PSV and AHTS segment. Vessels are typically classified according to length, although this does not fully explain the capability of a specific vessel within this highly diversified segment.

4.2 Drilling rigs¹¹

Mobile offshore drilling units (MODU's) consist of Jackups and floaters.

Jackups stand on the ocean floor with their hull and drilling equipment elevated above water on connected leg supports. A jack-up rig is a self-elevating unit with a buoyant hull, capable of raising its hull over the surface of the sea. The buoyant hull enables transportation of the unit and all attached machinery to a desired location.

Jackup rigs are generally preferred over other rig types in water depths of 400 feet or less, primarily because jackup rigs provide a more stable drilling platform with above water blowout prevention (BOP) equipment.

Jack up platforms are used as exploratory drilling platforms and offshore wind farm service platforms.

¹¹ <http://www.enscoplc.com/Rig-Fleet/Definitions/default.aspx> and RS Platou Rig Montly jan 2013



Floaters comprise of semi-submersible rigs and drillship's.

Semisubmersible rigs are floating offshore drilling units supported by pontoon type columns that can be partially submerged to a predetermined depth. While in transit semis can float on top of the water making tugging of these rigs from location to location easier. Semis are capable of drilling in water depths up to 8,000 feet. Semisubmersibles are chosen for their stability, but drillship's are capable of holding more equipment.

Drillship rigs are maritime vessels that have been outfitted with drilling apparatus. Most often used for exploratory drilling of new oil and gas wells in deep water. Drillships may also be used as platforms to carry out well maintenance or completion work such as casing and tubing installation or subsea tree installations. Drillship rigs are capable of ultra-deepwater drilling in depths of up to 10,000 feet with a total vertical drilling depth of 40,000 feet

Both Semis and drillships can be conventionally moored (CM) or dynamically positioned (DP). Dynamically-positioned floaters are held in a fixed location over the ocean floor by computer-controlled propellers or "thrusters."

4.3 Demand drivers

The main *drivers* for the PSV, AHTS and CSV segments are field activity as in developments, new fields coming on stream and development drilling and offshore construction.¹² The demand for these ships, are closely linked to exploration and production (E&P). The numbers of rigs, determine the demand for OSV's. 4 AHTS are required to move 1 rig in Norway, and 3 vessels are required in the UK. For PSV's the number is 2.5-3 per rig. Exploration is a driver as the drilling period for one well is +/- 30 days. There is high boat

¹² ABG Sundal Collier (2013) Offshore Supply & Subsea, **Credit Research – Sector report**, (Oct. 29 2013)

intensity during rig moves and for PSV's during the drilling period. Production (drilling) mostly involves PSV's.

Future OSV demand driven by an expanding MODU fleet

Both shallow and Deepwater offshore activity is likely to propel PSV demand further in the period 2014 and 2015. Discoveries of oil and gas in deep-water (>3000ft) have been bountiful. As a result, significant investments in mobile offshore drilling units (MODUs) to help explore and develop deep-water oil and gas resources have been made. In total, more than 100 units have been delivered in the last five years and the order books are currently indicating that 35 and 27 units will be delivered in 2014 and 2015, respectively. Having said this, the floater market is facing some headwinds, but the large contract backlog of rig owners should keep floater utilization at a high level. In shallow water RS Platou also expect increases in demand, with the redevelopment of older fields being the main driver.¹³

The world fleet development of AHTS and PSV has a CAGR of 9 %. The OSV to Rig ratio is expected to fall below 3.9 by 2014 from 4.1 as of March 2012, reflecting a tilt in market balance in favor of vessel owners.¹⁴

The OSV demand per rig/field (what ABG denote as the “demand multiplier”) also differs between geographical regions. Demand tends to be highest on a per rig/field basis in immature areas, where a large proportion of the total demand stems from (exploration) drilling activity. The demand also increases with distance to shore, poor onshore infrastructure and a high degree of government regulation. As ABG have defined the supply as the mid- to high-end of the OSV fleet, the multiplier also accounts for crowding out of low-end capacity. Relatively new oil and gas regions such as Brazil and West Africa fit the “high demand” description well.¹⁵

For the AHTS segment, the number of prelays¹⁶, have increased over the past years. This reduces time for anchoring, optimizing rig and vessel time. Reduced weather window reduces

¹³ RS Platou ASA Global Support Vessel Monthly (January & February 2014) RS Platou Montly (February 2014)

The North Sea OSV Market (January 2014) The Platou Report (2014)

¹⁴ Clarkson Capital Markets (2012) **Overview of the OSV Industry**, International Monetary Fund (IMF), **World Economic Outlook** (April 2012)

¹⁵ ABG Sundal Collier (2013) Offshore Supply & Subsea, **Credit Research – Sector report**, (Oct. 29 2013)

¹⁶ Prelying means that a significant part of the mooring work can be conducted weeks in advance and at the optimal time with respect to weather conditions and vessel availability or prices.

weather risk. Prelaying is safer for the oil company. Maersk FPSO¹⁷ Gryphon¹⁸ sustained damage in a storm in 2011, when four anchor chains broke and the vessel moved off station, causing considerable damage to the vessel and the subsea architecture. The number of Heading Control fixtures, have been increasing since. Demand for larger AHTS vessels are likely to come from Brazil. It is increasingly difficult to attain term charter contract in order to finance due to the banks being more focused on the Subsea sector. Many owners are uncertain about mooring vs DP in the future. Limited order-book is combined with a lower vessel to rig ratio.¹⁹

Clarkson Capital claims that oil consumption seems to be strongly correlated with GDP Growth. High energy demand and high oil prices leads to high exploration & production (E&P), which again leads to an increase in offshore activity as onshore fields mature. The OSV demand is robust. The global offshore CAPEX is expected to increase by CAGR²⁰ 12%.²¹

¹⁷ Floating Production Storage and Offloading system is used extensively by oil companies for the purpose of storing oil from the oil rigs in the middle of the ocean and in the high seas.

¹⁸

<http://www.maerskoil.com/media/newsroom/pages/maerskoiluk%E2%80%99sgryphonfpsobackinproduction.aspx>

¹⁹

¹⁹ Westshore Shipbrokers AS (2013) **Market Presentation**

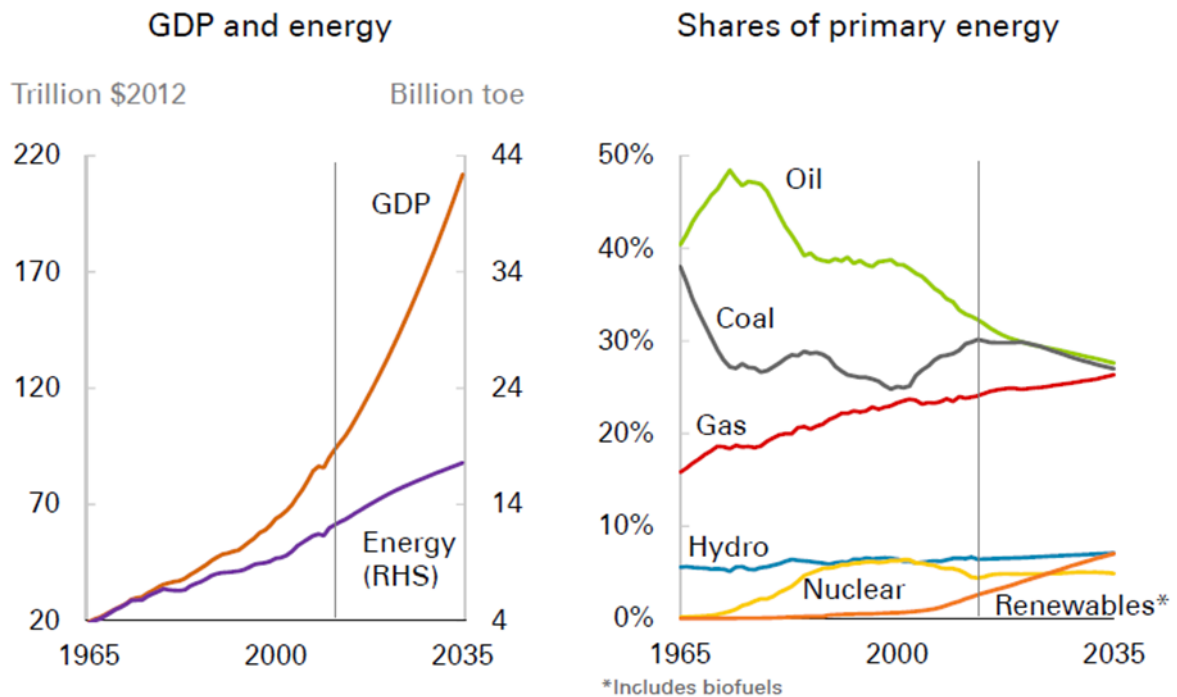
²⁰ Compound Annual Growth Rate

²¹ Clarkson Capital Markets (2012) **Overview of the OSV Industry**, International Monetary Fund (IMF), **World Economic Outlook** (April 2012)

BP²² on the other side finds a disconnect between GDP and energy;



Energy is gradually decoupling from economic growth...



Energy Outlook 2035

²² BP, Energy Outlook 2035 (January 2014)

DEMAND INDICATORS

Oil and Gas Prices

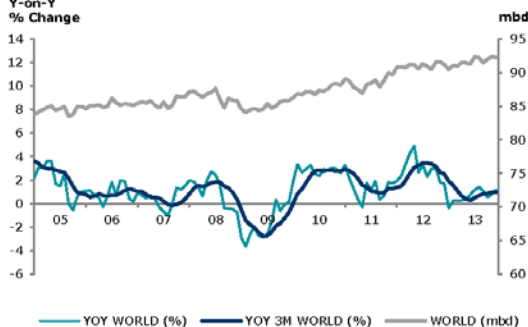
USD End Month	YTD	YTD	Dec	Jan
	2013	2014	2013	2014
Brent Dated	112.3	108.1	110.8	108.1
WTI	94.8	94.6	97.6	94.6
Henry Hub	3.4	4.7	4.3	4.7



Crude Oil Supply and Demand

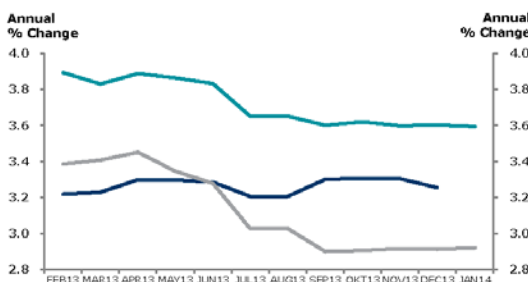
Demand in mbd	YTD	YTD	1 year	Dec
	2013	2014	% change	2013
OECD	45.1	46.0	↑ 2.0 %	46.5
Non OECD	45.6	45.3	↓ -0.6 %	46.5
World Oil Consumption	90.7	91.3	↑ 0.7 %	93.0

Supply in mbd	
World Oil Production	90.4 91.6 ↑ 1.3 % 92.2



World Economy - Real GDP growth (%)

	2012		2013		2014	
	Dec	Jan	Dec	Jan	Dec	Jan
US	2.8	0.0	1.7	1.9	2.7	2.8
EU	-0.6	0.0	-0.4	-0.4	1.0	1.0
Japan	1.4	0.0	1.8	1.7	1.6	1.6
China	7.7	0.0	7.7	7.7	7.4	7.4
Korea	2.0	0.0	2.8	2.8	3.6	3.5
India	5.0	0.0	4.8	4.8	5.7	5.7
South America	3.0	0.0	2.7	2.6	3.2	3.1
Russia	3.4	0.0	1.5	1.5	2.8	2.9
World	3.3	0.0	2.9	2.9	3.6	3.6



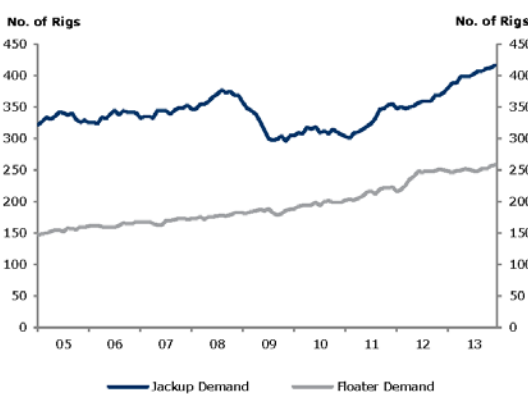
NOTE: The graph presents 12 months historical estimates for the Annual GDP Growth in 2011, 2012 and 2013

Rig Activity

Jackup Demand	Jan	Nov	Dec	12 months % change
	2013	2013	2013	
North Sea - UK	18	15	15	↓ -17.8 %
North Sea - Other	25	26	26	↑ 5.1 %
North Sea - Total	43	41	41	↓ -4.7 %
US Gulf	74	77	81	↑ 10.2 %
South America	6	7	7	↑ 21.7 %
West-/South-Africa	24	24	23	↓ -3.2 %
Pacific Rim	86	98	98	↑ 13.7 %
India	30	28	28	↓ -5.8 %
Middle East/East Africa	105	122	125	↑ 18.8 %
Other	14	15	14	↑ 1.8 %
Total	381	413	417	↑ 9.5 %

Floater Demand	Jan	Nov	Dec	12 months % change
	2013	2013	2013	
North Sea - UK	16	16	16	↑ 1.6 %
North Sea - Norway	25	27	27	↑ 8.0 %
North Sea - Total	44	48	48	↑ 9.7 %
US Gulf	47	45	46	↓ -3.2 %
South America	78	74	72	↓ -7.4 %
West-/South-Africa	31	37	36	↑ 16.1 %
Pacific Rim	29	35	37	↑ 27.0 %
Other	19	19	20	↑ 2.6 %
Total	248	257	258	↑ 4.1 %

Total Demand	629	669	675	↑ 7.4 %
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4.4 Deeper water

Offshore oil production contribution is expected to increase its share on behalf of onshore fields. Deepwater (water depths > 600 feet) CAPEX is expected to increase its share of the offshore production, with at CAGR of 23 %. The Golden Triangle of Latin America, The Gulf of Mexico and West Africa are expected to dominate deepwater expenditure over the next four to five years according to Douglas-Westwood²³. The exploration trend goes deeper and deeper, concentrated in the deep-water regions such as; Angola, USA, Brazil, Nigeria, Malaysia and Norway. There are significant Hydrocarbon discoveries in these deep-water regions²⁴.

Frontier operations absorb more supply capacity. Newer and larger vessels should intuitively bring efficiency gains to the industry, but the “real” world (count) confirms theory of 3-4 supply vessels per rig. Large PSV’s are taking a larger portion of the PSV segment in all offshore basins. The PSV platform is versatile and will also be used for subsea support, well intervention, renewables offshore and possibly seismic operations. Limited growth should be expected from current balance sheets due to low equity ratio.²⁵

As oil exploration and development become increasingly complex, moving into deep sea and harsh water acreages, the demands of the offshore supply vessel industry also increase. On top of this, stricter government regulations also support a trend for increasingly complex vessels, typically by adding requirements such as firefighting and oil recovery capabilities. This effect is expected to increase in the wake of the Macondo oil spill (BP Deepwater Horizon in 2010) and with oil and gas activity moving into more environmentally sensitive areas.²⁶

Increased operations in remote areas are fantastic for the industry, but are also dependent on the oil prices hovering at “healthy levels”. Fearnley comments that they have seen it before and

²³ <http://www.offshoreenergytoday.com/douglas-westwood-golden-triangle-to-dominate-deepwater-expenditure-over-5-years/>

²⁴ Clarkson Capital Markets (2012) **Overview of the OSV Industry**, International Monetary Fund (IMF), **World Economic Outlook** (April 2012)

²⁵ Swedbank First Securities (2012) **Offshore Supply Vessels**

²⁶ ABG Sundal Collier (2013) **Offshore Supply & Subsea, Credit Research – Sector report**, (Oct. 29 2013)

will see it again – if or when the oil price takes a sharp dip and remains low for a period, such projects together with deep water drilling are the first ones to be put on the shelves.²⁷

4.5 Arctic

The Arctic frontiers are seeing more activity. The Barents and Kara seas, Sakhalin, Canada and Greenland should all create demand for high end tonnage inclusive of ice management services.

Drilling in Arctic areas, with tough weather conditions, large distances and poor infrastructure does create a much higher relative demand for larger and more sophisticated Offshore Support Vessels (OSV). During 2014 there will be an increase of about 250 percent in deliveries of Deepwater rigs (34 in 2014 versus 13 in 2013), and this should drive demand for high-end OSVs. Over the next 12-24 month's we could see a somewhat challenging market for offshore drilling rigs, but longer-term this segment still looks firm. Fearnley expect the oil price will continue to perform better than current analyst consensus expects. Geopolitical risks are likely to continue to affect the supply side, and Fearnley expect to see oil demand surprise on the upside as the global economy, hopefully gathers long-sought after momentum.

AHTS demand (but also PSV demand) is expected to receive a significant boost from increasing offshore activity in the oil and gas basins of the Arctic, as the vessel intensity per rig is much higher than in other regions. Past experience from the Cairn Greenland campaigns indicates that each rig operating in Greenland will require three suitably sized and specified AHTS 'vessels for ice management. Due to the challenges in the Arctic, charterers will generally require top-end tonnage, which will, in most cases, be sourced from the North Sea market.

Although the timing of offshore activity in Arctic basins can be challenging to estimate, some Arctic campaigns for 2014 and 2015 have been booked already. AHTS vessels representing nearly 15 percent of the North Sea fleet are already booked for Arctic activity in 2014.

Excessive supply growth, especially of the PSV fleet, has been the concern of many OSV owners and investors. These concerns are based on the considerable PSV order book. Last year (2013), for example, 229 PSVs of various sizes were scheduled for delivery. Vessel

²⁷ Fearnley Offshore Supply The Offshore Report No.1&2 **Offshore Support and Specialized Vessels**

deliveries from yards were, however, extensively delayed. Inexperience, especially at new Asian yards and especially in the final construction stages, is cited as the main reason for delays. Furthermore, anecdotal evidence suggests that labor rotation at yards is high, thus preventing many yards from progressing along the ‘learning curve’ at the desired rate. The latest quarter is, however, showing a rise in deliveries. If this is an actual lift in productivity, then PSV fleet growth could be accelerating further.²⁸

4.6 Wind²⁹

The offshore wind market has been extremely active in 2013 in terms of construction activity, but this will change for the worse in 2015 and 2016. The UK dominance in the offshore wind market is now being, and will continue to be, challenged by Germany in 2014 and 2015. Germany saw a tremendous level of construction activity during 2013, with most of the projects set to be finalized in 2014 and 2015. New megawatts are being lined up in Europe, Asia and North America, but a significant proportion of the megawatts added are pilot projects and not commercial wind farms. Delays in current and future projects continue to be due to cabling issues, but in addition to that there have been several delays due to fabrication and installation problems.

The prevalent market driver in the offshore wind sector is, and will continue to be, government subsidies. In order to reach grid parity, technological progress, which is driven by large-scale government support, is essential.

4.7 Regional markets

US Gulf of Mexico (US GoM) is the most actively explored and drilled offshore basin. Deepwater activity remains near historically high. The E&P companies prefer to contract new DP drillships, with increased capabilities such as dual activity derrick and dual BOP’s. Deepwater PSV’s are on the orderbook to meet the increased demand from these vessels.

Latin America is one of the important OSV markets given its huge growth potential over the next decade. Petrobras indicated that the seventh OSV newbuilding tender, will be the last out of a 146 vessel renewal program. The tender calls for vessel constructed in Brazil with

²⁸ RS Platou ASA Global Support Vessel Monthly (January & February 2014) The North Sea OSV Market (January 2014) The Platou Report (2014)

²⁹ RS Platou ASA Global Support Vessel Monthly (January & February 2014) The North Sea OSV Market (January 2014) The Platou Report (2014)

contract duration of 4, 6 and 8 years with an option to extend with the same number of years. It is expected that Petrobras will come to the market for foreign PSV's again.

West African region is both a shallow and deepwater play. The additional demand is likely to come from deepwater projects in Angola, Nigeria and Ghana.

Middle East region is primarily a shallow water play. The Jackup count is an important driver for OSV activity and demand. The dayrates in the region are among the lowest in the world due to shallow waters and Saudi Aramco's ability to dictate prices.

The North Sea is one of the oldest and most explored oil and gas basins. It is the only established spot market in the supply industry. This is as close as it gets towards a perfect market as it is 100 % driven by supply and demand. The North Sea is the only market in shipping where the rates can surge 400 % in 4 hours.

In Norway, the tonnage is mostly high end. The tonnage in Aberdeen, are mixed bags as the requirements/specifications are lower. (The operators are holding a high standard though)

The Barents Sea has increased drilling activity. Boats for this spotmarket are based or on standby in Bergen and Stavanger. Ad hoc rig moves and supply in this area occupies 10 days just in sailing time up and down. This affects the availability in the spot market. The importance of arctic regions is growing. The Kara Sea is also attracting available tonnage.

The Asia Pacific region has witnessed rapid growth in production.

4.8 Macro drivers prompting OSV demand

Damodaran³⁰ warns against bringing macro into the valuation. Macroeconomic changes will affect value, but building the macroeconomic view into the valuation model will make it ...”impossible to separate how much of the result is attributed to views about the firm, and how much to the macroeconomic judgment”. Hirt and Block³¹, on the other hand brings in a Top-Down, and Bottom-Up approach into the valuation. In this thesis the company was chosen before analyzing the macroeconomic picture and consequently it will be closer to the bottom-up methodology. Another challenge is to quantify subjective factors. Qualitative views have to be translated into quantitative elements of growth³².

³⁰ Damodaran, A. (2006) **Damodaran on Valuation** 2nd ed. pp. 5-7 and 663 and Damodaran, A. (2012) **Investment Valuation** 3rd ed. p. 622

³¹ Hirt, G.A. & Block, S.B. (2012) **Fundamentals of Investment Management** 10th ed. ch. 5 and 6

³² Damodaran, A. (2012) **Investment Valuation** 3rd ed. pp. 301-302

4.9 Struggle

Many of the participants in the industry are still struggling to deliver decent returns, with high financial gearing due to extensive investments in recent years. So far, the companies have been able to generate sufficient cash flows to service interest and debt amortization. However, some companies appear to be in sight of harvesting the fruit of the high investments made.³³

4.10 Challenges

The industry has several challenges such as: Tremendous yard capacity - it is estimated that approximately 50% of the yard capacity in China is being utilized, hence we have seen in 2013 that many private shipyards have gone bankrupt and closed up. China is not the only challenge. In many other countries there is just too much capacity which is also fuelled by the fact that due to lack of orders for conventional ships many shipyards have switched to building offshore vessels.

Turkish shipyards are now offering prices which are very competitive compared to Norwegian and European yards, in fact prices have been close to Chinese prices which makes some of them very attractive alternatives. Rising costs - in areas such as Norway and Brazil we have reached level's which by many is considered "too much". Statoil has officially said that they are having difficulties in making a profit with oil prices around USD 100 per barrel and they have started a cost cutting process. Crew and operating costs have also reached level's, which seems to be (almost) too high and many owners have miscalculated totally the cost of operating in Brazil and to a certain extent regrets going in there. A few years ago it was unheard of for a Norwegian supply vessel owner to have any other crew than full Norwegian speaking crew. Today the situation has changed totally and most of these owners have today a large amount of Non Norwegian crew onboard.

Commercial life time for offshore support vessels - during 2013 we saw several vessels built in the early 80's being removed from the market and went into scrapping and the last two years have shown that the commercial life time for a supply vessel has been quite reduced.³⁴

Financing - or rather lack of financing will continue to be a big challenge during 2014 and we will see a large amount of sale/ leaseback which was also the case for 2013. Many of them might go into KS or DIS companies (or other limited liability companies) with bareboat charter back to the sellers. Secured or unsecured bonds will also be much in demand. From a

³³ ABG Sundal Collier (2013) Offshore Supply & Subsea, **Credit Research – Sector report**

³⁴ IHS does not agree. Ref IHS subchapter.

market prospective and in theory, it is quite good that financing is tight as it is supposed to reduce the speculative new buildings or make life to speculative projects. As certain yards are offering extremely attractive payment terms and no take out guarantee, the speculative new building will still carry on.

The OSV owners have two years behind them with “expectations not quite fulfilled”. It seems as if the expected activity wave has been pushed in front of them - the high activity peak with high rates being pushed to the right.³⁵

4.11 Expectations and Outlook

ABG expect a healthy CSV market, improved rates in the AHTS market and continued oversupply putting pressure on the PSV segment. Due to the opening up of new oil and gas regions such as Brazil and West Africa, mature regions such as the NWECS³⁶ being given a second life through new discoveries and increased exploration efforts in frontier arctic regions, ABG believe the underlying demand fundamentals in the OSV industry are strong.

Looking at E&P spending levels over the next few years, ABG still expect this to grow, albeit at a slower pace than in recent years. ABG forecast 3% growth in offshore spending in '14e and no growth in '15e.

The outlook for the mid- and high-end AHTS (> 10k BHP) market is slightly positive for 2014e. A 9% year-on-year increase in demand and a 5% forecast increase in supply should translate to a slight increase in utilization from 2013. For the PSV segment, the outlook is worse, as a 10% growth in demand stemming from growth in offshore fields and drilling units should be insufficient compared to a forecast of 15% growth in supply.³⁷

Fearnley generally have a positive outlook for the industry. Utilization has been picking up, but the rates have been lagging behind. Term rates for certain types of vessels will most likely pick up during 2014.³⁸

³⁵ Fearnley Offshore Supply The Offshore Report No.1&2 **Offshore Support and Specialized Vessels**

³⁶ North West Europe Continental Shelf

³⁷ ABG Sundal Collier (2013) Offshore Supply & Subsea, **Credit Research – Sector report**

³⁸ Fearnley Securities AS **OSV Sector outlook 4q13 previews** (24 February 2014)

E&P Spending 2013 to 2017 in the Norwegian Continental Shelf (NCS) is expected to be 7.7 % CAGR. The UK Continental Shelf (UKCS) is benefitting from record investment in new development. Exploration and Appraisal wells are up from previous years and possibly facing the most active drilling period in the last 15 years. Westshore sees a global potential of 950 offshore rigs by the end of 2015. Smaller operators are entering the NCS and the UKCS leading to more activity on the shelf.³⁹

RS Platou expects escalating costs and flat oil prices. Public oil companies face the challenge of maintaining dividend payments to their shareholders, while continuing to increase their E&P budgets. Global E&P is still expected to grow by approximately 6 percent to 700—750 billion USD, but growth in real oil service purchasing power will be relatively modest.⁴⁰

4.11.1 IHS Petrodata⁴¹– Former ODS Petrodata

IHS is a leading supplier of data to, among else, the shipping and offshore industry, and to those who follow these markets and make forecasts etc. As this is based on a breakfast briefing, and not written reports, their view will be hurdled up in this separate subchapter. IHS is tracking every vessel and rig individually. They are basing their prognosis and forecasts mainly on regression. The rigmarket is in a cyclical pause with signs of slowdown for 2014. South East Asia is primarily a midwater region, with increased deepwater development. Mediterranean with Israel, Cyprus and the Black Sea have promising discoveries. West Africa is the best UDW area with high rates and high utility. The bureaucracies are time consuming. The US Gulf of Mexico has DW discoveries, and Mexico is opening up exploration. East Africa has major discoveries and large future DW developments. The demand in North West Europe appears to be weak through 2014-2015. The Falkland Islands have promising first development. Brazil looks good for long term development, with new exploration. It's a regulated market, but it seems the authorities are easing on requirements like local content. The harsh environment areas of the Kara Sea, and Greenland does *not* look promising for the next few years, but maybe on a longer term.

Contractors prefer drillship's. IHS predicts that the fleet of drillship's will grow till 170 by 2020. 71 of 75 of the new ships will be capable of UDW drilling. Semisubmersibles are less attractive. The market for floaters is softening. The dayrates for UDW capability are expected

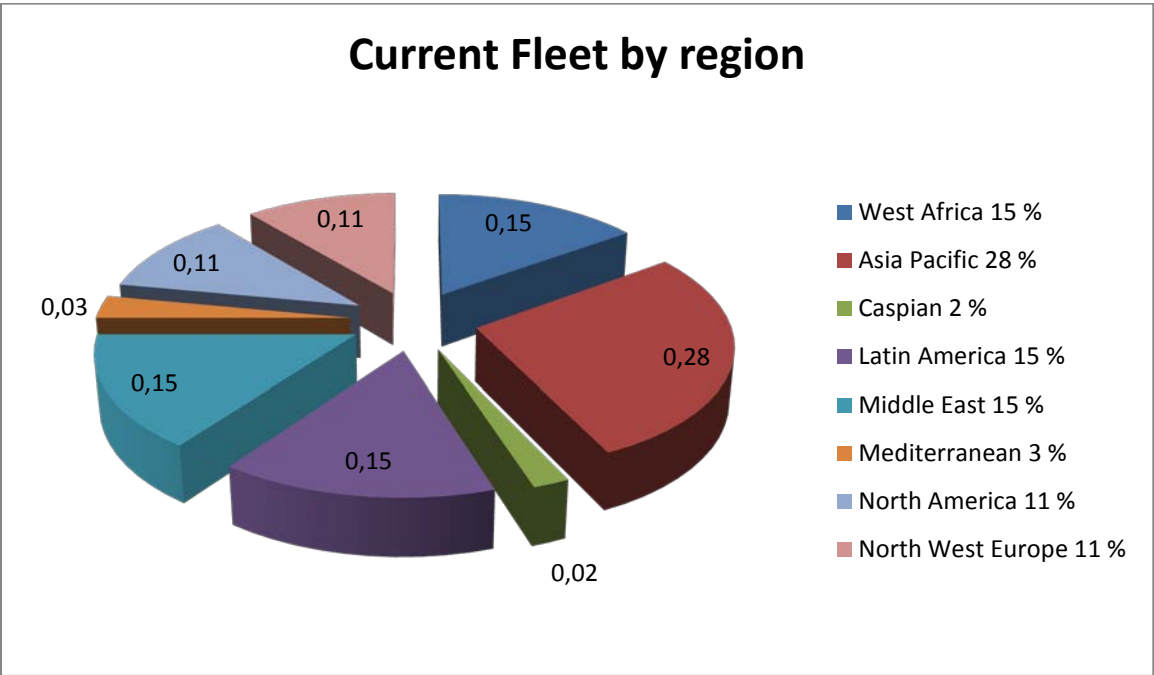
³⁹ Westshore Shipbrokers AS (2013) **Market Presentation**

⁴⁰ RS Platou ASA Global Support Vessel Monthly (January & February 2014) RS Platou Montly (February 2014) The North Sea OSV Market (January 2014) The Platou Report (2014)

⁴¹ IHS Petrodata **Breakfast Briefing: Offshore Rig Market, Supply Vessel Trends** (March 26, 2014)

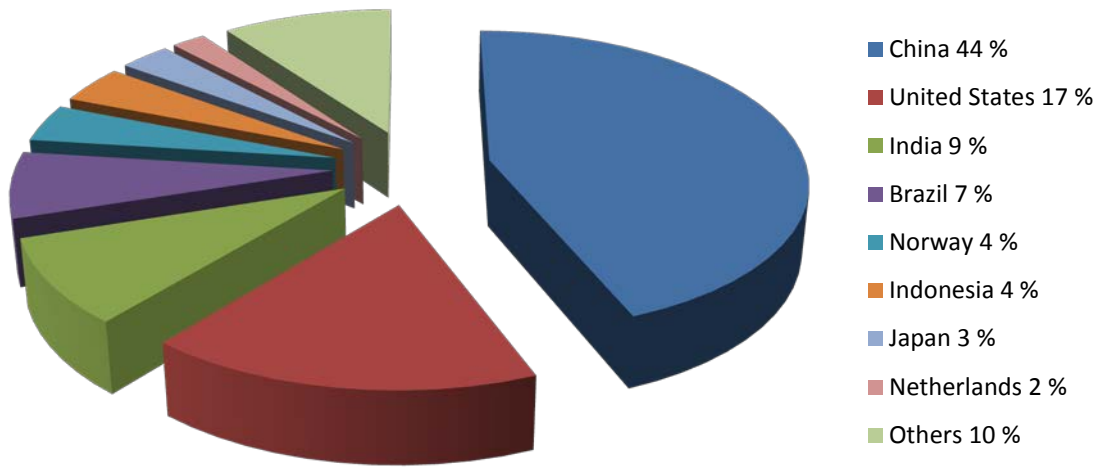
to fall from 630 000 USD to 450-500 000 USD. Few UDW rigs are drilling in UDW. This is pushing down the rates of lesser specified rigs. Latin America and Africa dominates discoveries. Chinese yards only require 10 % down payment for ship orders. They may get order for 3 vessels but builds 5 with hope to sell the last 2 later. The global PSV rates are on a slide 2009-2014. In many markets the Rig/OSV ratio is 90 % correlated, but there are regional differences. Examples of segmentation in the regional markets are; local content requirement in Brasil, Jones act in USGoM, high Norwegian requirement relative to lower requirements in the UK and the Aramco monopoly in the Mideast.

There is almost no attrition as OSV don't get scrapped but cold stacked, and used in market with lower specification requirement .This observation contradicts Fearnley in the *challenges* chapter.



Compiled/made by author with data from IHS

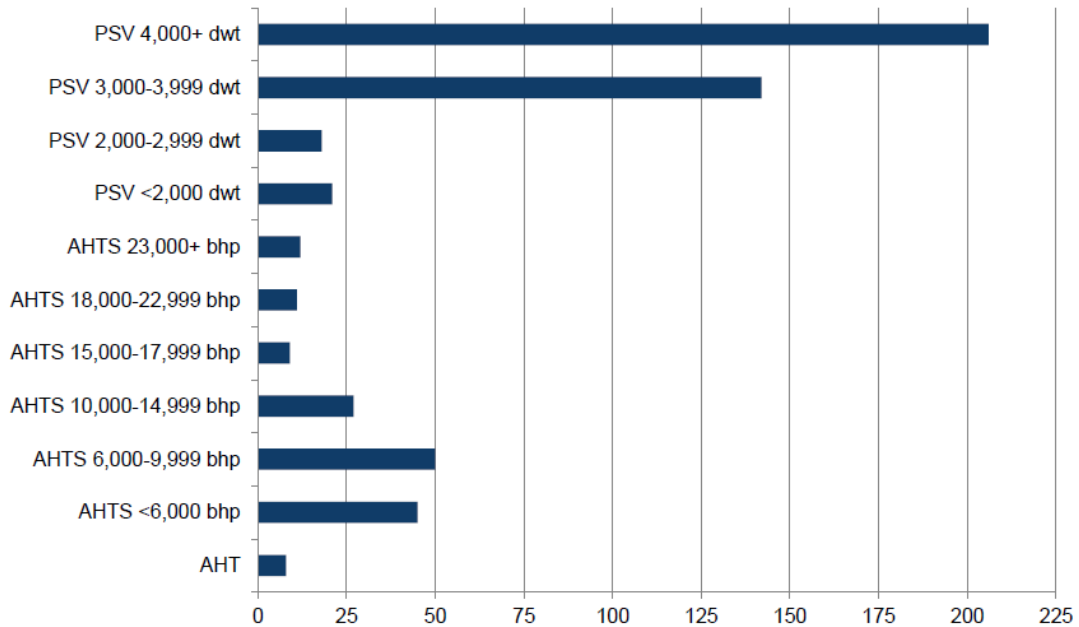
Current orderbook by build country



Compiled/made by author with data from IHS

OSV MARKET / MARCH 2014 

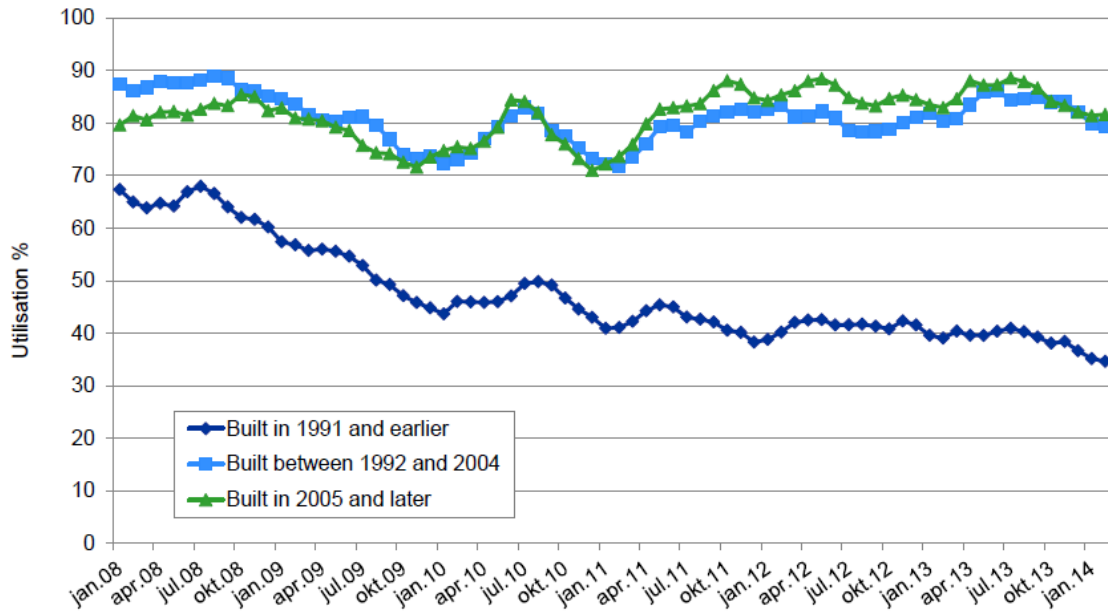
Current order book by vessel class



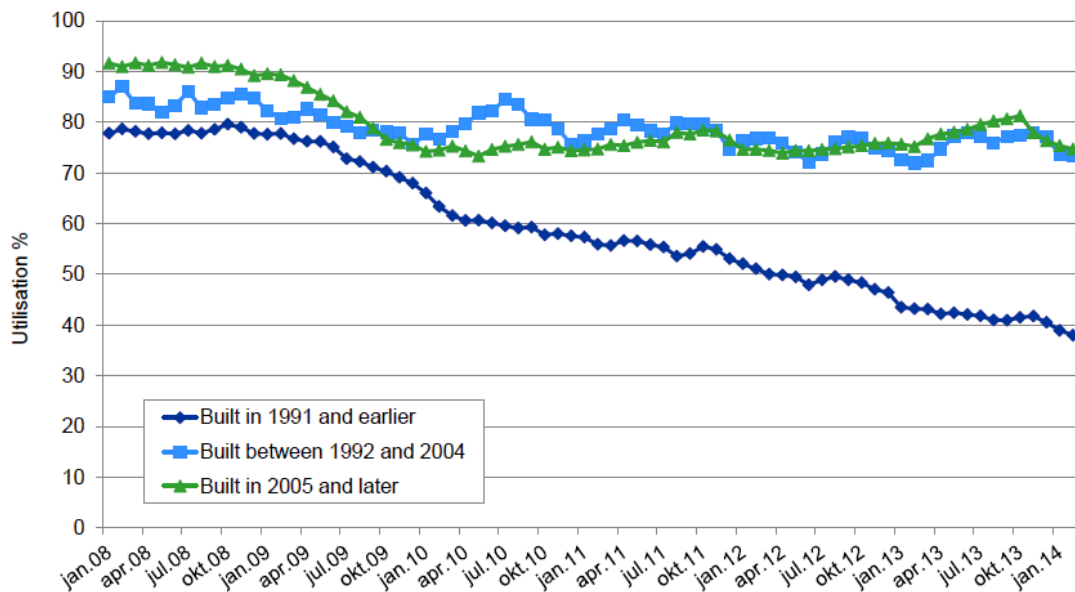
© 2014 IHS

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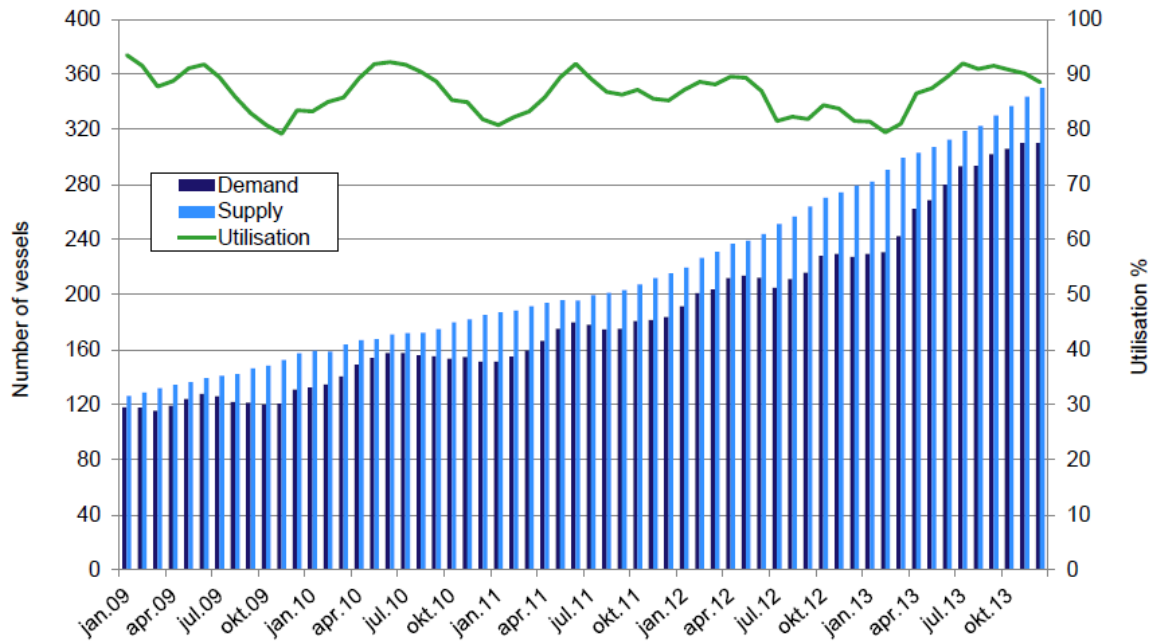
PSV utilisation by vessel age 2008-2014



AHTS utilisation by vessel age 2008-2014



Global PSV 4,000+ dwt Demand, supply & utilisation 2009-2013

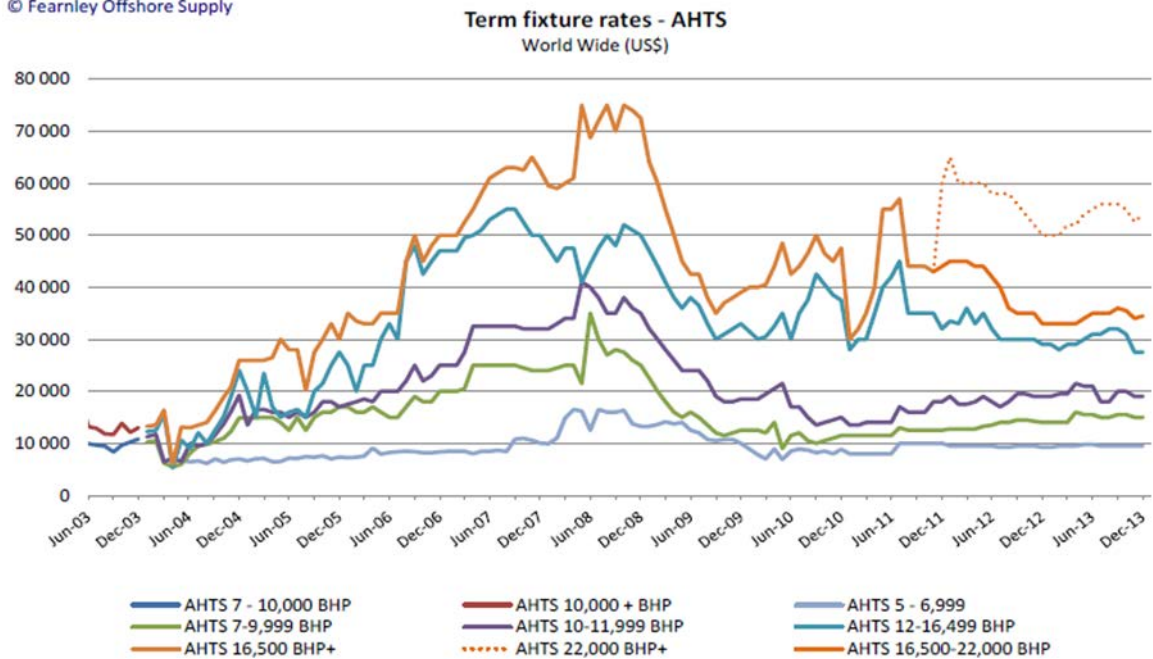


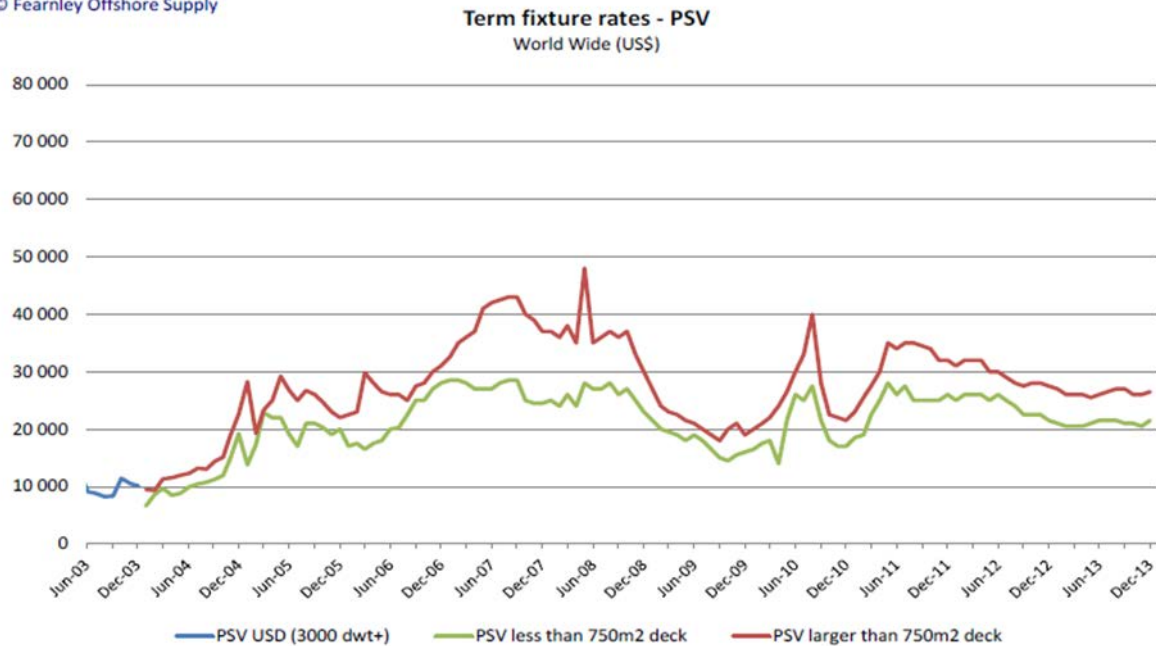
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4.12 Prices historic

© Fearnley Offshore Supply





4.13 Fleet

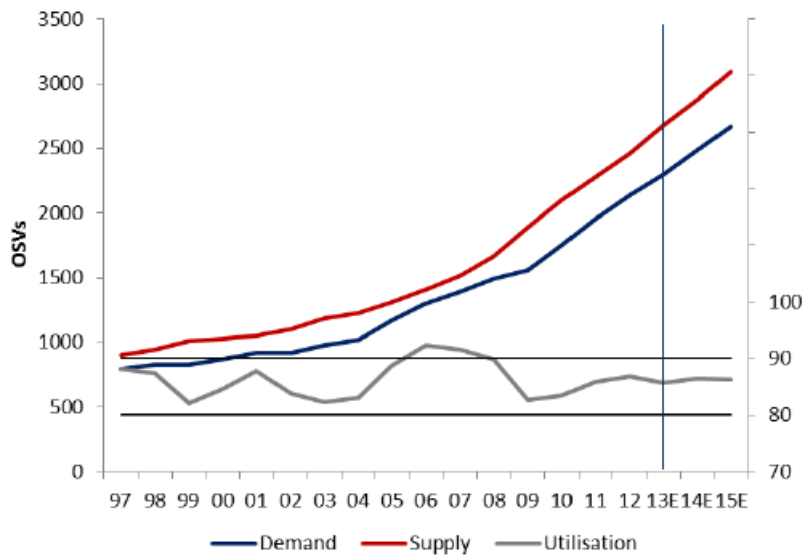
The global OSV market balance is expected to remain stable through 2014 and 2015. However, some regional variations are expected, due to local regulations and content requirements. The main driver of demand will still be the large number of new UDW floaters entering service through 2014 and 2015. The new UDW drillship's, are likely to be serviced by larger sized DP II⁴² PSV's. Oil and gas companies' safety concerns are also driving demand for high specialization modern units. Such vessels are likely to command a premium in contract terms.

The prospects for medium-sized AHTS vessels seem very good, as the renewal of the jackup fleet will continue in the period 2014-15, and further floating production units will enter service. At the same time the number of vessels on order for this asset class is relatively low and RS Platou therefore expects utilization to keep rising in the period 2014-15. However, the larger AHTS vessels, which are mostly in service with conventionally moored floaters, may face some headwind due to a softer floater market. This may lead to increased substitution through the asset classes and a more modest increase in day rates for the mid-size AHTS vessels.⁴³

⁴² Dynamic Positioning; DP2 involves increased level of system redundancy compared to DP1. DP3 is the most advanced class defined by the International Maritime Organization (IMO). DP3 enables the ship to maintain position during fire and flooding.

⁴³ RS Platou ASA Global Support Vessel Monthly (January & February 2014) RS Platou Monthly (February 2014) The North Sea OSV Market (January 2014) The Platou Report (2014)

Global estimated supply, demand and utilisation rate



*OSV defined as: PSVs >1,000dwt + AHTS 4-10,000bhp

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Newbuild PSV worldwide					Newbuild AHTS worldwide				
DWT	2014	2015	2016	Total	BHP	2014	2015	2016	Total
<1.5k	4	0	0	4	<8k	62	10	3	75
1.5-2k	6	1	1	8	8k-12k	18	0	0	18
2-3.5k	63	16	7	86	12k-16k	18	5	1	24
3.5-5k	117	61	9	187	+16k	29	5	3	37
+5k	59	14	2	75					
Total	249	92	19	360	Total	127	20	7	154

⁴⁴ RS Platou ASA Global Support Vessel Monthly (January & February 2014) RS Platou Monthly (February 2014) The North Sea OSV Market (January 2014) The Platou Report (2014)

Newbuild SUBSEA VESSELS worldwide					
TYPE	2014	2015	2016	2017	Total
CLV	3	2	0	0	5
CON	19	15	3	0	37
DSV	2	1	4	0	7
Heavylift/ Pipelay	5	1	0	0	6
LAYSV	8	2	8	2	20
LCV	7	1	1	0	9
MPSV	11	5	5	0	21
MSV	15	7	0	0	22
ROV	1	0	0	0	1
Total	71	34	21	2	128

Currently under construction – World Wide⁴⁵

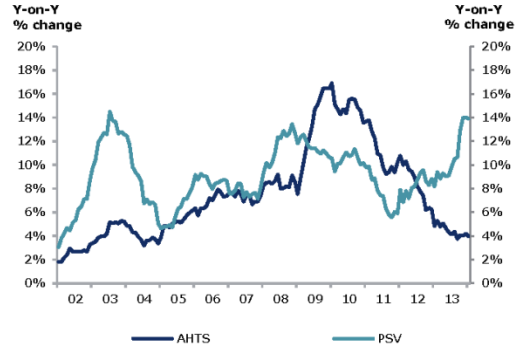
⁴⁵ Fearnley Offshore Supply The Offshore Report No.1&2 **Offshore Support and Specialized Vessels**

GLOBAL FLEET

Fleet Development

	YTD Deliv.	YTD Scrap	Jan 2014	1 year % change
AHTS 4-7,999 BHP	5	2	1198	↑ 4.9 %
AHTS 8-9,999 BHP	1		217	↑ 1.9 %
AHTS 10-15,999 BHP	0		321	↑ 1.3 %
AHTS 16-19,999 BHP	2		117	↑ 3.5 %
AHTS 20,000+ BHP	1		73	↑ 7.4 %
AHTS Total	9	2	1926	↑ 3.9 %
PSV <500 m2	3		397	↑ 7.9 %
PSV 500-749 m2	4		475	↑ 8.9 %
PSV 750-899 m2	7		130	↑ 34.0 %
PSV 900+ m2	10		312	↑ 23.3 %
PSV Total	24	0	1314	↑ 13.9 %
Total	33	2	3240	↑ 7.7 %

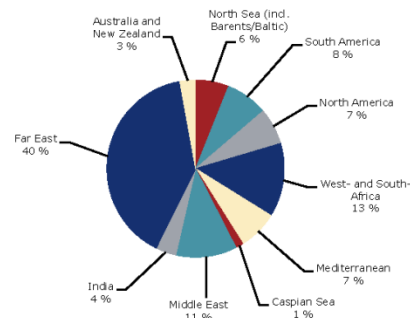
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Global AHTS Fleet Locator

	Jan 2013	Dec 2013	Jan 2014	1 year % change
North Sea (incl. Barents/Baltic)	98	117	117	↑ 19.4 %
South America	158	148	148	↓ -6.3 %
North America	115	128	128	↑ 11.3 %
West- and South-Africa	269	261	259	↓ -3.7 %
Mediterranean	143	143	139	↓ -2.8 %
Caspian Sea	28	27	27	↓ -3.6 %
Middle East	214	214	214	↔ 0.0 %
India	77	73	72	↓ -6.5 %
Far East	691	756	767	↑ 11.0 %
Australia and New Zealand	60	55	55	↓ -8.3 %
Total	1853	1922	1926	↑ 3.9 %

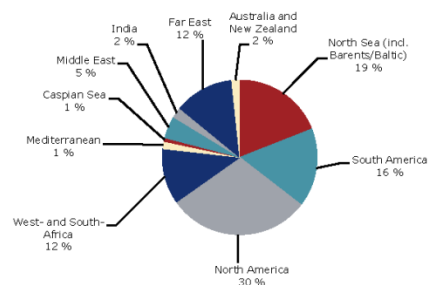
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Global PSV Fleet Locator

	Jan 2013	Dec 2013	Jan 2014	1 year % change
North Sea (incl. Barents/Baltic)	223	248	250	↑ 12.1 %
South America	192	216	216	↑ 12.5 %
North America	336	382	391	↑ 16.4 %
West- and South-Africa	142	145	152	↑ 7.0 %
Mediterranean	18	18	20	↑ 11.1 %
Caspian Sea	8	10	10	↑ 25.0 %
Middle East	57	60	61	↑ 7.0 %
India	23	25	29	↑ 26.1 %
Far East	137	174	163	↑ 19.0 %
Australia and New Zealand	18	17	22	↑ 22.2 %
Total	1154	1295	1314	↑ 13.9 %

*

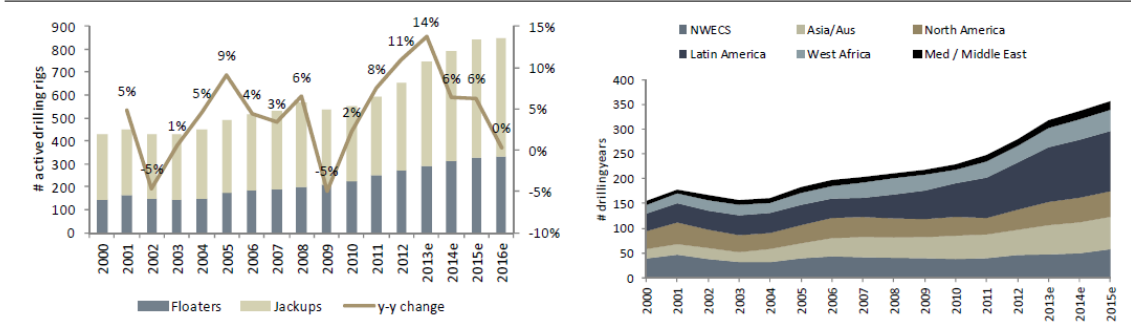


*When presenting the global fleet we only consider AHTS and PSV vessels. Vessels below 50m LOA are excluded from the fleet, as well as AHTS vessels below 4,000 BHP and PSV vessels below 1,000 dwt.

4.13.1 AHTS a closer look⁴⁶

A closer look – AHTS The underlying assumption behind the ABG AHTS market model is that demand is mainly driven by drilling activity. The following graphs illustrate the forecast drilling demand stemming from exploration and development drilling, as well as the geographical split.

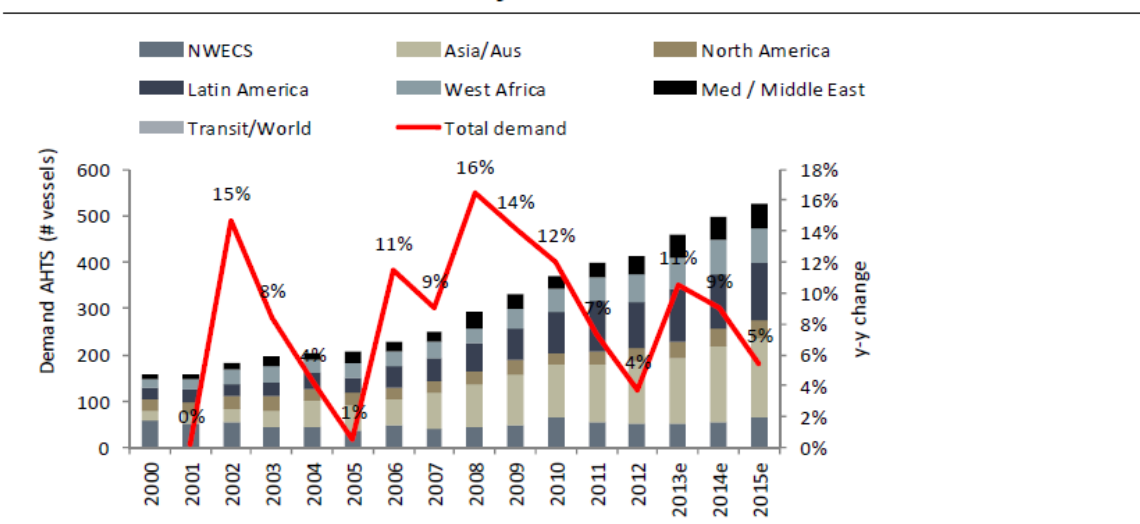
Continued growth in drilling activity



Source: ABG Sundal Collier, ODS Petrodata

The geographical distribution of drilling activity is important, as the demand for AHTS vessels per rig year varies significantly from region to region. This is due to factors such as the water depth in the oil and gas basins, government regulations, distance to shore, existing onshore infrastructure etc.

Demand is forecast to increase by 9% in 2014e

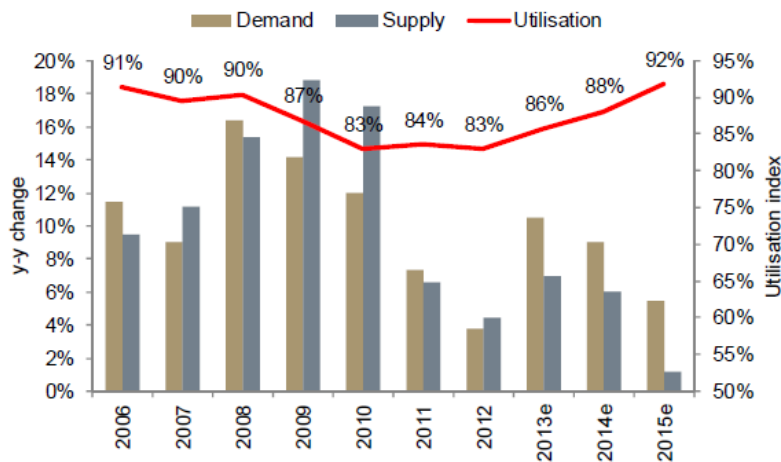


Source: ABG Sundal Collier, ODS Petrodata

In summary, ABG find that the AHTS market should remain fairly unchanged going into 2014e, while ABG forecast utilization (term+spot demand vs. supply) to increase marginally.

⁴⁶ ABG Sundal Collier (2013) Offshore Supply & Subsea, **Credit Research – Sector report**, (Oct. 29 2013)

AHTS market model



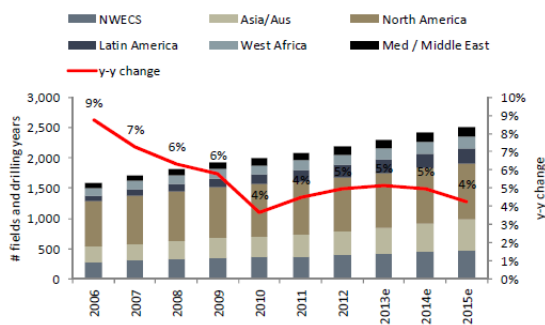
Source: ABG Sundal Collier, ODS Petrodata

Based on the utilization forecast, ABG will pencil in a 10% rate improvement for the high end AHTS segment in 2014e.

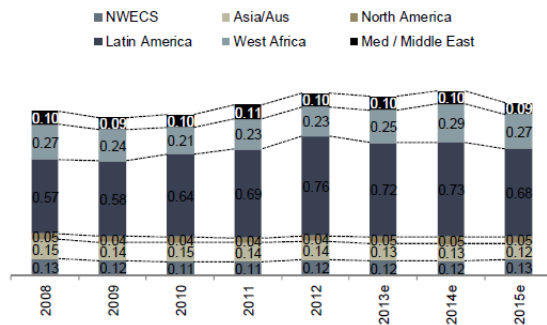
4.13.2 PSV a closer look⁴⁷

A closer look – PSV ABG have based the PSV market model on the assumption that demand is driven by 1) the number of offshore oil fields, and 2) drilling activity⁴⁸. They also assume the ratio between field and rig activity will remain relatively unchanged, which is in line with both historical and forecast developments.

Positive development in PSV demand drivers



Rig to field ratio will remain fairly constant



Source: ABG Sundal Collier, ODS Petrodata

As with AHTS, the geographical distribution of demand is important as the number of PSV vessels demanded per field and rig year varies significantly from region to region. Some of the regional differences in multipliers can be explained by differences in drilling intensity, drilling activity typically commands more PSVs than offshore field support on a per rig/per

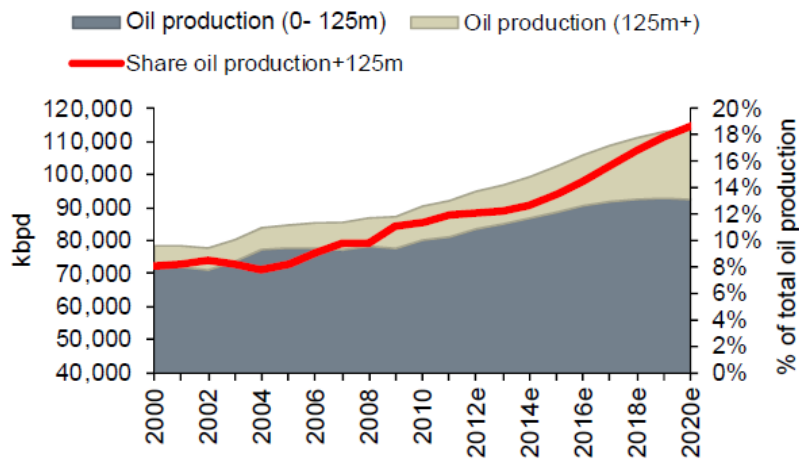
⁴⁷ ABG Sundal Collier (2013) Offshore Supply & Subsea, **Credit Research – Sector report**, (Oct. 29 2013)

⁴⁸ ABG have implicitly assumed that other PSV services such as pipe-laying support etc. are closely correlated with the two demand drivers above.

field basis.⁴⁹

ABG have based the demand forecast on current multipliers, and thus believe there could be some upside risk to our demand estimates as an increasingly large share of drilling and field activity will be carried out in deep water acreage.

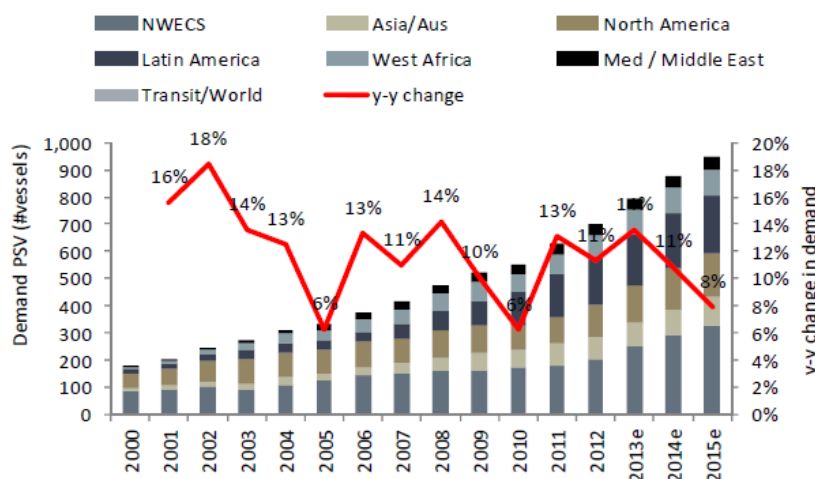
Discoveries are moving into deeper waters



Source: ABG Sundal Collier, Rystad Energy

Based on the forecasted growth in field and drilling activity, and applying the current multiples, we arrive at the demand forecast for the PSV segment. ABG anticipate demand growth relatively in line with historical developments, with low double-digit demand expansion forecast until 2014e.

Demand is forecast to grow in the low, double-digit range

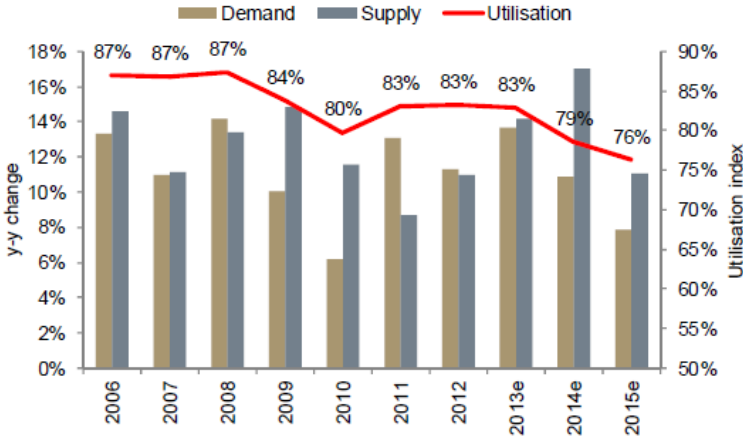


Source: ABG Sundal Collier, ODS Petrodata

⁴⁹ PSV multipliers will also be affected by the same factors as described in the AHTS section.

In summary, the PSV market should weaken going into 2014e, a trend that is forecast to continue also in 2015e. Utilization is forecast to drop to 79% and 76% in the two years respectively.

PSV market model



Source: ABG Sundal Collier, ODS Petrodata

ABG forecast that PSV rates will deteriorate by 5% for both the mid- and high end PSV segment in 2014e.

4.14 Subsea

2013 has been an active year in the subsea market, especially in terms of the number of newbuilding orders at Norwegian and foreign yards. Contractors are demonstrating a real desire to advance in the subsea hierarchy - a trend that started to materialize after the merger between Subsea 7 and Acergy. The continued growth in tile subsea market is expected to boost this trend in 2014 and beyond. Market expansion and the contractor’s segment ambitions will lead to a growing number of vessels and an increased relative complexity of these vessels. The main driver of the market growth is greater water depth and larger subsea structures, as well as an increased need for maintenance and the rejuvenation of existing installations.

A strong development of the subsea and floating production installation market is anticipated in the next few years. There has been high drilling activity in the deep and ultra-deep water segment over the last five years and many of these fields are now poised to reach the development stage.

With stable E&P spending and a high oil price, global oil and gas companies are expected to take on new projects and increase activity in the subsea construction market. Deep-water demand is expected to be particularly strong as the trend for larger and more subsea

equipment being put on the seabed will continue. Offshore wind farms are being placed further offshore and thus will demand more subsea vessels in the years to come. Several vessels were absorbed during 2013. In 2014 and 2015 several tidal projects are reaching the start of the construction stage and this will require subsea tonnage. In recent times, many oil companies have turned their focus on the escalation of costs, which is seen as a major threat for several projects. However, the field economics are still sufficient to continue developing deep-water subsea fields, where oil companies have reported higher return on the employed capital than in the shallow and medium water segments. Healthy growth across the coming years is expected in the subsea vessel market, but timing will still be crucial in this relatively young market.⁵⁰

The subsea market has been solid for PSV's. Owners are likely to upgrade those vessel's that have the ability to be upgraded to work in the subsea market. Medium to long term fundamentals for the subsea construction market is strong. Deepwater drilling activity, and subsea tree awards indicates significant growth. The market has absorbed new tonnage well, but there is an oversupply of PSV's. Banks favor subsea or specialized offshore areas. Larger PSV sector will be tight going forward, while mid sector is swamped.⁵¹

The Subsea Vessel segment was undoubtedly the hottest sector in 2013 according to Fearnley. There are few OSV owners left who have not bought a ticket in this demanding niche, and several large speculative investments were made both by existing players and by newcomers to the subsea industry. 2014 may prove to be the "acid test" to the sustainability of the fleet growth we have seen in 2013. Needless to say, all the planned deepwater developments will require a growing fleet of installation- and maintenance vessels with larger cranes and ROV's for depth in excess of 1500 meters.⁵²

4.15 Risks⁵³

ABG Sundal Collier offers this perspective on the risks in OSV business:

1. Business risks

⁵⁰ RS Platou ASA Global Support Vessel Monthly (January & February 2014) RS Platou Montly (February 2014) The North Sea OSV Market (January 2014) The Platou Report (2014)

⁵¹ Westshore Shipbrokers AS (2013) **Market Presentation**

⁵² Fearnley Offshore Supply The Offshore Report No.1&2 **Offshore Support and Specialized Vessels**

⁵³ ABG Sundal Collier (2013) Offshore Supply & Subsea, **Credit Research – Sector report**, (Oct. 29 2013)

Commodity price risks

We identify the oil price as the most important risk factor affecting growth in oil services. A sudden and unexpected long-term drop in the oil price would have a negative impact on demand for oil services and equipment. Activity within the supply segment, especially for AHTS vessels, is driven by rig activity. Rig activity depends on the oil companies' E&P spend, which in turn depends on the oil price.

Market supply

Besides the oil price and the implicit demand for supply services, supply growth is a key risk for the offshore supply names. The big increase in orders for newbuilds in recent years could potentially lead to massive supply growth over the next few years, thus putting further downward pressure on day rates and profitability within the supply industry.

Operational risk

The offshore supply companies have several vessels operating globally in challenging environments. This represents risk relating to damage and erosion to vessels, which could lead to significant cost and reduced utilization.

Construction risk

The companies currently have several vessels under construction at different ship yards. This represents risks related to prepayments that have been paid. Also, it's prudent to assume a delay in the delivery schedule, which in turn would impact the company's cash flow.

Counterparty risk

Many of the companies in the industry have contracts with major E&P counterparties like Statoil, Petrobras, and Total, mitigating the counterparty risk. The offshore supply companies are exposed to the volatility in the oil price through their counterparties.

2. Financial risk

Financial gearing

Several companies in the offshore industry tend to have high financial gearing due to large capex from extensive newbuild activity. The level of indebtedness depends predominantly on the pattern of vessel investments. For many companies in this industry, deleveraging is highly important in order to achieve a more prudent credit profile.

Cash flow position

The debt characteristics, i.e. the pattern of debt issuance, amortizations and redemption, will have a major impact on the total cash flow position in the capital intensive offshore supply industry. Capex related to new vessel programs will in some companies be partly funded by internally generated cash, which will have a negative effect on the total cash flows.

Currency risk

There is also risk related to currency exposure, as the local currency acts as the functional currency in several countries in which it operates, whereas the liabilities are predominantly denominated in NOK. The actual currency risk depends on the degree to which any currency mismatches are hedged.

4.16 Possible ups and downs by Swedbank First Securities⁵⁴

Possible positive surprises: Brazil sourcing more capacity, at higher rates - Greenland shows real impact in frontier operations - An increased activity in Canada and Alaska - Subsea segment increased appetite for large AHTS units, for ploughing and installation - Rigs being reactivated - Accidents with more widespread impact on demand than expected - High end vessels are preferred in emerging markets like West Africa.

Possible negative impact: Significant drop in oil price - Financing once again becomes cheap - Large scale accidents occur - An increased in local content, that induces less business and growth - Significant efficiency gains in operations and yards.

At the event “*Aksjåret 2014*”⁵⁵ Chief Strategist Peter Hermanrud at Swedbank First

⁵⁴ Swedbank First Securities Offshore Supply Vessels (June 2012)

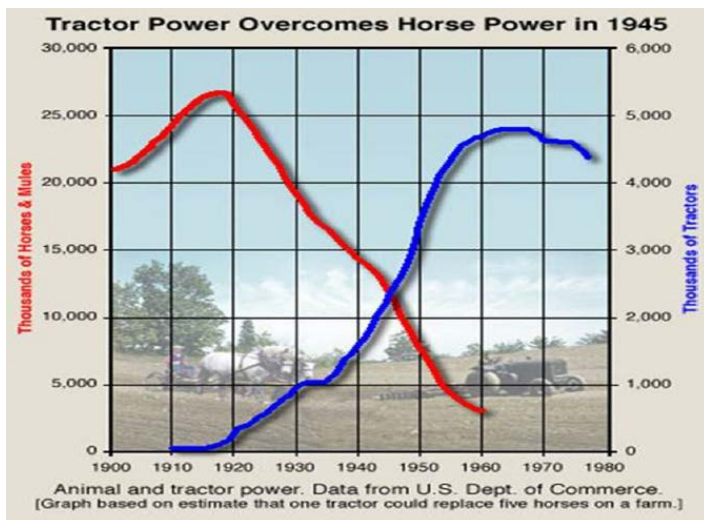
⁵⁵ Madsen, A. (2014) Gullalderen kan være over. **Offshore.no** (07 January 2014)
http://www.offshore.no/sak/60484_gullalderen_kan_vaere_over_#

Securities gave his view of the future. Shale gas will possibly sail up as the most important source of energy. Shale gas is less expensive than oil, and therefore a treat in the long term perspective. The oil companies are making a profit, but the cost of E&P is rising. The offshore market will stagnate. The rig rates will fall as the number of rigs will increase by 30 % over the next 3 years. He is expecting a drop in E&P during 2014. Up until now there has been a lack of capacity, and suddenly this has turned around to a lack of capital. The oil service profitability is disappointing, but the stock prices are increasing (rising) due to the markets expectations for 2015-16. The price of oil will average around 115 USD and end over 120 USD.

4.17 Energy in the future

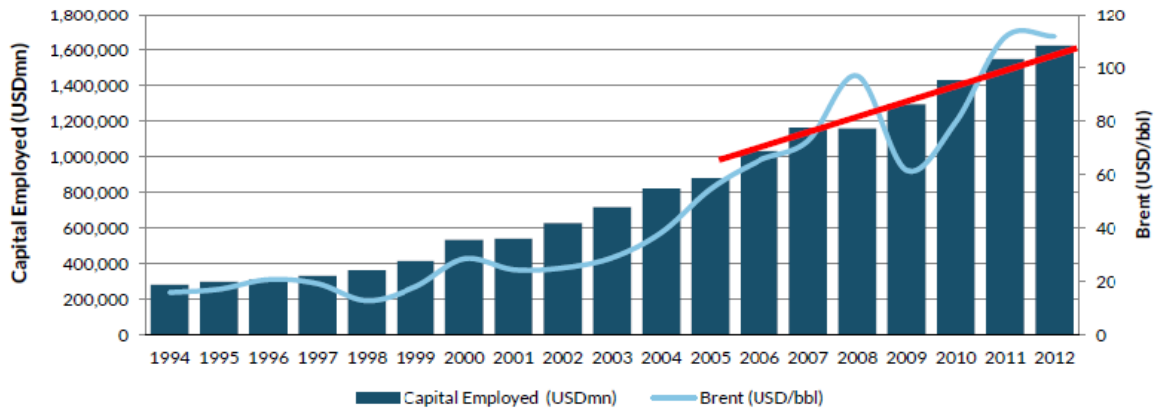
Skagen Vekst⁵⁶ believes that oil belongs to the past. Skagenfondene dumps stocks in oil, in favor of shares in renewables. For the oil dependent Norwegian economy, the risk is sky high, warns fund manager Ole Sjøberg at Skagenfondene. He claims that the oil companies are behaving like the producers of horse carriages in 1910, that didn't see the car taking over. Below is an excerpt from the Skagen Brief at Skandic Hotel Forus, Stavanger 26. februar 2014;

Solar and the next energy revolution – beginning to see the light



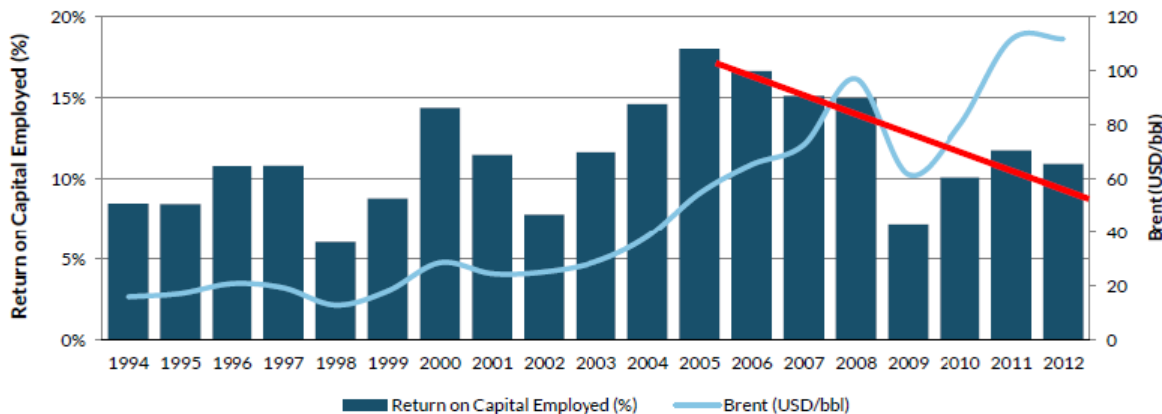
The oil companies are increasing E&P spending..

⁵⁶ Dagens Næringsliv **Tror olje hører fortiden til** (20. februar 2014) p. 8,9 (The article is translated from Norwegian)



Source: Company data, Kepler Cheuvreux

But the return is lagging...



Source: Company data, Kepler Cheuvreux

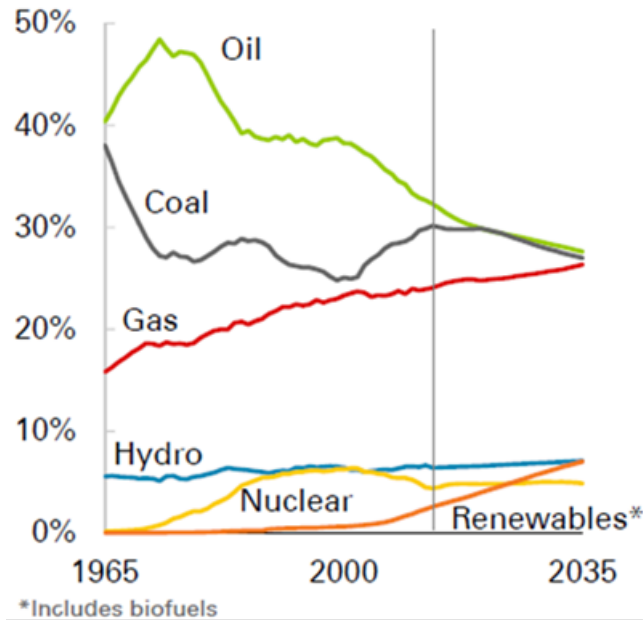
Solar power is competitive for 62 % of the world’s population, which equals 48 % of the world’s consumption of energy. It takes 6 gram poly-silicone to produce 1 watt solar energy. The demand for solar power was 35 GW in 2013, and is expected to rise to 75 GW in 2017. The cost of solar power will continue to drop/decline by 3-5 % per year. Batteries are improving by 5-8 % per year.

4.18 Macro and Energy

BP projects that global energy consumption will rise by 41% by 2035, with 95% of that growth coming from rapidly - growing emerging economies. That growth rate is slower than what we have seen in previous decades, largely as a result of increasing energy efficiency. Trends in global technology, investment and policy leave us confident that production will be able to keep pace. New energy forms such as shale gas, tight oil, and renewables will account for a significant share of the growth in global supply. Energy

efficiency promises to improve unabatedly, driven by globalization and competition.⁵⁷

Shares of primary energy



© BP 2014

India is likely to surpass China as the largest source of energy demand growth; renewable energy will no longer be a minor player, surpassing nuclear energy; and OECD countries will have started to “crack the code” of sustaining economic growth while reducing energy demand.

We are leaving a phase of very high energy consumption growth, driven by the industrialization and electrification of non-OECD economies, notably China. The 2002-2012 decade recorded the largest ever growth of energy consumption in volume terms over any ten year period, and this is unlikely to be surpassed in our timeframe.

There is expansion across all types of energy, with new energy forms playing an increasingly significant role. Renewables, shale gas, tight oil and other new fuel sources in aggregate grow at 6.2% p.a. and contribute 43% of the increment in energy production to 2035.

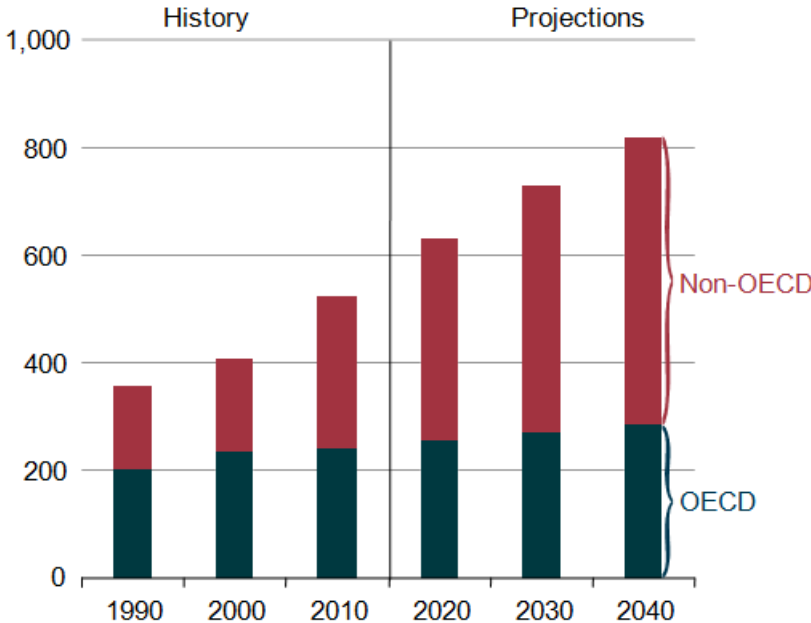
The *International Energy Outlook 2013* by the **US Energy Information Administration (EIA)**⁵⁸ projects that world energy consumption will grow by 56 percent between 2010

⁵⁷ BP, **Energy Outlook 2035** (January 2014)

⁵⁸ Energy Information Administration (EIA) 2013, **International Energy Outlook 2013** (July 2013)

and 2040. Total world energy use rises from 524 quadrillion British thermal units (Btu) in 2010 to 630 quadrillion Btu in 2020 and to 820 quadrillion Btu in 2040 (Figure 1). Much of the growth in energy consumption occurs in countries outside the Organization for Economic Cooperation and Development (OECD), known as non-OECD, where demand is driven by strong, long-term economic growth. Energy use in non-OECD countries increases by 90 percent; in OECD countries, the increase is 17 percent. The *IEO2013* Reference case does not incorporate prospective legislation or policies that might affect energy markets.

Figure 1. World energy consumption, 1990-2040 (quadrillion Btu)



The world’s real gross domestic product (GDP, expressed in purchasing power parity terms) rises by an average of 3.6 percent per year from 2010 to 2040. The growth rate slows over the period, peaking at 4.0 percent between 2015 and 2020 and declining to 3.5 percent between 2020 and 2040.

The fastest rates of growth are projected for the emerging, non-OECD regions, where combined GDP increases by 4.7 percent per year. In the OECD regions, GDP grows at a much slower rate of 2.1 percent per year over the projection, owing to more mature economies and slow or declining population growth trends. Other events have added further uncertainty to this year’s energy outlook. Political unrest in several North African and Middle Eastern nations has persisted, most notably in Syria, but elsewhere as well. A

number of the countries that experienced political transition as a result of the Arab Spring revolutions, including Egypt, Tunisia, and Yemen, have struggled to establish stability. In addition, the sanctions imposed on Iran as a result of its nuclear program have dampened the country’s growth outlook.

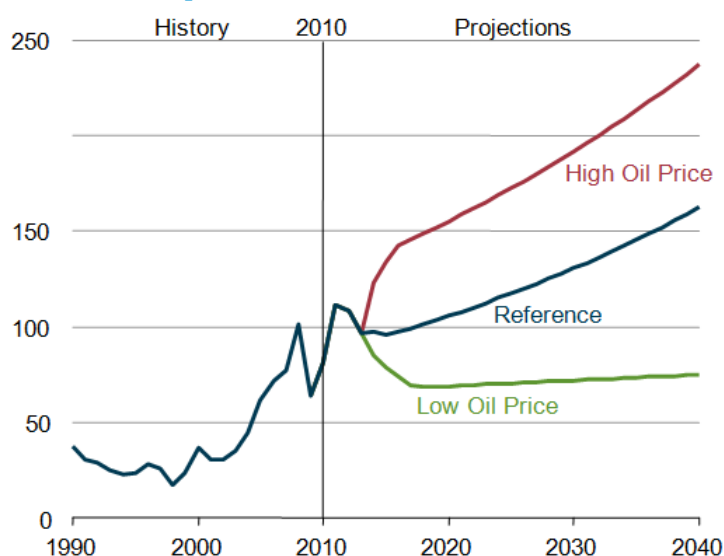
Economic growth is among the most important factors to be considered in projecting changes in world energy consumption.

IEO2013 also presents High and Low Oil Price cases as alternatives to the Reference case. The price cases were developed by adjusting four key factors: (1) the economics of non-OPEC petroleum liquids supply; (2) OPEC investment and production decisions; (3) the economics of other liquids supply; and (4) economic growth in non-OECD countries, a key driver of petroleum and other liquids demand.

Table 4. Brent crude oil prices in three cases, 2010-2040 (2011 dollars per barrel)

Year	Reference	Low Oil Price	High Oil Price
2010	81	81	81
2015	96	79	134
2020	106	69	155
2025	117	70	173
2030	130	72	192
2035	145	73	213
2040	163	75	237

Figure 33. World oil prices in three cases, 1990-2040 (2011 dollars per barrel, Brent crude oil)



The Organization for Economic Co-operation and Development (OECD)⁵⁹ Expects stronger growth ahead, but more risks. The global economy continues to expand at a moderate pace, with some acceleration of growth anticipated in 2014 and 2015. But global growth forecasts have been revised down significantly for this year and 2014, in large part due to weaker prospects in many emerging market economies (EMEs). Downside risks dominate and policy must address them.

Contrary to the situation in the early phases of the recovery when stimulus in EMEs had positive spillovers on growth in advanced economies, the global environment may now act as an amplifier and a transmission mechanism for negative shocks from EMEs.

In recent months, three events already have unsettled confidence and market stability, which accounts for part of the downgrading of our forecasts since the last Economic Outlook. First, the reaction to discussion in early summer regarding the tapering of asset purchases by the US Federal Reserve was surprisingly strong. Second, increased concerns about developments in some EMEs added to market tensions and sharp capital outflows. Third, the United States came close to a potentially catastrophic crisis associated with its legislative ceiling on federal government debt.

⁵⁹ Organization for Economic Co-operation and Development (OECD) **Economic Outlook No.94**, Volume 2013 Issue 2 (November 2013)

2013 2014 2015

Real GDP growth	2013	2014	2015
United States	1.7	2.9	3.4
Euro area	-0.4	1.0	1.6
Japan	1.8	1.5	1.0
Total OECD	1.2	2.3	2.7
China	7.7	8.2	7.5

As the recovery takes hold, policy makers need to resist the temptation to back off reforms, and instead take advantage of improved conditions to secure the recovery and move to a stronger trajectory for jobs and growth. More jobs would boost income and confidence, thus providing support for the reform process itself and upside, rather than downside, risks could materialize.

International Energy Agency IEA World Energy Outlook 2013⁶⁰ claims that Light tight oil shakes the next ten years, but leaves the longer term unstirred. The capacity of technologies to unlock new types of resources, such as light tight oil (LTO) and ultra-deepwater fields, and to improve recovery rates in existing fields is pushing up estimates of the amount of oil that remains to be produced. But this does not mean that the world is on the cusp of a new era of oil abundance. An oil price that rises steadily to \$128 per barrel (in year-2012 dollars) in 2035 supports the development of these new resources.

The rise of unconventional oil (including LTO) and natural gas liquids meets the growing gap between global oil demand, which rises by 14 mb/d to reach 101 mb/d in 2035, and production of conventional crude oil, which falls back slightly to 65 mb/d.

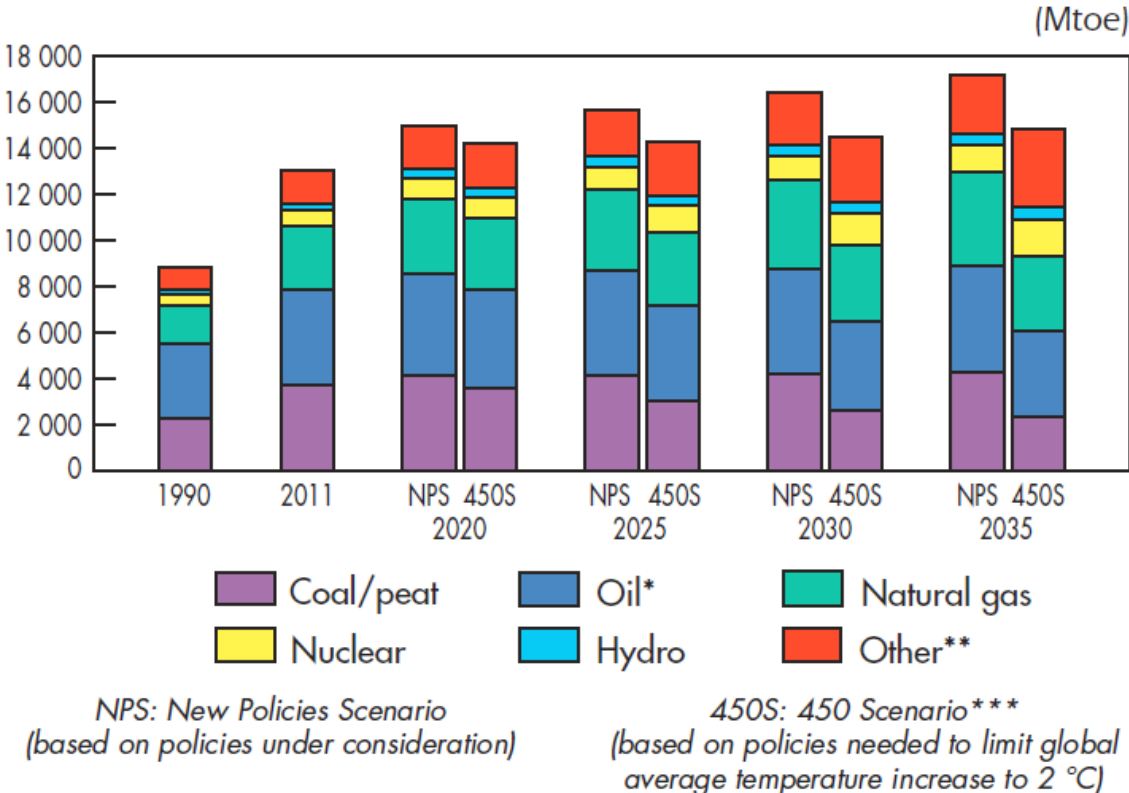
The need to compensate for declining output from existing oil fields is the major driver for upstream oil investment to 2035. Our analysis of more than 1 600 fields confirms that, once production has peaked, an average conventional field can expect to see annual declines in output of around 6% per year. While this figure varies according to the type of field, the implication is that conventional crude output from existing fields is set to fall by

⁶⁰ International Energy Agency (IEA), **World Energy Outlook 2013** – Executive Summary (2013) and International Energy Agency (IEA), **Key World Energy Statistics** (2013)

more than 40 mb/d by 2035. Among the other sources of oil, most unconventional plays are heavily dependent on continuous drilling to prevent rapid field-level declines. Of the 790 billion barrels of total production required to meet our projections for demand to 2035, more than half is needed just to offset declining production.

Demand for mobility and for petrochemicals keeps oil use on an upward trend to 2035, although the pace of growth slows. The decline in oil use in OECD countries accelerates. China overtakes the United States as the largest oil-consuming country and Middle East oil consumption overtakes that of the European Union, both around 2030. The shifting geography of demand is further underlined by India becoming the largest single source of global oil demand growth after 2020. Oil consumption is concentrated in just two sectors by 2035: **transport and petrochemicals**.

TPES Outlook by Fuel



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⁶¹ TPES – Total Primary Energy Supply

International Monetary Fund (IMF) ⁶² The global activity strengthened during the second half of 2013, as anticipated in the October 2013 World Economic Outlook (WEO). Activity is expected to improve further in 2014–15, largely on account of recovery in the advanced economies. Global growth is now projected to be slightly higher in 2014, at around 3.7 percent, rising to 3.9 percent in 2015, a broadly unchanged outlook from the October 2013 WEO. But downward revisions to growth forecasts in some economies highlight continued fragilities, and downside risks remain. In advanced economies, output gaps generally remain large and, given the risks, the monetary policy stance should stay accommodative while fiscal consolidation continues. In many emerging market and developing economies, stronger external demand from advanced economies will lift growth, although domestic weaknesses remain a concern. Some economies may have room for monetary policy support. In many others, output is close to potential, suggesting that growth declines partly reflect structural factors or a cyclical cooling and that the main policy approach for raising growth must be to push ahead with structural reform. In some economies, there is a need to manage vulnerabilities associated with weakening credit quality and larger capital outflows.

Risks to activity associated with very low inflation in **advanced economies**, especially the euro area, have come to the fore. With inflation likely to remain below target for some time, longer-term inflation expectations might drift down. This raises the risks of lower-than-expected inflation, which increases real debt burdens, and of premature real interest rate increases, as monetary policy is constrained in lowering nominal interest rates. It also raises the likelihood of deflation in the event of adverse shocks to activity.

In **emerging market economies**, increased financial market and capital flow volatility remain a concern given that the Fed will start tapering in early 2014. Portfolio shifts and some capital outflows are likely with Fed tapering. When combined with domestic weaknesses, the result could be sharper capital outflows and exchange rate adjustments.

In **advanced economies**, it will be critical to avoid a premature withdrawal of monetary policy accommodation, including in the United States, as output gaps are still large while inflation is low and fiscal consolidation continues. Stronger growth is needed to complete balance sheet

1.1.1 ⁶² International Monetary Fund (IMF), **World Economic Outlook** (October 2013) p. xv, 12, 17, 42, 153 & 180 and International Monetary Fund (IMF), **World Economic Outlook - Update** (January 21, 2014)

repair after the crisis and to lower related legacy risks.

European Central Bank (ECB) will need to consider additional measures, such as longer-term liquidity provision, including targeted lending, would strengthen demand and reduce financial market fragmentation. Repairing bank balance sheets through the Balance Sheet Assessment exercise and recapitalizing weak banks and completing the Banking Union.

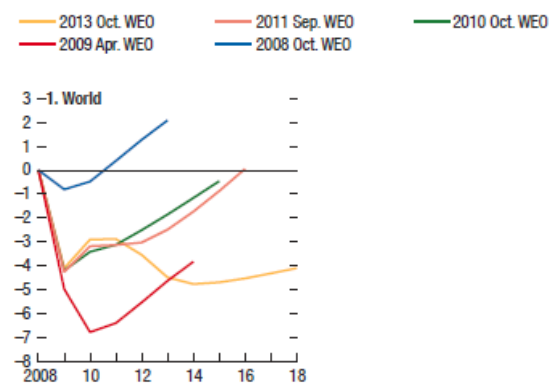
In **emerging market and developing economies**, recent developments highlight the need to manage the risks of potential capital flow reversals. Economies with domestic weaknesses and partly related external current account deficits appear particularly exposed. Exchange rates should be allowed to depreciate in response to deteriorating external funding conditions.

Policymakers might need to consider a combination of tightening macroeconomic policies and stronger regulatory and supervisory policy efforts. In China, the recent rebound highlights that investment remains the key driver in growth dynamics. More progress is required on rebalancing domestic demand from investment to consumption to effectively contain the risks to growth and financial stability from overinvestment.

Figure 1.13. Real GDP Projections: Past and Current

An assessment of past WEO forecasts reveals that those made in September 2008, just before the Lehman failure, have proved too optimistic for all economies; the forecasts that came soon afterward, in April 2009, were too pessimistic for the emerging market economies in Asia, Latin America, and sub-Saharan Africa. During October 2010–October 2011, forecasts settled broadly around their current profile, with two notable exceptions. First, the euro area fell into a crisis, which started with Greece in spring 2010 and broadened in 2011. Second, after forecast upgrades during 2010, emerging market economies experienced serial growth disappointments.

Real GDP, Percent of Precrisis Trend (2008 = 100)

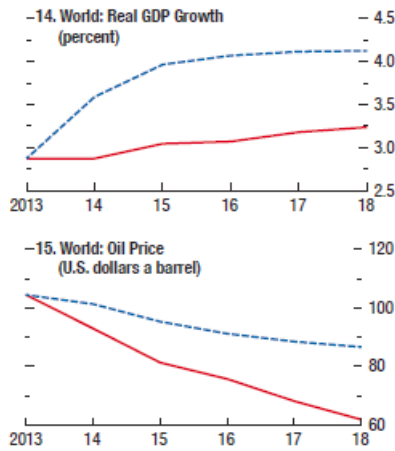


Source: IMF staff estimates.

Note: Precrisis trend is defined as the geometric average of real GDP level growth between 1996 and 2006.

Figure 1.17. Plausible Downside Scenario

This scenario uses The Euro Area Model (EUROMOD) to consider a plausible downside scenario.



Source: IMF staff estimates

Table B27. Emerging Market and Developing Economies, Medium-Term Baseline Scenario: Selected Economic Indicators

(Annual percent change)

	Averages				Projections			
	1995–2002	2003–10	2011	2012	2013	2014	2011–2014	2015–2018
Emerging Market and Developing Economies								
Real GDP	4.3	6.8	6.2	4.9	4.5	5.1	5.2	5.4
Export Volume ¹	7.9	8.0	6.8	4.2	3.5	5.8	5.1	6.5
Terms of Trade ¹	0.6	1.8	3.2	0.5	-0.5	-0.4	0.7	-0.5
Import Volume ¹	6.8	9.7	8.8	5.5	5.0	5.9	6.3	6.6

Table A1. Summary of World Output¹

(Annual percent change)

	Average										Projections		
	1995–2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2018	
World	3.6	4.7	5.2	5.3	2.7	-0.4	5.2	3.9	3.2	2.9	3.6	4.1	
Advanced Economies	2.8	2.8	3.0	2.7	0.1	-3.4	3.0	1.7	1.5	1.2	2.0	2.5	
United States	3.4	3.4	2.7	1.8	-0.3	-2.8	2.5	1.8	2.8	1.6	2.6	3.1	
Euro Area	2.2	1.7	3.2	3.0	0.4	-4.4	2.0	1.5	-0.6	-0.4	1.0	1.6	
Japan	1.1	1.3	1.7	2.2	-1.0	-5.5	4.7	-0.6	2.0	2.0	1.2	1.1	
Other Advanced Economies ²	3.7	3.8	3.9	4.2	1.0	-2.3	4.5	2.6	1.4	2.0	2.7	3.0	
Emerging Market and Developing Economies	4.9	7.3	8.3	8.7	5.8	3.1	7.5	6.2	4.9	4.5	5.1	5.5	

¹Real GDP

Table A16. Summary of World Medium-Term Baseline Scenario

	Averages				Projections			
	1995–2002	2003–10	2011	2012	2013	2014	Averages	
					Annual Percent Change			
	1995–2002	2003–10	2011	2012	2013	2014	2011–14	2015–18
World Real GDP	3.4	3.9	3.9	3.2	2.9	3.6	3.4	4.1
Advanced Economies	2.9	1.7	1.7	1.5	1.2	2.0	1.6	2.5
Emerging Market and Developing Economies	4.3	6.8	6.2	4.9	4.5	5.1	5.2	5.4

Norges Bank⁶³ – The Norwegian Central Bank

⁶³ Norges Bank, **Pengepolitisk Rapport** 1/2014 p. 7-8 and 50 (March, 2014) The Norwegian Central Bank is publishing the Monetary report in Norwegian. The translation is done by the author.

The industrialized nations are continuing the recovery. The Eurozone is picking up the pace but unemployment remains high. Private consumption and housing prices are increasing in the US. Labor market is still weak. The Great Britain and Sweden continues the recovery. The growth in emerging markets has decreased. The prognosis for the total international growth remains unchanged from the last report. The prognosis for the Brent Blend has dropped from the previous Pengepolitisk rapport (Monetary report). The prognosis in report 4/2013 was USD 109 in 2014. For 2015-2016 the prognosis was USD 100. The prognosis is based on forward and futures contracts.

TABELL 4 ANSLAG PÅ KONSUMPRISER I UTLANDET

Endring i anslag fra PPR 4/13 i parentes	Prosentvis vekst fra foregående år			
	2014	2015	2016	2017
USA	1½ (-¼)	2 (0)	2	2¼
Euroområdet	1 (-¼)	1¼ (0)	1½	1¾
Storbritannia	2 (-¼)	2 (0)	2	2
Sverige	½ (-¾)	2¼ (0)	2½	2¼
Kina	3 (-¼)	3½ (0)	3¼	3
Fremvoksende økonomier ¹	6 (¼)	5½ (0)	5¼	5¼
Norges handelspartnere ²	1¾ (-¼)	2¼ (0)	2¼	2¼
Oljepris Brent Blend. USD per fat ³	106	101	98	95

¹ Fremvoksende økonomier i handelspartneraggregatet utenom Kina: Brasil, India, Indonesia, Russland, Tyrkia, Polen og Thailand. BNP-vekter

² Importvekter, 25 viktige handelspartnere

³ Gjennomsnittlig terminpris for siste fem handledager. For 2014 er det gjennomsnittet av spotprisene så langt i år og terminprisene for resten av året

Kilder: IMF, Thomson Reuters og Norges Bank

PPR 1/2014

TABELL 3 ANSLAG PÅ BNP-VEKST I UTLANDET

Endring i anslag fra PPR 4/13 i parentes	Andel av verdens BNP ¹ (prosent)	Prosentvis vekst fra foregående år			
		2014	2015	2016	2017
USA	23	2¾ (0)	3¼ (0)	3¼	3¼
Euroområdet	20	1¼ (¼)	1½ (0)	1½	1¾
Storbritannia	4	2¾ (¼)	2½ (0)	2½	2½
Sverige	0,7	2¾ (¼)	3 (½)	2½	2½
Kina	9	7¼ (0)	7 (0)	7	6¾
Fremvoksende økonomier ²	12	3¼ (-½)	4 (-½)	4½	4½
Norges handelspartnere ³	78	2¼ (0)	2½ (0)	2½	2¾
Verden (PPP) ⁴	100	3¾ (0)	4 (0)	4	4
Verden (markedsкурser) ⁴	100	3¼ (0)	3½ (0)	3½	3½

1 Landenes andel av global produksjon målt i felles valuta (markedsкурser). Gjennomsnitt 2009–2011

2 Fremvoksende økonomier i handelspartneraggregatet utenom Kina: Brasil, India, Indonesia, Russland, Tyrkia, Polen og Thailand. BNP-vekter

3 Eksportvekter, 25 viktige handelspartnere

4 BNP-vekter. Norges Banks anslag for 25 handelspartnere, øvrige anslag fra IMF

Kilder: IMF, Thomson Reuters og Norges Bank

4.19 Conclusion

The brokers, information companies, agencies and independent organizations are drawing a mixed picture for the OSV business.

The economic recovery appears to be bubbling along, with individual country specific differences.

The demand for hydrocarbons will increase. The price in real terms will increase in the long run, but seem to fall in the short picture over the next few years. This price will affect the E&P. The deep water trend will demand higher specified vessels. The arctic frontiers are technologically challenging and will require relatively high oil prices to be profitable. A short season, demanding weather and ice sums up the challenges. Siem Offshore is well positioned for a high end vessels demand. Offshore wind parks offer new possibilities for the OSV industry.

The demand for vessels will increase, but the balance between the demand and supply is uncertain with signs of oversupply, at least in the low specification end of the OSV segment.

To quantify this into the valuation Siem Offshore is expected to achieve a level of profitability where the WACC = ROIC, but no excess return beyond that.

5 Financial Statement – Reformulated balance sheet and P&L

5.1 Income statement

The income statement is regrouped according to the lectures in valuation⁶⁴ at UiS and Damodaran⁶⁵ with a focus on measuring cash flows. In addition it is influenced by the remarks below.

5.2 Extraordinary items and Recurring vs. Non-recurring bookings

Gjesdal⁶⁶ emphasize the distinction between operating and non-operating items. He argues that deferred tax is non-interest bearing and actually not debt at all. There is a trend towards cost items more often being posted as extraordinary, than revenue items. In valuation it is important to separate temporary or extraordinary items, from more permanent elements. *Earnings power* is referring to normal earnings. Gain on sales should mainly be classified as extraordinary.

Knivsflaa⁶⁷ states that a normal result form the basis for pro forma income predictions. Gain or loss from sales of assets, are usually non-recurring, and extraordinary. Knivsflaa is using the term “unusual gain or loss” when describing postings regarding sale of assets as non-recurring, and even more so if the bookings are seldom and especially if the amounts are *relatively deviating*.

Hedging of currency – loss and gain – is included because the revenue itself goes into the profit and loss statement.

One can question whether gain and loss of assets at SIOFF is recurring or nonrecurring. Finally it is the judgment of the analyst’s that determines whether an item is normal or abnormal. *Several bookings are in reality a mix of recurring and nonrecurring items*. An instable trend makes predictions difficult.

The Damodaran⁶⁸ view is that gain or loss that seems to recur at regular intervals may really be ordinary. If the volatility in the size of the bookings is large the items may be normalized

1.1.2 ⁶⁴ MØA370 Valuation Fall term 2013 Instructor: Bernt Arne Ødegaard at UiS

http://dl.dropboxusercontent.com/u/8078351/teach/moa370_2013/index.html

⁶⁵ Damodaran, A. (2006) **Damodaran on Valuation**. 2nd ed. New Jersey, John Wiley & Sons, Inc. p. 79 -116

⁶⁶ Gjesdal, F. (2007) Regnskapsanalyse: Omgruppering av regnskapet for eierkontroll og verdsettelse. **Praktisk Økonomi & Finans** (2/2007) p. 3-16

⁶⁷ Rekneskapsanalyse og verddivurdering BUS 440 Professor Kjell Henry Knivsflå at NHH Lecture 04-42 to 04-47 <http://course.nhh.no/master/BUS440/>

⁶⁸ Damodaran, A. (2012) **Investment Valuation**. 3rd ed. New Jersey, John Wiley & Sons, Inc. p. 43 and 243

over time. If currency translations are recurring every year with different signs it may be ignored for the purpose of measuring cash flows.

Siem Offshore reports both gain and loss from sale of assets in the income statement, not only the gain. It seems to be recurring every year and these bookings will therefore be included in the operating income in this thesis. Even though the bookings may be noisy on an individual year basis, it could distort the picture to remove the items. Normalization or aggregation could be justified. Aggregation will be used in the growth section.

5.3 Balance sheet

The reformulated balance sheet is based on the basic principle of separating operating assets and liabilities from financial assets. The operating assets and liabilities are used in the business towards customers. The financial assets and liabilities are used to finance the business⁶⁹.

5.4 Accounting Measures of Risk

5.4.1 Financial ratios

The financial ratios below are used to measure profitability, risk and leverage. The specific ratios, and variations of ratios, will also be used to estimate two synthetic ratings. One is based on Damodaran's Interest coverage ratio, and the other on Knivsfloor's rating based on 4 ratios. As Siem Offshore is not rated by any of the big, recognized rating agencies, these synthetic ratings will be used to estimate the default risk in the company, and the accompanying default spread. This spread will be added on to the riskless interest rate to find the cost of debt.

Current ratio^{70 71} measures short term liquidity risk;

$$\text{Current ratio} = \text{Current assets} / \text{Current liabilities}$$

⁶⁹ Penman, S.H. (2013) **Financial Statement Analysis and Security Valuation**. 5thed. New York, McGraw-Hill Companies, Inc.p.241,295

⁷⁰ Damodaran, A. (2012) **Investment Valuation**. 3rded. New Jersey, John Wiley & Sons, Inc. p.44,48-50, 52, 218,219, 230

⁷¹ Penman, S.H., (2013) **Financial Statement Analysis and Security Valuation**. 5thed. New York, McGraw-Hill Companies, Inc. p. 39,318,685,686,716

This ratio is traditionally expected to be more than 2, but Damodaran points out the trade-off between minimizing liquidity risk and tying up an increasing amount of cash in net working capital. (Net working capital=Current assets – Current liabilities). Knivsflaa⁷² is comparing the ratios to the industry for calibration. The current ratio on Oslo Stock Exchange has been 1,527 in the period 1999-2012. Sector ratios; Industry 1.692, Offshore 1.73, Shipping 1.508, Siem Offshore is classified by CIGS Oil & Gas, Equipment & Services and has had a current ratio between 1,235 and 1,989 the last 5 years.⁷³

Interest coverage ratio is a solvency flow measure. It measures the capacity to meet interest payments in the long run;

$$\text{Interest coverage ratio} = \text{EBIT} / \text{Interest expenses}$$

Penman uses net interest expense in the denominator. Damodaran is using pre-tax in both the numerator and the denominator. Koller et al. are using EBITA, EBITDA or EBITDAR (includes rental expenses) in the numerator⁷⁴.

Knivsflå is using an after tax ratio, but he points out that *if* the tax rate on income is about the same as the one for financials, the ratio will be about the same post-tax, as well as pre-tax. This is not the case for Siem Offshore. The tax rate for SIOFF on income is estimated to 14 %, and the tax on financials is reported by SIOFF to be 28 % (27 % for 2014 onwards). The latter reported tax rate is taken for granted as it is in line with the external information about tax deductions⁷⁵.

Knivsflaa is using a slightly modified version of the above formula. The pre-tax version calls for EBIT + Financial income in the numerator and Financial expenses in the denominator. The post-tax version corrects Altinn⁷⁶ recommends a ratio above 3. The OSE average for the period 1999-2012 is 1,908. The ratio for the industrial sector is 1,800 and 1,408 for offshore and 2,144 for shipping. Siem Offshore ranges from 0,711-2,066 using Damodaran for low cap

⁷² Rekneskapsanalyse og verdivurdering BUS 440 Professor Kjell Henry Knivsflå at NHH <http://course.nhh.no/master/BUS440/> Lecture 8 p.30-75 lecture 11 p. 23

⁷³ Rekneskapsanalyse og verdivurdering BUS 440 Professor Kjell Henry Knivsflå at NHH <http://course.nhh.no/master/BUS440/> Lecture 8 p. 30,39,58 and 61

⁷⁴ Koller, T., Goedhart, M. & Wessels, D. (2010) **Valuation, Measuring and Managing the Value of Companies**. 5th ed. New Jersey, John Wiley & Sons, Inc. p. 178-179

⁷⁵ KPMG Law (2013) **Tax Facts Norway 2013** A survey of the Norwegian Tax System p.29 and Lov om skatt av formue og inntekt (skatteloven) http://lovdata.no/dokument/NL/lov/1999-03-26-14/*#*

⁷⁶ Altinn Beregning av økonomiske nøkkeltall <http://webcache.googleusercontent.com/search?q=cache:QzlrL6G0eZwJ:https://www.altinn.no/Global/Starte%2520og%2520drive%2520bedrift/Dokumentaler/Nokkeltall.doc+&cd=1&hl=no&ct=clnk&gl=no>

firms (0,711-2,908 disregarding one outlier), and from 0,904 – 6,681 using Knivsflaa (0,904 – 2,066 leaving out the same outlier). Siem Offshore is reporting a lower tax rate on income than for financials. This fact will improve the ratio. The tax rates are discussed in the tax-section below.

The equity to total assets ratio measures the long term solvency and default risk. The equity ratio may be looked at as a buffer to handle/resist/survive/withstand future losses. Indirectly it also shows the ability to pay back principal on outstanding debt. Knivsflaa seems to use the book values;

$$\text{Equity ratio} = \text{Total equity} / \text{Total assets}$$

Penman and Damodaran looks at the opposite ratio, the debt ratio to total assets. Damodaran makes an argument for market values, and that the book values are not necessarily the conservative choice. Siem Offshore can serve as an example, as the market value of equity, are lower than the book value. He also makes the case that even if the market value of the debt-ratio are lower than the book value ratios – the cost of capital using book values will be lower than those calculated on the basis of the market value. In this case the book value is a less conservative estimate than the market value. Altinn suggest 30 % as a norm, but adds that it should be as high as possible. The average equity ratio on OSE in the period 1999-2012 is 0,403. The industrial sector average is 0,431. For Offshore the ratio is 0,424 and 0,379 for shipping. The equity ratio for Siem Offshore using book values range from 0,414 – 0,547 in the same period.

Return on net operating assets (RNOA). This is the fourth and last ratio in the Knivsflaa table. RNOA is according to Knivsflaa also referred to as Return on Invested Capital (ROIC). Penman⁷⁷ defines RNOA to Operating income divided by average Net Operating Assets (NOA);

$$\text{Return on net operating assets (RNOA}_t) = \text{OI}_t / \frac{1}{2} (\text{NOA}_t + \text{NOA}_{t-1})$$

Penman also defines RNOA as operating income *after* tax relative to net operating asset. (This is some of the challenge with financial statements – the lack of standardization or variability

⁷⁷ Penman, S.H., (2013) **Financial Statement Analysis and Security Valuation**. 5thed. New Yord, McGraw-Hill Companies, Inc. p. 39, 241,318,686,716

in terminology – even in the same book) Operating income is defined as Gross margin less Operating expenses by Penman. EBIT is the accounting measure of operating income. It is also commonly referred to as operating profit or recurring profit. Siem Offshore uses operating profit as EBIT. Net operating asset derives from deducting operating liabilities from operating assets.

Koller et al⁷⁸., who has devoted a whole chapter to this specific metric, shows that ROICs differ by industry, but not by company size. McKinsey have studied the ROIC by industry for the last 45 years. In the low end we find commodities and regulated industries with a median ROIC of 5.8 %. In the other end of the scale, Pharmaceutical and Biotechnology, the ROIC is soaring at 23.5 %. The study also shows that ROIC tend to persist for both high and low ROIC companies. The longer a company can sustain a ROIC greater than its cost of capital, the more value it will create. The traditional definition is NOPLAT divided by invested capital. Koller et al. are now using an after tax ROIC;

$$ROIC = (1 - Tax Rate) * ((Price per Unit - Cost per Unit) / Invested Capital per Unit).$$

The Damodaran⁷⁹ version is; $ROIC = EBIT(1 - tax) / (BV \text{ of debt} + BV \text{ of equity} - Cash)$. The denominator reflects the book value of *invested capital*. In a paper about return measurements, Damodaran⁸⁰ explains a shift in corporate finance and valuation towards “excess return” as a key figure in estimating the value of a business. Earlier focus on growth as a foundation for value creation has been modified to include excess return. Growth without excess return creates no value. Excess return equals ROIC - Cost of Capital. In this paper the numerator is at time t, and the denominator is at time t-1. He also offers a variant of subtracting goodwill from the denominator for those cases where all the goodwill is associated with growth assets. This may increase the ROIC markedly. The paper is also referring to the Mc Kinsey study;

ROIC and Revenue Growth at US Firms: The Mc Kinsey Study

⁷⁸ Koller, T., Goedhart, M. & Wessels, D. (2010) **Valuation, Measuring and Managing the Value of Companies. McKinsey & Company** 5th ed. New Jersey, John Wiley & Sons, Inc. p. 58,68,72

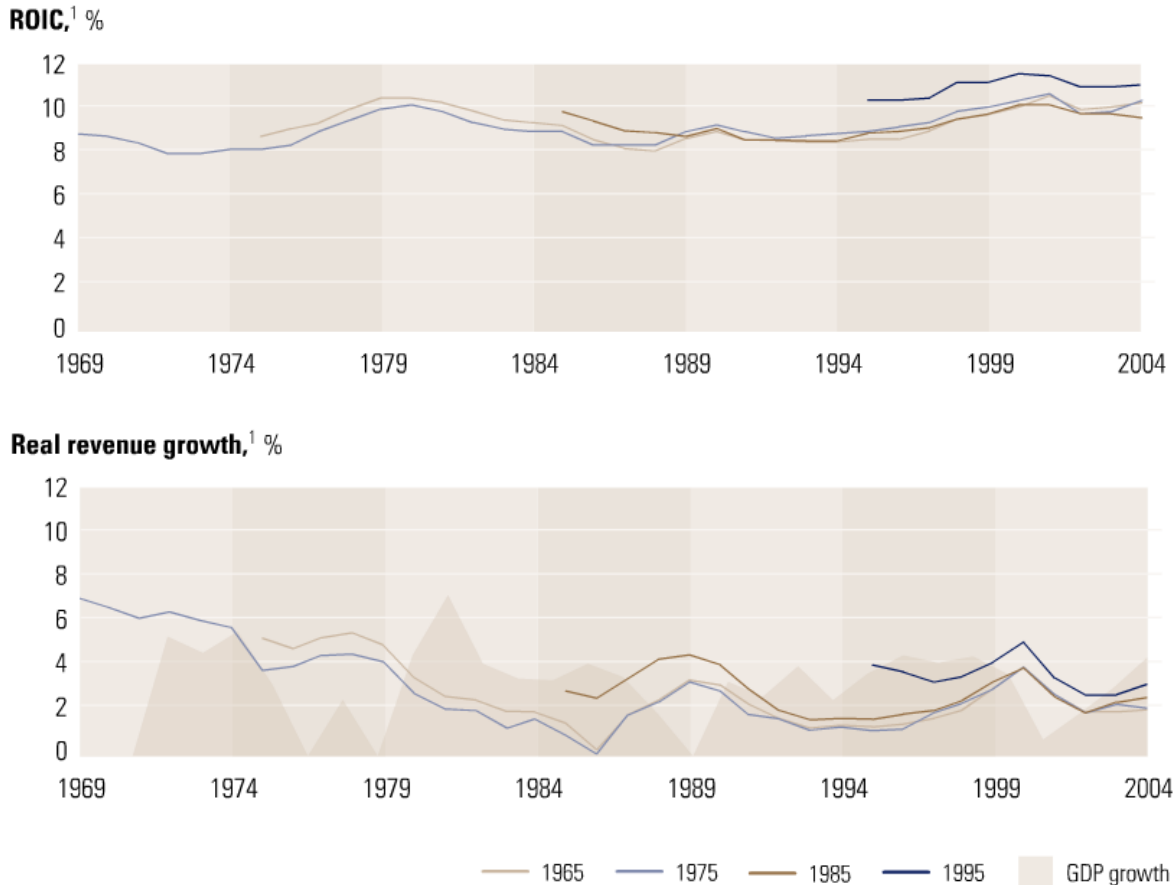
⁷⁹ Damodaran, A. (2012) **Investment Valuation**. 3rd ed. New Jersey, John Wiley & Sons, Inc. p. 45

⁸⁰ Damodaran, A. (2007) Return on Capital (ROC), Return on Invested Capital (ROIC) and Return on Equity (ROE): Measurement and Implications. **Stern School of Business** p.1-11, 37,44,45,59

A more sustainable measure

Median for top 500 publicly listed US companies by revenues in 1965, 1975, 1985, and 1995

Returns on invested capital (ROIC) is sustainable over time, but growth inevitably declines.



¹ROIC shown is 7-year simple average, including goodwill; growth shown is 7-year compound annual growth rate for revenues adjusted for inflation.

The McKinsey study suggests that revenue growth tends to revert rapidly to average levels, but returns on invested capital can remain high for extended periods. To avoid double counting of the tax benefit on debt, the marginal tax rate should be used when computing tax on operating income. (The double counting will occur if the tax benefit is used to increase the return on equity, and then again in the cost of capital calculation.)

The average ratio on OSE from 1999-2012 has been 0,047. For the industrial sector the average was 0,050. The ratio for Offshore was 0,040 and 0,051 for the shipping sector.

Penman⁸¹ reports typical level of RNOA in the transportation equipment business to be 11.2

⁸¹ Penman, S.H. (2013) **Financial Statement Analysis and Security Valuation**. 5thed. New York, McGraw-Hill Companies, Inc. p. 375

% and shipping 9,1 %. The ratio for Siem Offshore using Knivsflaa for the last 5 years, have ranged in the interval 0,013-0,089. Looking 3 years back, the range is 0,027-0,042.

5.5 Credit rating

The resultant credit rating will be discussed and displayed in the cost of capital section.

5.6 Depreciation⁸²

Most OSV operators depreciate their assets over a period towards a presumed date of sale. This is typically 15-20 years. The firms estimate a sales price 15 years in the future. This (very) often presupposes a very moderate impairment in asset value in the period. Lower depreciation leads to a markedly higher profit than if a “standard” linear depreciation of 30 years were used. The profit in the OSV firms would typically be 30-40 % lower if linear depreciation over 30 years were implemented. The above procedure is in line with the recommendations from the Financial Supervisory Authority of Norway (Finanstilsynet). On the contrary, The Norwegian Society of Financial Analysts (NFF) recommends linear depreciation over an expected life time of the asset.

Deep Sea Supply (DESSC) and Siem Offshore (SIOFF) depreciate their vessels over the full life time of the assets.

The Norwegian Society of Financial Analysts (NFF) finds the above principles counterproductive and asks for them to be amended. They object due to the large fluctuations in depreciation. Analysts will not get a good estimate of average wear and tear. The balance will be more correct but this is allegedly less important for investors according to NFF.

SIOFF and DESSC are therefore apparently underperforming on P&L relative to peer group. This will influence multiples.

5.7 Tax rate and tax regime

The effective tax rate is the most widely reported rate in financial statements. Tax credits are seldom perpetual, and the deferred taxes have to be paid eventually. The marginal tax is the tax paid on the last dollar of income - the marginal income. This rate depends on the tax code and country of operation. This paper intended to estimate a marginal tax rate for Siem

⁸² Norske Finansanalytikeres Forening (NFF) The Norwegian Society of Financial Analysts. NFFs Komite for Finansiell Informasjon, **Uttalelse 2013 1. Avskrivninger i Supply** (12 Sept 2013)

Offshore for use in measuring and calculations. It has proven rather difficult to gain the required information, necessary⁸³ to estimate the marginal tax rate.

Siem Offshore⁸⁴ is subject to taxes in several jurisdictions. To calculate the tax provision requires significant judgment.

The company has estimated a tax rate of 0 % for companies subject to the Norwegian Tonnage Tax Regime⁸⁵. Financial income within the regime is taxable at a rate of 28%. Interest cost is tax deductible at the same rate. The rate is lowered to 27 % from 2014. The tonnage rates⁸⁶, the favorable tax deductions for interest expenses in addition to the net wages arrangements for seamen in Norway is the explanation for the 0 tax estimate for the part of the fleet being subject to the Norwegian tonnage regime.

For companies not included in the tonnage tax regime Siem Offshore applies at tax rate of 28 %. As it is written in note 1.19 it appears that the 28 % rate applies to the rest of the operation, all over the world.

The corporate tax rate in Brazil is 34 % according to note 11 in the annual report. I have been led to believe that I would get some guidance from SIOFF on the tax matter, but recently in an email⁸⁷ of 16 May 2014 SIOFF unexpectedly replied that they were unwilling, or unable to elaborate on the matter of taxation. SIOFF is pointing to the fact that they are noted on OSE and therefore are not able to give out any information beyond what is stated in the Annual Reports, or other public reports. That is of course not entirely true as I have seen that some brokerage firms have information about SIOFF that exceeds what is stated in the annual reports. SIOFF of course has to oblige with/to the legislation regarding listed firms on Oslo Stock Exchange.

Siem Offshore is currently under investigation by the Norwegian financial crimes unit, Økokrim, for alleged tax evasion, or possible tax fraud. This may be one reason for the cautiousness when my questions came too close to the tax manager of the firm. Several other OSV operators report revenue by geographical sectors. This would be very helpful in the effort to estimate a proper tax rate. In the absence of exact information about the marginal taxes affecting SIOFF I have to turn my attention to other sources.

⁸³ More on effective tax rates http://pages.stern.nyu.edu/~adamodar/New_Home_Page/valquestions/taxrate.htm

⁸⁴ Siem Offshore Annual report 2012 note 11 and note 1.19

⁸⁵ Siem Offshore ASA **Annual Report** 2012, p.36

⁸⁶ KPMG Law (2013) **Tax Facts Norway 2013** A survey of the Norwegian Tax System p.30

⁸⁷ E-mail of 16 May 2014 See Appendix Fin statement

KPMG⁸⁸ has worked out a table for corporate tax rates by country. Brazil had a rate of 34 % including 2013, and 25 % from 2014 onwards. In Angola, the rate should decrease from 35 % to 30 % from 2014, but it has not yet been published. Cayman Island is steady at 0 %. Nigeria uses 30 %. The United States is reporting a 40 % corporate tax rate. Norway is down to 27 % from 2014 onwards. The previous level was 28 %. Ghana has a general corporate tax rate of 25 %, but there are specific rates applicable to certain sectors.

Damodaran has compiled data on effective tax rates by sector and geographical region. The compilation is displayed in the table below. Effective tax rates are not a proper proxy for marginal taxes for reasons mentioned in the introduction to this subchapter. (In many real life cases though, the analyst has to settle for effective taxes)

Average effective tax rate by industry	Date updated:	05.jan.14		Aswath Damodaran	
				http://www.damodaran.com	
	Industry name	Number of firms	Average across all companies	Average across only money-making companies	Aggregate effective tax rate
US	Oilfield Svcs/Equip.	163	10,73 %	28,42 %	29,24 %
Emerg. Mrkt	Oilfield Svcs/Equip.	251	14,05 %	21,57 %	25,47 %
Europe	Oilfield Svcs/Equip.	87	14,90 %	26,78 %	23,90 %
Global	Oilfield Svcs/Equip.	593	13,98 %	27,22 %	28,40 %

In the absence of firm specific information about SIOFF I will attempt to elaborate on the overall tax-picture for an OSV operator in Norway. The tax law §8-16 defines the tonnage regime⁸⁹. § 8-1 Confines and describes the taxable income for shipping companies included in the tonnage tax regime. The tax exemption includes operating profits and gains on sales. Financial income will be taxed at the ordinary tax rate of 28 %. This income can be distributed as dividend without any further taxation for the tonnage taxed company. The qualifying company can only engage in activities closely associated with the marine transport business⁹⁰. Unlike some EU regimes, the Norwegian tonnage tax is open to a range of offshore vessels. This includes platforms supply vessels (PSV), anchor handling tug supply vessels (AHTS), seismic vessels, (well) intervention vessels, inspection, maintenance and repair vessel, crane vessels and cable and pipe-laying vessel⁹¹.

⁸⁸ Tax rates by countries by KPMG <http://www.kpmg.com/global/en/services/tax/tax-tools-and-resources/pages/corporate-tax-rates-table.aspx>

⁸⁹ Lov om skatt av formue og inntekt (skatteloven) http://lovdata.no/dokument/NL/lov/1999-03-26-14/*#*

⁹⁰ KPMG Law (2013) **Tax Facts Norway 2013** A survey of the Norwegian Tax System p. 29,30

⁹¹ Norwegian tonnage tax – an attractive regime

<http://www.internationallawoffice.com/newsletters/detail.aspx?g=7b4091a3-ccba-40a0-8827-3a556dc83ceb> (24 October 2012)

This means that the entire SIOFF fleet and the associated administration is eligible for tax exemption based on Norwegian jurisdiction. The actual tax will depend on the jurisdiction in the region of the operation of each individual vessel. Glenn Pettersen at SIOFF claims that most of their fleet is subject to the Norwegian tonnage regime⁹². He is not able, or willing, to quantify the term “most” into a number or ratio. Unfortunately the annual report for SIOFF does not specify revenue by geographical region. This makes it difficult for the stakeholders to get a clear picture of the taxation of SIOFF’s operations. SIOFF’s reply to the question about marginal tax rates is that tax rates will not be determining for the valuation of SIOFF⁹³. This contradicts, among else Damodaran⁹⁴, that stresses the importance of at least adjusting the taxes towards the marginal tax rate over time so that the tax rate used in perpetuity to compute the terminal value is the marginal tax rate

Effective tax rate for SIOFF, measured by aggregating taxes for the last 6 years, divided by the aggregated operating income (EBIT) in the same period, results in a rate of 1.5 %. The same exercise over the last 7 years yields an effective tax rate of 4.5 %. The effective tax rate in the Global Oilfield Service and Equipment sector based on 593 firms yields an average of 14 % effective tax rate.

Given that SIOFF claims that an unquantified “*most of their fleet*”, are subject to the Norwegian tonnage tax regime together with applied tax rate of 28 % for the rest of the operation the Global effective tax rate can serve as a best estimate and a proxy for the marginal tax rate. In SIOFF’s own application this would fit with 50 % of the taxable income being subject to the Norwegian tonnage tax regime, and 50 % not included in this regime. This is more restrictive than SIOFF’s claim that “most of their fleet” is being subject to an estimated tax rate of 0 %, and also more restrictive than the reported effective taxes.

The accusations and the ongoing investigation by the Norwegian financial crimes unit regarding tax evasions calls for cautiousness about the reported figures. SIOFF’s apparent ambitions for growth, and the fact that SIOFF is already now being an international player, makes it more believable and probable that the effective tax rate should converge towards the global sector average over time.

⁹² E-mail of 16 May 2014 See Appendix Fin statement

⁹³ E-mail of 16 May 2014 See Appendix Fin statement

⁹⁴ More on effective tax rates http://pages.stern.nyu.edu/~adamodar/New_Home_Page/valquestions/taxrate.htm

Another point to evaluate is the favorable Norwegian tonnage tax regime. There is no guarantee that this so called “competitive” regime will last in the long run. And in terminal value calculations, it is the rates in the long term that are the determinants for value. On the other side, the picture towards globalization is mixed with increased protectionism and demand for local content in some regions of the OSV market. This may give a longer life expectancy for special tax regimes as well.

The chosen proxy rate of 14 % is still not a theoretically correct marginal tax rate, but it is the best estimate and will be used for further calculations in this paper.

6 Valuation and Valuation Models⁹⁵

Why Value Value⁹⁶?

Investors expect that the value of each investment will grow sufficiently to compensate for the risk taken. According to a growing body of research, companies that maximize value for their shareholders in the long term will create more employment, treat their employees better, increase customer satisfaction, take on a greater burden of corporate responsibility than shortsighted rivals. Value focused companies also ensure efficient use of capital, human capital and natural resources. Knowledge of how companies create value and how to measure it are vital tools in a market economy. Confusion around which investments create value and how to measure it, has led to value-destroying investments ending up in crisis.

Efficient Market Hypothesis (EMH)

The strong form of the efficient market hypothesis - implies that public and inside information - are embedded in a traded security. Major test results are not supportive of the strong form of EMH. The semistrong form of EMH maintains that all public information is impounded into the value of a security. Fundamental analysis would not work under this assumption. This form of EMH appears to be generally valid, but exceptions can be noted. It is fundamental analysis that makes the market efficient and some analysts may have extraordinary insight and capability. The weak form of EMH suggests that there is no relationship between past and

⁹⁵ Damodarans books...several/all.,

⁹⁶ Koller, T., Goedhart, M. & Wessels, D. (2010) **Valuation, Measuring and Managing the Value of Companies**. 5th ed. p.3-4

future prices of securities. This seems to be supported in studies but it does not exclude fundamental analysis.⁹⁷

The market price of a stock will reflect the weighted average of the opinion of all analysts. The individual analysts estimates may differ for two reasons: 1.They could have access to different amounts of information (although presumably public information is available to all) or; 2. They could analyze the information differently with regard to its impact on future stock prices. Arbitrage also enforces the Law of One Price – in a competitive market, if two assets are equivalent they will tend to have the same market price.⁹⁸

Bodie et al⁹⁹ (2011) conclude that markets are generally very efficient, but that rewards to the especially diligent, intelligent, or creative may in fact be waiting. Empirical evidence both supports and contradicts EMH. Bubbles appear to depart from an unbiased assessment of intrinsic value. Are anomalies regarding fundamental analysis unexplained puzzles or merely a result of data mining? It is still a matter of debate whether anomalies like the P/E effect, small-firm-in-January effect, the neglected-firm effect, price drift, book-to-market effect and so on - represent market inefficiency or poorly understood risk premiums.

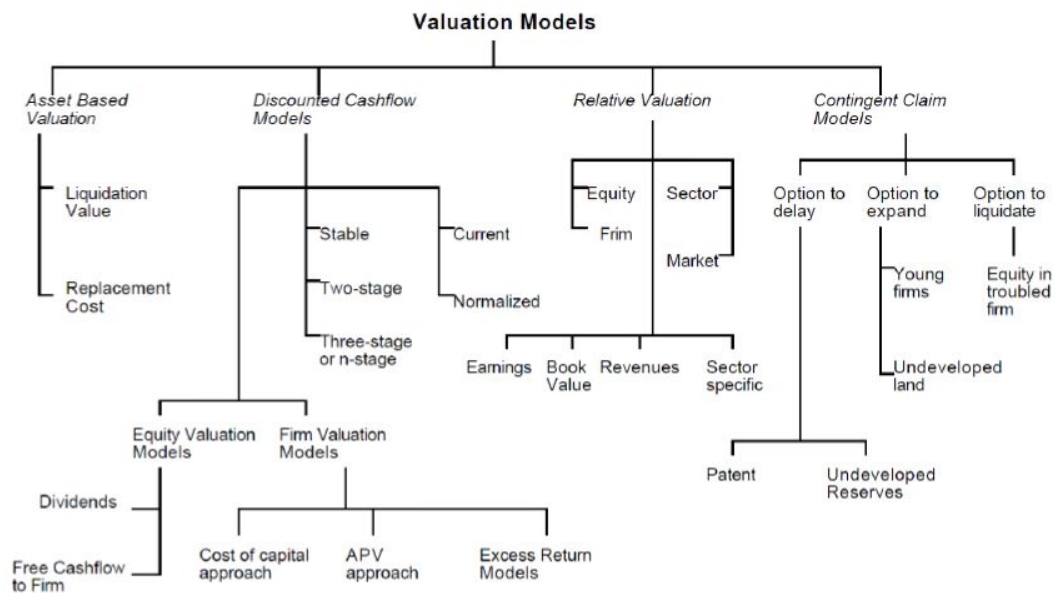
Damodaran claims that it is possible to make reasonable estimates of value from financial fundamentals, with error, for most assets. The market price cannot deviate from this value in the long run. The price we pay for any asset should reflect the cash flow it is expected to generate. There will always be uncertainty associated with valuations, and some valuations will be hopelessly wrong in hindsight. The payoff to valuation will actually be the highest when you are most uncertain about the numbers. It is not how precise a valuation is that determines its usefulness, but how precise the value is relative to the estimates of other investors trying to value the same company. Valuation plays a key role in corporate finance, in mergers and acquisitions, and in portfolio management. Valuation is not an objective exercise, and any preconceptions and biases the analyst brings to the process will find their way into the value.

⁹⁷ Hirt, G.A. & Block, S.B. (2012) **Fundamentals of Investment Management**. p.237-241

⁹⁸ Bodie, Z., Merton, R.C., Cleeton, D.L. (2009) **Financial Economics** 2nd ed.p.209-211

⁹⁹ Bodie, Z., Kane, A., Marcus, A.J. (2011) **Investments and Portfolio Management** 9th ed. p.371-402

As illustrated in the figure from Damodaran, firm assets can be valued in four ways.



Investment Valuation, Damodaran (2012) p.926

Asset based valuation

Liquidation value or replacement value are the two most common approaches to find the value of the assets.

Discounted cash flow model (DCF)

We assume that markets make mistakes across entire sectors or even over the entire market. These mistakes will be corrected over time. The value of an asset is the present value of the expected cash flow on the asset, discounted back at a rate that reflects the riskiness of these cash flows. This is the class room favorite as it comes with the best theoretical credentials.

Relative Valuation

We assume that markets make mistakes in the pricing of individual stocks, but are correct on average with regard to sector or the broader market. While the academic focus remains on DCF valuation, the reality is that most assets are valued on a relative basis. This valuation is done by looking at the market prices of similar asset.

Contingent claim

The value of patents, reserves, options to delay, expand or liquidate is the basis for this valuation model.

7 Cost of Capital

7.1 Risk

Risk refers to the likelihood of receiving a return on an investment that is different from the return we expect to make. Damodaran¹⁰⁰ uses the Chinese symbol for risk to capture the definition of risk in finance.

危機

The first symbol means “danger” and the second stands for “opportunity”. Although this may not be proper Mandarin¹⁰¹, this popular translation makes a nice metaphor of the trade-off between risk and reward.

There are two types of risk. The first is equity risk from investments with no promised cash flow, but with an expected cash flow. The second type, default risk arises on investments with promised cash flow.¹⁰² The following chapters will attempt to quantify these risks.

7.2 Cost of Capital

Cost of capital is defined as the opportunity cost of all capital invested in an enterprise. The cost of capital is a weighted average of the cost of the different components of financing, with weights based on the market value of each component.

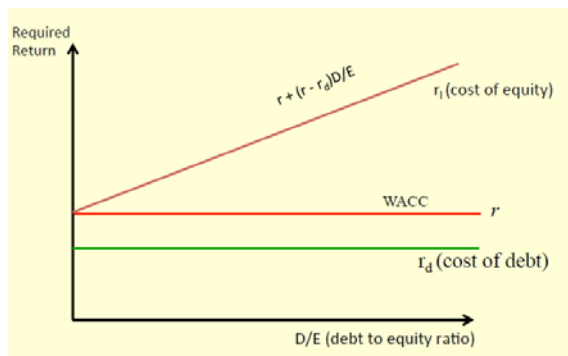
Some analysts use the unlevered cost of equity as the cost of capital, following the argument made by Modigliani and Miller¹⁰³ about capital structure. The value of a firm should be independent of the capital structure. This implies that the cost of capital should not be affected by its debt ratio. (See figure below)

¹⁰⁰ Damodaran, A. (2012) **Investment Valuation**. 3rd ed New Jersey, John Wiley & Sons, Inc. p.59

¹⁰¹ Victor H. Mair (2009) How a misunderstanding about Chinese characters has led many astray **Pinyin.info** (September 2009) <http://www.pinyin.info/chinese/crisis.html>

¹⁰² Damodaran, A. (2012) **Investment Valuation**. 3rd ed. New Jersey, John Wiley & Sons, Inc. p.81

¹⁰³ Miller, M. H. and Modigliani, F. (1958) **The Cost of Capital, Corporation Finance and the Theory of Investment**. The American Economic Review, Volume XLVIII (June 1958 Number Three) p.23-29



The cost of capital may change with changes in the debt ratio, changes in taxes or with changes in the default risk.¹⁰⁴ This paper will follow the convention and use the WACC as the cost of capital in the following. (This implies that when using the WACC to discount cash flow over several years the three mentioned elements is expected to remain relatively stable.) For calculations based on changes in debt ratio, the Adjusted Present Value (APV) approach can be used.¹⁰⁵

7.3 Cost of equity

The cost of equity is what investors in a business expect to make on their investment. This rate is an implicit cost and need not be the same for all investors. The challenge is to transform the implicit cost into an explicit cost and then come up with an appropriate rate of return.

It is a convention in valuation to use the capital asset pricing model (CAPM) to find the cost of equity. The competitors, like the multifactor model of Fama-French clearly do make a better fit to historical data for returns since they do not constraint themselves to one factor. Because the factor premiums and betas are themselves volatile, the estimation error may eliminate the benefits that could be gained by moving from the CAPM to more complex models. Despite the shortcomings of the standard CAPM, its survival as the default model for risk in real-world applications is due to the insights it offer, it's intuitive appeal and the failure of more complex models to deliver significant improvement in terms of estimating expected returns.^{106 107}

¹⁰⁴ Damodaran, A. (2006) **Damodaran on Valuation**. 2nd ed. New Jersey, John Wiley & Sons, Inc. p.63,77

¹⁰⁵ Koller, T., Goedhart, M. & Wessels, D. (2010) **Valuation, Measuring and Managing the Value of Companies**. Mc Kinsey & Company 5th ed. New Jersey, John Wiley & Sons, Inc. p. 101

¹⁰⁶ Damodaran, A. (2006) **Damodaran on Valuation**. 2nd ed. New Jersey, John Wiley & Sons, Inc. p.31-35

¹⁰⁷ Bodie, Z., Kane, A., Marcus, A.J. (2011) **Investments and Portfolio Management** 9th ed. New York, Mc Graw-Hill Companies Inc. p.308-365 & 435-463

Black points out that data-snooping may be a part of the story when researchers uncover past patterns.¹⁰⁸ This is prevalent in proxy models according to Damodaran.¹⁰⁹

The Arbitrage Pricing Model (APM) is a fourth model available to estimate the cost of equity.

Titman & Martin remarks that if the discrepancy of the standard CAPM is caused by market inefficiency that is not likely to exist in the future, one might prefer the traditional CAPM, which is better grounded in theory.¹¹⁰

7.3.1 Risk Parameters

Based on CAPM the beta is the risk that the investment adds to a market portfolio. There are three main approaches to estimating this parameter; Historical, Fundamental and Accounting. This paper will present two historical and one fundamental beta. The bottom-up beta provides the best estimate according to Damodaran.¹¹¹

7.3.2 Historical beta

7.3.2.1 Service Beta

Dagens Næringsliv¹¹² is publishing 24-months beta. Below is an excerpt from DN on selected OSV companies and the accompanying beta. The table shows beta close to the finish line of this paper, and six months earlier. Siem Offshore is almost unchanged, but intuitively the beta seems to be too low. OSE is an energy heavy (biased) bourse and this could affect the result. Bloomberg are supplying DN with data, and the beta's appears to be from regressions on OSE.

Service Beta	08 November 2013	02 May 2014
Siem Offshore (SIOFF)	0,45	0,42
Deep Sea Supply (DESSC)	0,97	0,78
DOF (DOF)	0,57	0,68
Eidesvik Offshore (EIOF)	0,28	0,37

¹⁰⁸ Bodie, Z., Kane, A., Marcus, A.J. (2011) **Investments and Portfolio Management** 9th ed. p.363

¹⁰⁹ Damodaran, A. (2012) **Investment Valuation**. 3rd ed p. 77

¹¹⁰ Titman, S. & Martin, J. (2014) **Valuation: The Art and Science of Corporate Investment Decisions**. 2nd ed. p.124

¹¹¹ Damodaran, A. (2012) **Investment Valuation**. 3rd ed. New Jersey, John Wiley & Sons, Inc. p. 206

¹¹² Data are supplied by Bloomberg

Farstad Shipping (FAR)	0,51	0,5
Solstad Offshore (SOFF)	0,52	0,47
Havila (HAVI)	0,55	0,61

Damodaran¹¹³ has collected and compiled data by sector, and geographical regions. He does not use GICS codes specifically but his *Oilfield Svcs/Equip.* coincide with the GICS code 10101020 Oil & Gas Equipment & Services 1 - Oil and Gas, which classifies SIOFF used by Oslo Stock Exchange (OSE) and is used in the construction of MSCI Global Sector Indexes.

Levered and Unlevered Beta by Industry Sector: This data set lists betas by industrial sector. The betas are computed using 5 years of monthly returns for each stock and then averaged (simple). The unlevered betas are estimated using the average market debt/equity ratios by industrial sector. (Hamada betas).

	Date updated:	05.jan.14	Aswath Damodaran					
			http://www.damodaran.com					
Levered and Unlevered Beta by Industry	Industry Name	Number of firms	Beta	D/E Ratio	Tax rate	Unlevered beta	Cash/Firm value	Unlevered beta corrected for cash
Beta Global	Oilfield Svcs/Equip.	593	1,14	37,39 %	13,98 %	0,86	6,29 %	0,92
Beta Emerging Mrkt	Oilfield Svcs/Equip.	251	1,08	43,06 %	14,05 %	0,79	6,50 %	0,84
Beta Europe	Oilfield Svcs/Equip.	87	1,34	53,59 %	14,90 %	0,92	6,90 %	0,99
Beta USA by sector	Oilfield Svcs/Equip.	163	1,30	20,29 %	10,73 %	1,10	5,69 %	1,17

Total Beta by Industry Sector: These are betas adjusted to reflect a firm's total exposure to risk rather than just the market risk component. It is a function of the market beta and the portion of the total risk that is market risk. These betas might provide better estimates of costs of equity for undiversified owners of businesses

	Raw Data from	S&P Capital IQ					
Total Beta by industry sector	Industry Name	Average Unlevered Beta	Average Levered Beta	Average correlation	Total Unlevered Beta	Total Levered Beta	
Total beta Emerging	Oilfield Svcs/Equip.	0,84	1,08	15,56 %	5,41	6,93	
Total beta Europe	Oilfield Svcs/Equip.	0,99	1,34	28,00 %	3,54	4,80	Number of firms
Total beta Global	Oilfield Svcs/Equip.	0,92	1,14	22,70 %	4,05	5,02	
Total beta USA	Oilfield Svcs/Equip.	1,17	1,30	33,87 %	3,46	3,85	163

¹¹³ Data from Morningstar, Bloomberg and S&P Capital IQ data and the Fed (US companies)
<http://pages.stern.nyu.edu/~adamodar/>

	Industry name	Number of firms	Beta	Correlation with the market
Regression coefficient and correlation USA	Oilfield Svcs/Equip.	163	1,30	33,87 %

7.3.2.2 Regression betas

The standard procedure to estimate beta's, is to regress stock returns against market returns. The convention in academia is to use monthly returns over a period of three to five years¹¹⁴.

I have regressed return against OSEBX, S&P 500 and MSCI World index. The monthly return is based on end of month stock prices. The end of month exchange rate is used to convert the stock prices in NOK to USD before regressing on MSCI World index which is based on USD. For those dates, and firms with no published price or trade the price is estimated using the average of the preceding, and the proceeding day.(the immediate day after)

The results from S&P 500 are omitted as they turned did not have much explanatory power. (Low R² and high standard error) This is a summary of regression betas; (the full result can be found in the appendix)

SIOFF		OSEBX			MSCI World		
5 Years monthly return	$\beta 1$	0,7216	-0,0036	$\beta 0$	$\beta 1$	1,22982796	-0,00482238
	se $\beta 1$	0,2211	0,0107	se $\beta 0$	se $\beta 1$	0,26606643	0,01170505
	R ²	0,1574	0,0793	se y	R ²	0,27263705	0,08738568
	F	10,6475	57	df	F	21,3652787	57
	ss reg	0,0670	0,3587	ss resid	ss reg	0,16315076	0,43526666

SIOFF		OSEBX			MSCI World		
3 Years monthly return	$\beta 1$	0,8483	-0,0129	$\beta 0$	$\beta 1$	1,54166416	-0,01818688
	se $\beta 1$	0,2542	0,0108	se $\beta 0$	se $\beta 1$	0,26142973	0,01055993
	R ²	0,2413	0,0645	se y	R ²	0,49838909	0,06321791
	F	11,1338	35	df	F	34,7751974	35
	ss reg	0,0463	0,1456	ss resid	ss reg	0,13897922	0,13987765

SIOFF		OSEBX			MSCI World		
2 Years monthly return	$\beta 1$	0,3156	-0,0098	$\beta 0$	$\beta 1$	1,07793448	-0,01876436
	se $\beta 1$	0,4045	0,0142	se $\beta 0$	se $\beta 1$	0,40090245	0,0135236
	R ²	0,0258	0,0659	se y	R ²	0,23915341	0,06416352
	F	0,6088	23	df	F	7,22948421	23
	ss reg	0,0026	0,0999	ss resid	ss reg	0,02976347	0,09469001

¹¹⁴ Praktisk Økonomi & Finans (2/2011) Tema Verdsettelse p.19

The best result seems to come from the 3 years regression on the MSCI World index. The results from the regression on OSEBX, is markedly different from the results from the regression on MSCI.

Below is a summary of the historical regression betas for a peer group;

DESSC		OSEBX		MSCI World		
5 Years monthly return	β_1	0,75120952	-0,00186967	β_0	β_1 1,68068427 -0,0069683	β_0
	se β_1	0,301446	0,01458867	se β_0	se β_1 0,32369977 0,01424051	se β_0
	R ²	0,0982463	0,10812868	se y	R ² 0,32108903 0,10631452	se y
	F	6,21016449	57	df	F 26,9579892 57	df
	ss reg	0,07260807	0,6664332	ss resid	ss reg 0,30470014 0,64425829	ss resid

DESSC		OSEBX		MSCI World		
3 Years monthly return	β_1	1,31200626	-0,01820981	β_0	β_1 2,18913505 -0,02371855	β_0
	se β_1	0,35815371	0,01520992	se β_0	se β_1 0,35319099 0,01426644	se β_0
	R ²	0,27714916	0,09087834	se y	R ² 0,52327258 0,08540726	se y
	F	13,4193942	35	df	F 38,4172157 35	df
	ss reg	0,11082907	0,28906054	ss resid	ss reg 0,28023052 0,25530399	ss resid

DOF		OSEBX		MSCI World		
5 Years monthly return	β_1	0,81834419	-0,00692005	β_0	β_1 1,73759649 -0,01190688	β_0
	se β_1	0,27560405	0,01333804	se β_0	se β_1 0,28355759 0,01247454	se β_0
	R ²	0,133957	0,09885917	se y	R ² 0,39714734 0,0931304	se y
	F	8,81659307	57	df	F 37,5504655 57	df
	ss reg	0,08616576	0,55706872	ss resid	ss reg 0,32568537 0,49437645	ss resid

DOF		OSEBX		MSCI World		
3 Years monthly return	β_1	1,21683807	-0,02181215	β_0	β_1 2,18145037 -0,02777246	β_0
	se β_1	0,42010502	0,01784085	se β_0	se β_1 0,41084738 0,01659536	se β_0
	R ²	0,19335817	0,10659794	se y	R ² 0,44613455 0,0993495	se y
	F	8,38976562	35	df	F 28,1922432 35	df
	ss reg	0,09533392	0,39770921	ss resid	ss reg 0,27826655 0,34546131	ss resid

FAR		OSEBX		MSCI World		
5 Years monthly return	β_1	0,52691871	-0,00404131	β_0	β_1 1,23331301 -0,00798889	β_0
	se β_1	0,13464549	0,00651626	se β_0	se β_1 0,15591017 0,00685895	se β_0
	R ²	0,21177664	0,04829734	se y	R ² 0,52330994 0,05120645	se y
	F	15,3145274	57	df	F 62,5745523 57	df
	ss reg	0,03572317	0,13296006	ss resid	ss reg 0,16407674 0,1494597	ss resid

FAR		OSEBX		MSCI World		
3 Years monthly return	β_1	0,85276967	-0,01592834	β_0	β_1 1,53957657 -0,02112537	β_0
	se β_1	0,18896496	0,00802489	se β_0	se β_1 0,19196392 0,007754	se β_0
	R ²	0,3678405	0,04794819	se y	R ² 0,64761282 0,04641996	se y
	F	20,3657743	35	df	F 64,3225681 35	df
	ss reg	0,0468215	0,08046601	ss resid	ss reg 0,13860309 0,07541845	ss resid

HAVI	OSEBX				MSCI World			
5 Years monthly return	β_1	0,49552571	-0,00131135	β_0	β_1	1,31349333	-0,00666888	β_0
	se β_1	0,28265012	0,01367904	se β_0	se β_1	0,29520369	0,01298689	se β_0
	R ²	0,05116242	0,10138659	se y	R ²	0,25778915	0,09695539	se y
	F	3,07350575	57	df	F	19,7975838	57	df
	ss reg	0,03159331	0,58591676	ss resid	ss reg	0,18610418	0,53581985	ss resid

HAVI	OSEBX				MSCI World			
3 Years monthly return	β_1	0,93444148	-0,01689811	β_0	β_1	1,73272827	-0,02279646	β_0
	se β_1	0,40244667	0,01709094	se β_0	se β_1	0,39600133	0,01599568	se β_0
	R ²	0,13347518	0,10211729	se y	R ²	0,35359404	0,09575949	se y
	F	5,39122605	35	df	F	19,1455402	35	df
	ss reg	0,05621938	0,36497791	ss resid	ss reg	0,1755623	0,32094578	ss resid

SOFF	OSEBX				MSCI World			
5 Years monthly return	β_1	0,69489674	-0,00214784	β_0	β_1	1,36946912	-0,00511036	β_0
	se β_1	0,17837997	0,00863281	se β_0	se β_1	0,20697848	0,0091056	se β_0
	R ²	0,21026039	0,06398489	se y	R ²	0,43439934	0,0679791	se y
	F	15,1756885	57	df	F	43,7778169	57	df
	ss reg	0,06213027	0,23336177	ss resid	ss reg	0,20230419	0,26340598	ss resid

SOFF	OSEBX				MSCI World			
3 Years monthly return	β_1	0,68603606	-0,00767935	β_0	β_1	1,36270644	-0,01299573	β_0
	se β_1	0,25541972	0,01084706	se β_0	se β_1	0,26809314	0,01082909	se β_0
	R ²	0,17089408	0,0648105	se y	R ²	0,42468722	0,06482923	se y
	F	7,21414776	35	df	F	25,8364726	35	df
	ss reg	0,03030231	0,14701402	ss resid	ss reg	0,10858628	0,14709902	ss resid

The results from the regressions in the peer group, is telling the same story. The 3 year regression on MSCI seems to make the best fit with the peer group as well.

7.3.3 Fundamental betas

The fundamental beta in this paper is a bottom-up beta. Plenborg & Petersen offers another variant where they quantify qualitative strategic, financial and operating elements. By grading and weighing they come up with a beta based on a company's fundamental risk.¹¹⁵

7.3.3.1 Bottom-Up Betas

The beta of a firm is determined by three variables; the type of business or businesses, the degree of operating leverage, and the financial leverage.¹¹⁶ By breaking down betas into business risk and financial leverage components, we can find the average unlevered beta for the business. Comparable firms will represent the business in this paper.

The average unlevered beta will be calculated by unlevering the average (or median) beta for the comparable firms by their average (or median) debt-to-equity ratio. Alternatively the

¹¹⁵ Petersen, C.V. & Plenborg, T. (2012) **Financial Statement Analysis**. Harlow, Pearson Education Limited p. 254-263

¹¹⁶ Damodaran, A. (2012) **Investment Valuation**. 3rd ed. New Jersey, John Wiley & Sons, Inc. p. 193

average unlevered beta for every firm may be used. Titman & Martin uses the latter method. Damodaran claims that the compounding of errors is less (pronounced) with the first approach.

Unlevered beta_{business} = Beta_{comparable firms} / [1 + (1-t) (D/E ratio_{comparable firms})]

This beta will be relevered using the debt-to-equity ratio for Siem Offshore to get a levered, equity beta for the cost of capital calculation.

Most corporate debt is thinly traded, if at all. It is therefore customary to use book value of debt. Titman & Martin¹¹⁷ suggests using the firm's interest bearing liabilities. This includes short-term notes payable, the current portion of the long-term debt, plus long term debt.

Petersen & Plenborg¹¹⁸ uses net interest bearing debt (NIBD). NIBD is the difference between enterprise value and shareholder's equity. Damodaran¹¹⁹ recommends the use of gross debt. The focus in this paper will be on the interest bearing debt.

The selected comparable firms are DESSC, DOF, FAR, SOFF, HAVI and SIOFF. Other firms like EIOF and REM are not include due to illiquidity, despite EIOF being on the OB Match list. The inclusion of SIOFF is because SIOFF is the best match for SIOFF. Titman & Martin¹²⁰ argues that this could be a reason to increase the weight on SIOFF in the calculation. Damodaran claims that even weights are more appropriate due to the savings in standard error.¹²¹

The Bottom-Up beta calculation for Siem Offshore is displayed below. The calculation is based on the 3 years beta from the regressions on MSCI World index. The book value at the year-end 2013 is used for debt, and the market value the 8 of May 2014 is used for equity.

Finally the bottom-up beta is corrected for the long term trend of any stock, towards the market beta of 1. Bloomberg calls this adjusted beta;

¹¹⁷ Titman, S. & Martin, J. (2014) Valuation: **The Art and Science of Corporate Investment Decisions**. 2nd ed. Harlow, Pearson Education Limited p. 118

¹¹⁸ Petersen, C.V. & Plenborg, T. (2012) **Financial Statement Analysis**. Harlow, Pearson Education Limited p. 204,210

¹¹⁹ Damodaran, A. (2012) **Investment Valuation**. 3rd ed. New Jersey, John Wiley & Sons, Inc. p.217,218,220

¹²⁰ Titman, S. & Martin, J. (2014) Valuation: **The Art and Science of Corporate Investment Decisions**. 2nd ed. Harlow, Pearson Education Limited p. 117

¹²¹ Damodaran, A. (2012) **Investment Valuation**. 3rd ed. New Jersey, John Wiley & Sons, Inc. p. 199

$$\text{Adjusted beta} = \text{Raw beta} \cdot (0,67) + 1(0,33)$$

This is in line with Martin & Titman¹²². Damodaran¹²³ also approves of the overall idea of a company trending towards a beta of 1, but finds the parameter used in the weighting process to be arbitrary. I have no better way of correcting for this notion towards the market beta of 1 and will settle for the widely used Bloomberg adjustment.

Estimating Bottom-Up Beta for SIOFF	SIOFF	DESSC	DOF	FAR	HAVI	SOFF
BV of Debt 1000 (USD)	1003218	368770	NA	NA	NA	NA
NOK per USD 08 May 2014	5,8611					
BV of Debt 1000 (NOK)	5879961	2161398	24393000	9648490	5939967	10055000
Outstanding number of shares year end 2013	389078000	127197194	111051348	39000000	30180000	38440155
Share price year end 2013 (NOK)	9,65	11,45	31,7	133	32,5	120,5
MV of Equity year end 2013 1000 (NOK)	3754603	1456408	3520328	5187000	980850	4632039
Share price 08 May 2014 (NOK)	8,82	9,1	27,3	121	34,5	110
MV of Equity 08 May 2014 1000 (NOK)	3431668	1157494	3031702	4719000	1041210	4228417
Debt to Equity ratio (D/E) year end 2013	1,56606743	1,48406081	6,9291844	1,86012917	6,05593822	2,17075044
Debt to Equity ratio (D/E) 08 May 2014	1,71344113	1,86730728	8,04597602	2,04460479	5,70486933	2,37795844
Average Debt to Equity ratio year end 2013	3,34435508					
Average Debt to Equity ratio 08 May 2014	3,62569283					
Beta 5 years OSE	0,72159679	0,75120952	0,81834419	0,52691871	0,49552571	0,69489674
Beta 5 years MSCI	1,22982796	1,68068427	1,73759649	1,23331301	1,31349333	1,36946912
Beta 3 years OSE	0,84825934	1,31200626	1,21683807	0,85276967	0,93444148	0,68603606
Beta 3 years MSCI	1,54166416	2,18913505	2,18145037	1,53957657	1,73272827	1,36270644
Average Beta 5 years OSE	0,66808194					
Average Beta 5 years MSCI	1,42739736					
Average Beta 3 years OSE	0,97505848					
Average Beta 3 years MSCI	1,75787681					
Unlevered beta business	0,48687921					
Estimated proxy for the tax rate on financials	0,28					
Relevered Beta SIOFF (Beta debt = 0)	1,08753118					
Bloomberg Adjustment	1,05835412					

¹²² Titman, S. & Martin, J. (2014) Valuation: **The Art and Science of Corporate Investment Decisions**. 2nd ed. Harlow, Pearson Education Limited p. 119

¹²³ Damodaran, A. (2012) **Investment Valuation**. 3rd ed. New Jersey, John Wiley & Sons, Inc. p. 187

The tax rate for financials is used to estimate the unlevered and the re-levered betas. See the tax section for the discussion around the two different tax rates used for SIOFF.

This chapter has presented betas for SIOFF in the range from 0.42 – 1.54. The bottom-up beta is somewhat lower than the global service beta, and slightly above the emerging market beta.

As a revenue breakdown is not possible based on public available information, the beta is not corrected for country specific risk. One could argue that country risk is diversifiable. The fact that the bottom-up beta is based on regression against a world index opens for the possibility that the beta could capture country risk. But according to Damodaran, there is little evidence that they do in practice.¹²⁴ The bottom-up beta for SIOFF is within the range of the emerging market beta and the global beta for the relevant industry sector as displayed in the service beta section - and thus may be regarded as adjusted for country risk. At the same time it is well below the sector beta for Europe and the US which is part of the market for SIOFF.

The bottom-up beta for SIOFF ended well below all of the individual betas in the peer group. This is partly due to the high leverage in DOF and HAVI, relative to their respective betas. The number of peer's in the peer group is in the absolute shallow end for making a bottom-up beta.

Together this calls for an adjustment upwards.

This paper will continue with the bottom-up beta, including the Bloomberg adjustment and an upward harmonizing to the global average. The beta of 1.09 will be used in the CAPM to calculate the cost of equity.

7.3.4 Market risk premium

The risk premium will be proportional to the average degree of risk aversion of the investor population and the risk of the market portfolio.¹²⁵

¹²⁴ Damodaran, A. (2013) **Equity Risk Premiums (ERP): Determinants, Estimation and Implications – The 2013 Edition** (March 2013) p. 40-45

¹²⁵ Bodie, Z., Kane, A., Marcus, A.J. (2011) **Investments and Portfolio Management** 9th ed. New York, Mc Graw-Hill Companies Inc. p 312-313

There are three broad approaches used to estimate equity risk premiums. The first is to survey investors and managers to sense their expectations (and implied risk aversion). The second is to look at historical return relative to the riskless return. The third is to calculate the implied premium on traded assets today. The risk premium is not constant and Wachter linked the risk premiums in the US to the volatility in GDP growth. The risk premium has been declining as the result of lower volatility in real economic variables.¹²⁶

Mehra and Prescott argued that the observed historical risk premium at the time of 6 %, were too high. A demand for this level of risk premium would require an implausible high constant relative risk aversion.¹²⁷

Barro and Ursua on the other hand, estimated that investor would need an equity risk premium of 7 % to compensate for the 3.6 % disaster probability per year found in their research. This is based on what they deem to be a reasonable coefficient of relative risk aversion of 3.5.¹²⁸

A study performed by PWC and The Norwegian Society of Financial Analysts (NFF) finds the risk premium in the Norwegian market to be 5.0 %. This study is based on surveys and implied risk premium. A small firm premium between 0 % - 1 % may be added for firms with a market value less than 5 billion NOK.¹²⁹

Fernandez et al. finds the median risk premium for Norway to be 5.5 % in a comprehensive survey. The median US premium is 5.4 %. This is in line with the PWC study and a small cap premium (for SIOFF). But the median for developed markets is 6.01 %, Emerging Asia 7,42 %, and the grand total median and average is 7,77 %. This survey asks about the required equity premium, as opposed to expected equity premium used in most surveys.^{130 131}

¹²⁶ Damodaran, A. (2013) **Equity Risk Premiums (ERP): Determinants, Estimation and Implications – The 2013 Edition** (March 2013) p. 8,9, 17

¹²⁷ Mehra, R. and Prescott, E.C. (1985) **The Equity Premium – A Puzzle**. Journal of Monetary Economics 15 (1985) p. 145-161

¹²⁸ Barro, R. and Ursua, J. (2008) **Macroeconomic Crisis since 1870** (April 2008)

¹²⁹ PWC and NFF (2012) **Risikopremien i det norske markedet 2012 og 2013 (The risk premium in the Norwegian market)** p. 9

¹³⁰ Fernandez et al. (2012) **Market risk premium used in 82 countries in 2012: a survey with 7192 answers** (Nov. 23 2013) p. 4

¹³¹ Table for regional and total risk premium is in the Appendix

Although many in the finance profession disagree about how to measure the market risk premium, Koller et al.¹³² believe that 4.5 to 5.5 percent is an appropriate range for the market risk premium.

Dimson et al. infer that investor expect a long run equity premium relative to bill of 3 – 3.5 % on a geometric mean basis. The equity premium is smaller than was once thought. This study is based on 111 years of historical equity premiums on their 19-country world index.¹³³

Titman and Martin uses an equity risk premium of 5 % which they claim to be commonly used in practice.¹³⁴

Although there are evidence of the risk premium might being both higher and lower, this thesis will use a risk premium of 6.0 % including an additional small cap premium of 1.0 %. This includes any illiquidity premium. This rate is also in line with the findings in the Fernandez survey for developed markets.

In a discounted cash flow (DCF) perspective a low cost of equity, will lower the cost of capital. This again will lead to a higher valuation of SIOFF. A low risk premium is not conservative in DCF valuation.

No corrections are made with regard to a specific country or world premium. Several of the premiums discussed above are on a world basis. So even though a world premium is not explicitly added, it may be regarded as embedded in the selected risk premium.

7.3.5 The riskless rate

The convention is to use the return on 10 year government bonds as a proxy for the riskless rate. The rate on Norwegian government bonds was 2.81 %, and 2.61 % on US Treasury notes. Both rates are taken on the 8 of May, with 10 years maturity.

SIOFF is exposed to several currencies and markets both for revenue and loans. SIOFF is noted on the Oslo Stock exchange, utilizing the Norwegian tonnage regime, Norwegian

¹³² Koller, T., Goedhart, M. & Wessels, D. (2010) **Valuation, Measuring and Managing the Value of Companies. Mc Kinsey & Company** 5th ed. New Jersey, John Wiley & Sons, Inc. p. 244-245

¹³³ Dimson, E., Marsh, P., Staunton, M. (2011) **Equity Premia Around the World** (7 October 2011) p.14, 18, 19

¹³⁴ Titman, S. & Martin, J. (2014) **Valuation: The Art and Science of Corporate Investment Decisions.** 2nd ed. Harlow, Pearson Education Limited p. 122

export credits. There are good arguments for both of the rates above. The riskless rate is set to 2.81 %. This is the most conservative in most respects.¹³⁵

7.3.6 CAPM

$$\text{Expected returns} = \text{Riskless rate} + \text{Beta} \cdot (\text{Risk premium})$$

$$\text{Expected return} = 0.0281 + (1.09 \times 0.06) = 0.0935$$

The cost of equity is 9.35 % in SIOFF using CAPM and the previously discussed parameters.

7.4 Cost of debt

The cost of debt should be forward looking for valuation purposes. It should reflect the rate at which the company would be able to refinance all of its debt today, and will depend on the default risk embedded in the firm.¹³⁶ The cost of debt is determined by the riskless rate, the default risk and the tax advantage on the debt. The cost of debt measures the cost of borrowing funds to finance its asset. Lenders add default spread to the riskless rate to cover for the default risk they perceive.

The expected return that the investors require would be the best estimate in theory, but the promised yield to maturity is often used by practitioners¹³⁷.

Independent rating agencies like Moody's and Standard & Poor's measures the default risk and assigns ratings. When there is no rating available to estimate the riskiness and the cost of debt the, option is to look at recent borrowing history, or estimate a synthetic rating and default spread. Damodaran¹³⁸ uses the interest coverage ratio with options to extend with the five financial ratios making up the Altman Z-Scores. Damodaran admits that the inclusion of more ratios increases the precision of a synthetic rating. The downside is lack of insight to explain changes in ratings. Prof Knivsflå at NHH, suggests a rating based on four financial ratios.¹³⁹

¹³⁵ As a ceiling for long term growth, it is the less conservative of the rates, but this paper will use 2.5 % for stable growth rate.

¹³⁶ Damodaran, A. (2006) **Damodaran on Valuation**. 2nd ed. New Jersey, John Wiley & Sons, Inc. p.77

¹³⁷ Titman, S. & Martin, J. (2014)(sic) **Valuation: The Art and Science of Corporate Investment Decisions**. 2nd ed. Harlow, Pearson Education Limited. p 106

¹³⁸ Damodaran, A. (2006) **Damodaran on Valuation**. 2nd ed. New Jersey, John Wiley & Sons, Inc. p.67

¹³⁹ Appendix 1 and Rekneskapsanalyse og verddivurdering BUS 440 Professor Kjell Henry Knivsflå at NHH

The after-tax cost of debt should be calculated using the marginal tax rate. Firms mostly report the effective tax rate. These rates may differ due to tax brackets, different books for tax and reporting purpose and deferred taxes. Firms may for instance use straight-line depreciations for reporting purposes and accelerated depreciation for tax purposes. To omit this obstacle the tax code of the country may be used. Corporations like Siem Offshore, with global operations will be subject to different tax regimes. The weighted average of the marginal tax rates, or the rate of the country where the income eventually will return for taxation, may be used. The third approach is to separate the income based on geographical regions¹⁴⁰.

7.4.1 Traded Loans

The forward looking prerequisite (for valuation purposes) limits the use of the numbers from the financial statement, as these numbers represent historical loan agreements, and do not necessarily represent refinancing cost today. SIOFF has a 600 Mill NOK bond that is traded on the Oslo Stock Exchange. It is a 3 months floating rate bond, with a margin on the 3 months NIBOR of 4.75 %. The bond has been traded around par, but has risen somewhat over the last 9 months. It was traded on an all-time high of 102.475 the 14 of May 2014. The bond was issued 30 Jan 2013, and matures the same date 2018. Even though this is a floating rate bond the margin in combination with the traded price reflects the present market view of the credit quality of SIOFF.

Why not regress bonds against a market index to estimate a beta for debt? A significant portion of debt is non-traded. Beta is based on the mean-variance criterion. This assumes symmetric returns. The investor either gets the promised interest and principal payment, or in a worst case scenario, the firm defaults on its debt. This makes the risks asymmetric and turns the focus on the downside risks. Low rated companies may have more symmetric payoffs and debt betas may therefore make more sense¹⁴¹. But, even if the debt is risky, its covariance with the market will be very low. As a result, and for simplicity, the beta for the debt is usually assumed to be zero.

7.4.2 Synthetic rating Damodaran

The interest coverage ratio of a firm relates to a synthetic rating and an accompanying default spread. The link between interest coverage ratios and ratings was developed by looking at all

¹⁴⁰ Damodaran, A. (2012) **Investment Valuation**. 3rd ed p. 251-252

¹⁴¹ Damodaran, A. (2011) **Applied Corporate Finance**. 3rd ed. New Jersey, John Wiley & Sons, Inc. p158

rated companies in the United States. The default spreads are obtained from traded bonds. Adding that number to a riskfree rate should yield the pre-tax cost of borrowing for a firm. The table below is Damodaran's latest update of the accompanying spread. The spread has increased in the region CCC to A- over the last 3 years¹⁴². For A and grades below CCC the spread has decreased in the same period. For firms like SIOFF the spread has increased with 1.5 percentage point, from 5.0% to 6.5 %.

<i>For smaller non-financial service companies with market cap < \$ 5 billion</i>		Date of Analysis: Data used is as of January 2014	
<i>If interest coverage ratio is</i>			
greater than	≤ to	Rating is	Spread is
12,5	100000	Aaa/AAA	0.40%
9,5	12.499999	Aa2/AA	0.70%
7,5	9.499999	A1/A+	0.85%
6,0	7.499999	A2/A	1.00%
4,5	5.999999	A3/A-	1.30%
4,0	4.499999	Baa2/BBB	2.00%
3,5	3.999999	Ba1/BB+	3.00%
3,0	3.499999	Ba2/BB	4.00%
2,5	2.999999	B1/B+	5.50%
2,0	2.499999	B2/B	6.50%
1,5	1.999999	B3/B-	7.25%
1,25	1.499999	Caa/CCC	8.75%
0,8	1.249999	Ca2/CC	9.50%
0,5	0.799999	C2/C	10.50%
-100000,00	0.499999	D2/D	12.00%
http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/ratings.htm			

The table below is a summary of the interest coverage ratings for SIOFF and the accompanying rating and default spread. Knivsfå has developed weights for the estimation of a synthetic rating. These weights are intended for use with his 4 ratios based rating. But it makes sense to adapt it to Damodaran's one key ratio rating (the Interest coverage ratio) as well. The ratio based on the mentioned weights, or the ratio on a simple 6 years average, yields the same rating. This rating B, differs with the rating for 2013. The 2013 rating is B+, with a corresponding spread of 5.5% as opposed to the spread for a straight B rating of 6.5 %. The simple average for the last 5 years would also yield a B+ rating.

The rating for SIOFF using this approach will be set to B, and the corresponding spread is 6.5%. The 10 years interest rate on Norwegian Bonds will serve as a proxy for the riskless

¹⁴² Damodaran, A. (2012) **Investment Valuation**. 3rd ed. New Jersey, John Wiley & Sons, Inc. p. 212

interest rate. This rate was 2.81 % at the 08 of May 2014. The cost of debt will then add up to 9.31 %. The calculations are displayed in the table below;

Synthetic Rating Based on Interest Coverage Ratio	2007	2008	2009	2010	2011	2012	2013
Knivsfå Suggested Weights		0,05	0,1	0,15	0,2	0,25	0,25
Interest Coverage Ratio = EBIT/Interest expenses	7,74835768	0,04059371	6,83251482	0,71111111	1,07117	1,34120299	2,90899551
Synthetic Rating Low Market Cap Firms (Less than \$5 bn)	A+	D	A	C	CC	CCC	B+
Spread	0,85 %	12,00 %	1,00 %	10,50 %	9,50 %	8,75 %	5,50 %
	Avg last 3 y	Avg last 5 y	Avg last 6 y	Avg last 6 years using Knivsfå Weights			
Interest Coverage Ratio	1,7737895	2,57299889	2,15093136	2,06873146			
Synthetic Rating	B-	B+	B	B			
Spread	7,25 %	5,50 %	6,50 %	6,50 %			
	3 year	5 year	10 years				
Interest rate 08 May 2014 Norwegian Government bonds	1,72 %	2,09 %	2,81 %				
US Treasury Notes 08 May 2014	0,86 %	1,63 %	2,61 %				
Cost of Debt using Norwegian Government bonds	9,31 %						
Cost of Debt using USD Treasury rate	9,11 %						

As for the beta and the market risk premium, Damodaran also operates with an adjustment for country risk with regards to debt. Being an international operator, SIOFF are off course exposed to the risks of international business. As mentioned in the cost of equity section this multinational exposure also offers an element of diversification and hedging. The revenue comes in several currencies. The debt correlates to these currencies. Nevertheless the country risk for the USA is estimated to 0 by Damodaran. The same goes for Norway. One could argue for an adjustment of the risks toward Africa, Latin America and Asia. Damodaran has estimated the global (add-on) risk premium for the Oilfield Service and Equipment segment to be 0.9 %. This is based on a global weighted average.¹⁴³

7.4.3 Synthetic rating Knivsfå

Knivsfåas rating based on four ratios	2008	2009	2010	2011	2012	2013	Weighted ratio and rating
Amounts in USD 1000							
Suggested weights by Knivsfå	0,05	0,1	0,15	0,2	0,25	0,25	
Current assets	150783	192290	199639	223158	256955	206200	
Current liabilities	93945	96668	125727	160988	159740	166900	
Current ratio	1,6050136	1,9891795	1,5878769	1,3861779	1,6085827	1,2354703	1,505599
Knivsfå rating	BBB	BBB	BBB	BB	BBB	BB	BBB

¹⁴³ Cost of Capital data http://pages.stern.nyu.edu/~adamodar/New_Home_Page/data.html

EBIT	681	80692	17216	43497	54139	69301	
Financial income	10588	7760	8130	5719	4106	5360	
Financial expenses	17283	13238	28027	44785	42302	36132	
Interest coverage ratio (Pre-tax version)	0,652028	6,681674	0,9043422	1,0989394	1,3768853	2,0663401	1,9170143
Knivsfloor rating	B	AA	B	BB	BB	BBB	BBB
Interest coverage ratio (Post-tax version)	0,6506528	7,7591409	1,0097582	1,2701507	1,603469	2,4058687	2,216275
Knivsfloor rating	B	AA	B	BB	BB	BBB	BBB

The reason for the difference between pre- and post-tax interest coverage ratio is that operating income is taxed with a 14 % rate, and financial income and deduction for financial expenses are subject to a 28 % rate.

Total equity Book Value	425944	702728	769070	769751	786510	793900	
Total liabilities Book Value	437906	581250	942413	1090780	951947	1102200	
Equity to total assets ratio BV	0,4930763	0,5473053	0,4493588	0,4137265	0,4524184	0,4187015	0,4473135
Knivsfloor rating	BBB	BBB	BBB	BBB	BBB	BBB	BBB
Market value of equity (USD)	408766	450410	698221	550304	542061	614200	
Total assets Book Value	863850	1283978	1711483	1860531	1738457	1896100	
Equity to total assets ratio MV of Equity	0,4731911	0,3507926	0,4079628	0,2957778	0,3118058	0,3239279	0,3380222
Knivsfloor rating based on MV of Equity	BBB	BB	BB	BB	BB	BB	BB

Operating Income (EBIT)	681	80692	17216	43497	54139	69301	
Net Operating Assets	700848	1095002	1503039	1643420	1551223	1730309	
Return on Net Operating Assets (RNOA)	0,0010692	0,089865	0,0132531	0,0276482	0,0338936	0,042237	0,0355902
Knivsfloor rating	CCC	BBB	CCC	B	B	B	B
RNOA after tax using tax rate of 14 % on EBIT	0,0008356	0,0633744	0,0098505	0,0227619	0,0300147	0,0344441	0,0285239
Adjusted Knivsfloor rating	CCC	BB	CCC	CCC	B	B	B

Total Knivsfloor rating	BB+		
Credit spread BB+ 10 years to maturity	0,0337		
	3 year	5 year	10 years
Interest rate 08 May 2014 Norwegian Government bonds	1,72 %	2,09 %	2,81 %
US Treasury Notes	0,86 %	1,63 %	2,61 %
Cost of Debt using Norwegian Government bonds	6,18 %		
Cost of Debt using USD Treasury rate	5,98 %		

Knivsfloor lecture 09-57 are on an after tax basis, and lecture 09-58 are pre-tax numbers. Using a 28 % tax rate, will make the numbers coincide. The numbers are based on US data in the

period 2001-2010, with times to maturity from 1 year to 30 years. 10 Years will be used in this paper. The same goes for the risk-less interest rate. (The Spread for this rating is similar to a BB+ spread using Damodaran's table from Jan 2014, despite Knivsfloor's table being based on an older time series)

7.4.4 Summary cost of debt

There is a significant difference in the result between the two approaches. Damodaran's interest coverage ratio is a common factor. The same coverage ratio is yielding a lower rating in the Damodaran table than in the Knivsfloor table. Damodaran is using only one key ratio but is being more restrictive in the grading. The spread based on a specific grade is similar for the relevant range. The spread based on the broader Knivsfloor approach and the more narrow and also more restrictive rating and corresponding spread based on the Damodaran will be given even weights in this thesis.

The cost of debt is set to $\frac{9,31\% + 6,18\%}{2} = 7,745\%$

Adding the 0.9 % global default spread for the cost of debt in the Oilfield Service and Equipment segment, the cost of debt will be 8,645 %

This is also in line with the margin on the traded bond. The bond margin of 4.75 % would yield a cost of debt of 4.75 % + 2.81 % + 0.9 % = 8.46 %.

A cost of debt of 8,645 % will be used in the continuation of this paper.

7.5 Summary cost of capital – WACC

$$WACC = \frac{Debt}{Debt+Equity} r_D (1 - \tau) + \frac{Equity}{Debt+Equity} r_E$$

Notation;

Debt is the market value of debt. Book value will serve as a proxy for the market value.

Equity is the market value of equity

r_D return on debt (cost of debt)

r_E return on equity (cost of equity)

τ tax rate

$$WACC_{SIOFF} = 0.6483 \cdot 0.08645 \cdot (1 - 0.28) + 0.3517 \cdot 0.0935 = 0.0732$$

Damodaran offers this alternative for the Global Oilfield Service and Equipment segment;

Date updated:	05.jan.14	Aswath Damodaran									
Raw Data from	S&P Capital IQ	http://www.damodaran.com									
Industry Name	Number of Firms	Beta	Cost of Equity	E/(D+E)	Std Dev in Stock	Cost of Debt	Tax Rate	After-tax Cost of Debt	D/(D+E)	Cost of Capital	
Oilfield Svcs/Equip.	593	1,14	10,28 %	72,79 %	66,87 %	5,94 %	13,98 %	5,11 %	27,21 %	8,87 %	
Long Term Treasury bond rate =			3,04 %								
Risk Premium to Use for Equity =			6,35 %	Global weighted average							
Global Default Spread to add to cost of debt =			0,90 %	Global weighted average							

The WACC for SIOFF is lower mainly because of a higher leverage combined with a higher rate for deduction of financial expenses.

SIOFF is using a hurdle rate, or discount rate of 11 %.¹⁴⁴

A final consideration is to use the 593 global firms from the table in the service beta section are used as a peer group, and the reported tax rate is used to find the unlevered beta. The levered beta for SIOFF is estimated using their tax rate for financials and debt ratio. This will yield yet another beta for SIOFF of 1.62 after the Bloomberg adjustment. The figures are presented in the table below.

This beta is within the range of the regression betas for the Norwegian peer group, but it is

Oilfield Svcs/Equip. Beta 593 Firms	1,14
D/E 593 Global Firms	0,3739
Tax rate used to unlever beta	13,98 %
Unlevered beta busines	0,86
Tax rate used to relever beta	28 %
D/E SIOFF	1,7134
Relevered Beta SIOFF	1,92572742
Bloomberg Adjusted Beta	1,61715161

well above all the industry sector betas from the service beta section. This is of course due to leverage. But looking at the leverage among the peer group on the Oslo Stock Exchange SIOFF is at the absolute low end. This beta will yield a cost of

equity using CAPM of 12.53 %. The WACC will be;

$$WACC_{SIOFF} = 0,6483 \cdot 0,08645 \cdot (1 - 0,28) + 0,3517 \cdot 0,1253 = 0,0844$$

This beta will not need any corrections towards a global average as it is based on the global beta for 593 firms in the sector. All the other corrections are maintained.

After this final exercise the beta has risen from the newspaper beta (DN) of around 0.4 to 1.92 before the Bloomberg adjustment.

The cost of capital is set to 8.44 %. This is the most conservative of the estimates, and it is not unreasonably high.

¹⁴⁴ Siem Offshore ASA **Annual reports** 2013 p.61

8 Growth

Growth is the most critical input in valuation¹⁴⁵. A firm can grow by managing its existing investments better, or by making new investments. As an example of efficiency growth Siem Offshore is laying off 60 Scandinavian seamen in an attempt to cut costs¹⁴⁶. This comes on top of previous/earlier layoffs of 100 local seamen. Chairman Sorensen in Siem Offshore points to the competition in the world market, but he emphasizes that the increasing protectionism and the demand for local content is an additional cause for these layoffs. Growth from improvements in efficiency can generate substantial growth in the near term, but not for ever.

Graham¹⁴⁷ suggests that the growth rate itself be calculated by comparing the average of the last three years with the corresponding figures ten years earlier. Read financial reports backward. Read the notes in the reports. The unpleasant are hidden in the back.

A long term constraint to growth is the growth rate in the economy. No firm can outgrow this rate in the long run. A rule of thumb is to use the riskless rate used in the valuation as a ceiling for long term, stable growth. The nominal riskless rate equals the expected inflation + the real riskless rate which in sum roughly equals the nominal growth rate in the economy in the long run.¹⁴⁸

Koller et al.¹⁴⁹ divides revenue growth into three main components; organic growth caused by the overall market expansion, organic growth due to changes in the market share, inorganic growth achieved by mergers and acquisitions (M&A). In a study by Baghai, Smith and Viguerie of 416 large companies worldwide, the gain in market share is the least significant of the three. The market share performance accounted for only 0,4 percentage point of a total growth of 10,1 % in the period 1999-2006. The average median revenue growth in the US in real term was 5,4 % in the period from 1963 -2007. The real growth in GDP was 3,2 % in the same period. This apparent disconnect may be explained by the capital inflow to companies

¹⁴⁵ Damodaran, A. (2012) **Investment Valuation**. 3rd ed. New Jersey, John Wiley & Sons, Inc. p. 271

¹⁴⁶ Sunnmørsposten <http://www.smp.no/nyheter/article7704395.ece>

¹⁴⁷ Graham, B. (2006) **The Intelligent Investor**. Revised edition. New York, HarperCollins Publishers. p. 319,328

¹⁴⁸ Damodaran, A. (2006) **Damodaran on Valuation**. 2nd ed. New Jersey, John Wiley & Sons, Inc. p.146

¹⁴⁹ Koller, T., Goedhart, M. & Wessels, D. (2010) **Valuation, Measuring and Managing the Value of Companies**. **Mc Kinsey & Company** 5th ed. New Jersey, John Wiley & Sons, Inc. p. 79-98

with growth opportunities, outsourcing and specialization, M&A and global expansion not affecting US GDP. The use of median company may affect the result. The median company is typically small, and small public companies grow faster. But, even the fastest growing company tend, to fall below 5 % growth within 10 years.

Petersen & Plenborg¹⁵⁰ introduces *sustainable growth* as a key measure. This is the upper limit to growth, while preserving financial risk, as in maintaining the same financial leverage. Sustainable growth = ROE x (1- Payout ratio). They also emphasize that all growth is not necessarily adding value. One measure of value creation is the Economic value added (EVA). Value added (EVA) = (ROIC-WACC) x Invested capital. (ROIC – WACC) is the measure Damodaran calls *excess return*.¹⁵¹ A further distinction between growth in EVA due to growth in core business or due to transitory item is needed to sort out the quality and the sustainability of growth. The increasingly popular share buy-back programs are only affecting the capital structure, and not the underlying performance of the operation.

There are three basic methods of estimating growth according to Damodaran, starting with the least precise method;

1. Historical growth. Past growth is not a sure indicator of the future. The geometric average is preferred over arithmetic average. This is even more important with erratic growth. The geometric mean uses only the first and the last observation. This is partly overcome by using OLS regressions of earnings per share (EPS) against time. Time series do better than models based on past earnings but may be of limited value for periods extending over several years. Siem Offshore is relatively young and in many respects regarded as a high growth firm. In the presence of negative earnings and volatile growth, as is the case in SIOFF, the revenue might be a better indicator than earnings. Revenue growth is less volatile and less affected by accounting choices and adjustments.

¹⁵⁰Petersen, C.V.& Plenborg, T. (2012) **Financial Statement Analysis**. Harlow, Pearson Education Limited p. 127-148

¹⁵¹ Damodaran, A. (2007) Return on Capital (ROC), Return on Invested Capital (ROIC) and Return on Equity (ROE): Measurement and Implications. **Stern School of Business** p. 36

Titman and Martin¹⁵² argues that although the geometric mean is the appropriate way to measure historic return, the arithmetic average is a better estimate for forward looking periods.

2. Analyst or manager estimate of growth. Managers are likely to overestimate their capacity to generate growth and may serve as an upper limit to the growth estimate. Analysts may have their own biases, but are able to include the latest information about the firm, macroeconomics, the competitors, private information and public information other than historic data on earnings.

3. Fundamental determinants of growth. This is held up as the soundest way.

In the long run a firm's growth will depend on the reinvestment it makes in new assets and the quality of these investments. Investments in this broad sense, includes acquisitions, expanding market capabilities and building distribution channels.

8.1 Growth in SIOFF

In some respect SIOFF may be regarded as a high growth firm. Koller et al.¹⁵³ suggests the measure of organic revenue growth exceeding 15 % annually, to categorize a firm as a high growth company. They recommend the use of discounted cash flow (DCF) valuation. The process should begin with the future, by sizing the potential market, predicting the level of sustainable profitability, and estimating the investment necessary to achieve scale. The long term future view is linked back to current performance.

Damodaran¹⁵⁴ defines growth companies as firms that get most of their value from growth assets - from investments yet to be made. This main characteristic may not fit SIOFF exactly although the strategy is altered towards an increase in subsea which is expected to be more profitable. Other characteristics like short and shifting history and profitability makes a better fit. The debt to equity ratio is more than 1.5 but SIOFF is still on the shallow side regarding leverage amongst the Norwegian peer group. The market value of equity is below the book value, but again, this goes for the peer group as well.

¹⁵² Titman, S. & Martin, J. (2013) *Valuation: The Art and Science of Corporate Investment Decisions*. 2nd ed. Harlow, Pearson Education Limited p.121

¹⁵³ Koller, T., Goedhart, M. & Wessels, D. (2010) *Valuation, Measuring and Managing the Value of Companies*. **Mc Kinsey & Company** 5th ed. New Jersey, John Wiley & Sons, Inc. p.717-718

¹⁵⁴ Damodaran, A. (2010) *The Dark Side of Valuation*. 2nd ed. New Jersey, Pearson Education, inc. Published as FT Press p.263-266

Young or start-up firm? In a lifecycle perspective SIOFF may be seen as a young firm in a high growth phase. In this group it is common with rapidly growing revenue, with earnings lagging behind. The existing assets have significant value, but a larger proportion of value still come from future growth.¹⁵⁵

The label *high growth*, *young startup* etc. is not of cardinal importance, but merely means for finding characteristics and appropriate methods of measuring performance and profitability.

There are several approaches available to capture the growth in a company within the 3 basic methods. The state of SIOFFs economy and its history, and the slump the OSV business is in, limits the available options. The next section will present the findings in SIOFF using the methods that seem to fit best with the characteristics and numbers in SIOFF.

8.2 The historical growth in revenue for SIOFF

The regression of operating income and EPS did not show any significant relationship between the variables. EPS in SIOFF is volatile in the period and negative in 2008 and 2011. Operating income is also fluctuating. Regressions on revenue came out with more explanatory power (high R^2 and reasonable standard error).

Revenue 2005-2013			Revenue 2008-2013			Log Revenue 2008-2013					
$\beta 1$	44749,4167	34730,8889	$\beta 0$	$\beta 1$	43491,4857	170842,619	$\beta 0$	$\beta 1$	0,16188866	12,0932322	$\beta 0$
se $\beta 1$	4009,89989	19090,942	se $\beta 0$	se $\beta 1$	8439,37157	25551,4663	se $\beta 0$	se $\beta 1$	0,03183173	0,09637534	se $\beta 0$
R^2	0,94678411	31060,551	se y	R^2	0,86909952	35304,4242	se y	R^2	0,86606395	0,13316167	se y
F	124,539666	7	df	F	26,5575661	4	df	F	25,8649999	4	df
ss reg	1,2015E+11	6753304782	ss resid	ss reg	3,3101E+10	4985609473	ss resid	ss reg	0,45863893	0,07092812	ss resid

The average revenue for the full period is USD 213 728 adding up to a growth rate of 20.94 %. The average revenue for the period 2008-2013 is USD 279 571 leading to a growth rate of 15.56 %. The regressions on the log of the revenue came up with a growth rate of 16.19 % for the period 2008-2013.

8.3 Analyst estimates of growth

The consensus among 6 analyst estimates on Reuters is revenue of USD 577 million's in 2014, and USD 660 million's in 2015. This is 10 % down for 2014 compared to the means a year ago, and around 10 % up for 2015 compared to the means of estimates a year ago.¹⁵⁶ The expected growth and recovery has been pushed out in time. This translates to 58.5 % growth in 2014, followed by 14.4 % in 2015.

¹⁵⁵ Damodaran, A. (2012) **Investment Valuation**. 3rd ed. New Jersey, John Wiley & Sons, Inc. p. 644-646

¹⁵⁶ <http://www.reuters.com/finance/stocks/analyst?symbol=SIOFF.OL>

Arctic Securities expect revenue to rise to USD 621 mill in 2014, and USD 678 mill in 2015.¹⁵⁷ This is an increase of 70.1 % in 2014 followed by 9.2 % in 2015. The EBIT margin is expected to increase to 25.2 % by 2015.

Based on estimates from Fearnley Securities¹⁵⁸ the EBIT/Revenue for DESSC, DOF, FAR and SOFF is in the region 23-36 % and a sales-to-capital in the region 29-37 % for 2014 and 2015. The average EBIT/Revenue for 2014 is 28.5 %, and 27.75 % for 2015. The average sales-to-capital is 32.25 % for 2014 and 31.5 % for 2015.

8.4 Fundamental determinants in SIOFF

When a firm has a stable return on capital its expected growth in operating income is a product of the reinvestment rate and the quality of these reinvestments. The quality is here measured by the return on the capital invested. (ROIC)

$$\text{Expected growth}_{EBIT} = \text{Reinvestment rate} \times \text{Return on capital.}$$

Reinvestment rate = (Capital expenditure - Depreciation + Δ Noncash WC)/[EBIT(1-Tax Rate)]

Return on Capital = EBIT(1-t)/(Book value of Equity + Book value of debt – Cash and marketable securities)

To capture the nature of SIOFFs fluctuating figures in the financial statement, shifting profitability and low return, the expected growth in EBIT will be estimated by aggregating the reinvestment rate and the return on capital. The aggregated invested capital, reinvestment and EBIT(1-t) is used to find an average reinvestment rate and ROIC.¹⁵⁹ From this aggregation the estimated growth in operating income for SIOFF is 13.76 %. This implies an initial reinvestment rate of 4.174.

The historic ROIC in SIOFF based on the aggregated figures is 3.3 %. Besides this obviously being below the cost of capital, it also demands hefty reinvestments to sustain the brisk

¹⁵⁷ Arctic Securities (2014) **Result analysis Siem Offshore** (20 February 2014)

¹⁵⁸ Fearnley Securities AS **OSV Sector outlook 4q13 previews** (24 February 2014)

¹⁵⁹ Damodaran, A. (2012) **Investment Valuation**. 3rd ed. New Jersey, John Wiley & Sons, Inc. p. 292
Damodaran has not included the first column/year for reinvestment in his example. The request for an explanation from Mr Damodaran is not yet answered. Until further it will be considered a possible spreadsheet mistake made by Damodaran. This valuation is based on aggregation of all the years for both reinvestment and return in capital. Appendix Growth and Forecast for SIOFF

growth in SIOFF. The sales to capital in SIOFF from 2009 onwards have averaged 21.63 %, with a standard error of 1.55 %.

Hereof lies some of the problems, challenges, and the financial predicament in SIOFF. SIOFF is, and has been, destroying value as the ROIC-WACC has been, and is negative. As a consequence, the market is pricing the equity in SIOFF well below book value.

One of the reasons for choosing just SIOFF in this valuation was due to the fact that the mutual funds Skagen Kon-Tiki and Skagen Vekst were major shareholders in SIOFF.

Kristoffer Stensrud, one of the founders of Skagenfondene, and the manager of Skagen Kon-Tiki has on several occasions held SIOFF up as a company to invest in for the value oriented investor. In other words – I was hoping to find the company to be undervalued.

8.5 Steely business

On direct questions/confrontation about where the values in SIOFF where to be found (are hidden), Mr. Stensrud replied the 04th of June 2014;

“The steel-value of SIOFF is around 13 NOK/share. If you add 1-3 NOK for construction etc., DESSC¹⁶⁰ has once again led the way by sale to the Brazilians and rebated buy from JF¹⁶¹ with fixed financing and dividend policy.SIOFF will possibly see the light soon. Horrible business – nessekonger¹⁶² & commissioning sharks are all over...”

It goes beyond the scope of this thesis to enter into a discussion around all the details of the above. The basis for his conclusion is not taken directly from the latest annual reports. But Mr. Stensrud’s fundamental view is enticing. The argument makes sense in a fundamental view. The intrinsic steel value of NOK 13 per share on top of the cost of construction indicates a value well above the latest market value of NOK 8.49 the 11th of June 2014. It follows from this that the market is getting OSV-services way below the cost. The sales-to-capital, the ROIC and the OPEX level underpins this conclusion. Unless the market condition improves, leading to a pickup in revenue, SIOFF and its investors will have to consider changing the strategy towards divesting or liquidation of assets. In this steel value perspective the share is underpriced and the recommendation is a clear – buy.

¹⁶⁰ DESSC is the ticker for Deep Sea Supply, one of the companies in the peer group

¹⁶¹ John Fredriksen, shipping tycoon and stakeholder in DESSC.

¹⁶² “Nessekonger” may be explained as local privileged merchants, or owners of a smaller port, with a monopoly power to dictate prices and terms. The permission to trade was granted by the King. (This translation is done to the best of my knowledge and is by no means substantiated or verified by any official sources)

8.6 Assumptions for a going concern – Estimating sustainable margins and the path to margin

To value SIOFF as a going concern the prerequisite will be that the quality of growth, as measured by the sales-to-capital and ROIC, has to improve. This implies that ROIC has to rise towards or above the cost of capital to achieve sustainable margins. The required change in ROIC contradicts the findings in the mentioned McKinsey study¹⁶³ about ROIC being persistent for both high and low ROIC companies. The table below displays expected ROIC for some of the peer companies on the Oslo Stock Exchange, estimated by Fearnley Securities.¹⁶⁴

Company	Fearnley Securities AS ROIC	
	2013E	2014E
Deep Sea Supply	7 %	8 %
DOF	7 %	9 %
Farstad Shipping	6 %	8 %
Solstad Offshore	8 %	10 %
Mean	7,00 %	8,75 %
Harmonic mean	6,93 %	8,67 %

It should be plausible that SIOFF attains similar numbers eventually. The fleet in SIOFF is relatively young and consists mainly of high end-vessels. This indicates that SIOFF is expecting an increase in the demand for highly specified vessels and an accompanying premium in the OSV market.

It makes no economic sense to shape expensive steel into vessels not making up for the incurred costs. As the prevailing rates are not sustainable in the long run it is fair to assume that the market will in some way regain the equilibrium where demand and supply is in balance.

The slump in revenue and low margin is not confined to SIOFF .With a few exceptions, the struggle for profitability seems to be worldwide in the OSV business. This further justifies the assumptions for improved margins in the future.

¹⁶³ See the Financial statement section. Koller, T., Goedhart, M. & Wessels, D. (2010) **Valuation, Measuring and Managing the Value of Companies. Mc Kinsey & Company** 5th ed. New Jersey, John Wiley & Sons, Inc. p.77

¹⁶⁴ Fearnley Securities AS **OSV Sector outlook 4q13 previews** (24 February 2014)

These preconditions for a going concern will be modelled into the valuation parameters. The parameters will further be corrected for actual yard installments up to, and including 2016. The confirmed future installments, actually over-goes the brisk growth estimate, based on historic and fundamental determinants

9 Forecasting Pro Forma financial statement, P&L (Measuring FCFF)

Titman & Martin recommends the use of common size financial statement to construct the pro forma financial statement. A blind use of common size will fail to capture economies of scale effects.¹⁶⁵ The relationship between the individual entries and the firm revenue is used to construct the common size income statement in this paper.¹⁶⁶

The average operating expenses for the period 2009-2013 is 67.19 %. The standard error is 2.08 %. The average EBIT is 19.60 % with a standard error of 12.73 %. The fluctuations in EBIT, is partly due to bookings recurring with uneven intervals and magnitude. This is discussed in the financial statement chapter.

The following steps are used to compute FCFF. After the initial construction the pro forma statement is adjusted to incorporate the requirements for SIOFF to perform as a going concern from an investor perspective;

Step 1: Revenue. The revenue is constructed on the basis of the regression on historical revenue. A second input is analyst estimates. The projected revenue will stay within the span/range of these outcomes. The projected revenue has to fit with the planned and forecasted reinvestments and the sales-to-capital.

Step 2: Operating Income (EBIT). Operating income will be modelled on the basis of the fundamental approach. The second input is the expected operating margin in the mature phase, based on sustainable profitability. A third input is the operating margin, and expected operating margin for peer companies.¹⁶⁷

Step 3: Reinvestment. The initial reinvestment is based on the rate from the fundamental determinants section above. This is further adjusted for planned yard installments and deliveries of new vessels forward, including 2016. Reinvestment needs is further estimated on

¹⁶⁵ Titman, S. & Martin, J. (2014) Valuation: **The Art and Science of Corporate Investment Decisions**. 2nd ed. Harlow, Pearson Education Limited p. 206

¹⁶⁶ Appendix Growth and Forecast

¹⁶⁷ Damodaran, A. (2012) **Investment Valuation**. 3rd ed. New Jersey, John Wiley & Sons, Inc. p.650 Ill. 23.2

the basis of expected growth and return on capital. Sales-to-capital links this to revenue. Expected reinvestment = expected Δ revenue/ (sales/capital).¹⁶⁸ The reinvestments will be scaled down towards the stable reinvestment needed in the mature phase. Working capital (WC) is taken from the common size statement, and is expected to remain at 8% of revenue. Cash is expected to stay fixed. Arctic securities have made the opposite assumption regarding cash and WC.

Step 4: Terminal Value. The assumption is that the return on invested capital after the high growth period will be equal to the cost of capital in perpetuity. This implies a reinvestment in perpetuity of;¹⁶⁹

$$\text{Reinvestment rate in Mature Phase} = \text{Stable Growth rate} / \text{Stable return on capital.}$$

The stable growth rate is assumed to be 2.5 %.¹⁷⁰ This results in a reinvestment rate of (2.5 % / 8.44 %) = 29.62 % in perpetuity. The formula to calculate the terminal value is;

$$\text{Terminal Value} = [\text{EBIT}_{2019}(1-t)(1-\text{Reinvestment Rate})] / (\text{Cost of Capital}_{\text{stable}} - g_{\text{stable}})$$

Step 5: Adjustments. Make necessary adjustments in revenue, EBIT and reinvestments to link the long term future view to current performance. The EBIT as a percentage of revenue is presumed to increase with around 1 percentage point a year. The base year figure from the common size statement is 19.6 %. This will rise to 26-27 % in the terminal year.

The argument for the improvement in the operating income margin is economies of scale and efficiency growth. In addition to these internal improvements from SIOFF, an improvement in the market condition is necessitated to attain the target level for sustainable profitability.

These figures are further substantiated by looking at the analyst's expectation for SIOFF and its peers.

The reinvestment needed to fuel the growth will fall as the ROIC improves. Higher sales-to-capital ratio also decreases reinvestment needs.

¹⁶⁸ Damodaran, A. (2012) **Investment Valuation**. 3rd ed. New Jersey, John Wiley & Sons, Inc. p.651

¹⁶⁹ Damodaran, A. (2010) **The Dark Side of Valuation**. 2nd ed. New Jersey, Pearson Education, inc. Published as FT Press p.285

¹⁷⁰ PWC and NFF (2012) **Risikopremien i det norske markedet 2012 and 2013 (The risk premium in the Norwegian market)** p.16. This is also in line with the riskless rate used, of 2.81 %. Damodaran, A. (2006) **Damodaran on Valuation**. 2nd ed. New Jersey, John Wiley & Sons, Inc. p. 146 The stable growth rate is also discussed in the beginning of this chapter.

The EBIT corrected for confirmed installments are very much in line with the growth based on the fundamentals and in that respects complements this estimated growth rate. The actual installments are not as even as the estimated growth rate, but the adaption is manageable.

The above scenario makes a reasonable and believable forecast for SIOFF.

10 DCF Valuation

To value growth companies firm valuation models work better than equity valuation models.¹⁷¹ The free cash flow to the firm (FCFF) is calculated according to the pro forma statement below. The inputs are the results from the discussions in previous sections.

1000' USD	2013	2014	2015	2016	2017	2018	Terminal 19
Operating revenue	363995	433154	515453	613389	729933	868621	1033659
Growth rate rev	0,19						
EBIT (Operating Income)	69301	90313	113915	143226	179564	224538	284256
EBIT (Operating Income) % of Rev	0,196	20,85 %	22,10 %	23,35 %	24,60 %	25,85 %	27,50 %
Tax		12644	15948	20052	25139	31435	39796
NOPLAT		77669	97967	123175	154425	193103	244460
Depreciation		82453	94105	99168	110796	114436	117788
Delta WC		5235	6584	7835	9324	11095	13203
Capex		432000	246000	448000	220000	215000	176000
FCFF		-277113	-60512	-233492	35897	81444	173045
WACC	0,0844	ΔWACC					
Discount factor		0,922168941	0,850395556	0,7842	0,7231726	0,6669	
PV (FCFF)		-255545	-51459	-183106	25960	54314	
Terminal cashflow	173045	Terminal g					
Terminal Value	2913221	0,025					
PV(Terminal value)	1942790						
Enterprise value, EV	1532953						
Debt	1108814						
Cash	101206						
Value of minority interest	24691						
Value of equity, V (E)	500654						
Number of shares	389078						
Price per share USD	1,286770						

The FCFF is negative the first 3 years of the forecasted period. The high capex is attributed to the forecasted growth and actual yard installments and expected deliveries. The terminal value

¹⁷¹ Damodaran, A. (2010) **The Dark Side of Valuation**. 2nd ed. New Jersey, Pearson Education, inc. Published as FT Press p. 281

represents the lion's share of the estimated stock value. This too, is attributed to the grand investments in the coming 3 years. The estimated share value is USD 1.287 equivalent to NOK 7.72. The latest closing price on the Oslo Stock Exchange was NOK 8.3.¹⁷² According to this paper the stock is overvalued by around 7.5 % at the current market price. The share price has declined since January when it reached NOK10.40.

The firm will need to raise capital due to the negative cash flows in the first 3 years of the forecasted period. The WACC implies that the debt to equity ratio remains unchanged. That means that the capital need will be covered by new debt and new equity. To avoid double counting, this future loss in ownership does not justify an adjustment of the number of shares today.

1000' USD	2013	2014	2015	2016	2017	2018	Terminal 19
Reinvestment rate		4,56787989	1,61767696	2,89561678	0,76754375	0,57823548	0,29213321
Reinvestment (Net Capex + d WC)		354782	158479	356667	118528	111659	71415
Reinvestment in % of rev		0,81906654	0,30745568	0,58146881	0,16238156	0,12854753	0,0690895
PPE 31/12	1579070	1928617	2080512	2429344	2538548	2639112	2697324
Cash Constant	101206	101206	101206	101206	101206	101206	101206
Invested Capital beginning of year	1637882	1801496	2156278	2314757	2671424	2789952	2901611
sales to capital	0,22223518	0,24044131	0,23904771	0,26499086	0,2732376	0,31133902	0,3562362
Implied ROIC (NOPLAT/Inv. Capital)		0,04311353	0,04543341	0,05321281	0,05780615	0,06921378	0,08424986
Operating(noncash) Working Capital	29417	34652	41236	49071	58395	69490	82693
As percentage of Operating revenue	8,00 %						
Delta WC		5235	6584	7835	9324	11095	13203
Depreciation	75841	82453	94105	99168	110796	114436	117788
Capex from presentation March 2014		432000	246000	448000	220000	215000	176000
Capex as % of rev		0,9973	0,4772	0,7304	0,3014	0,2475	0,1703

11 Relative valuation

The law of one price and the related principle of no arbitrage, leads to relative valuation. Market information about comparable assets is used to estimate values. The assumption in relative valuation is that although the markets may be wrong on individual stocks, they are correct on average. Valuation based on multiples is popular among practitioners, and most valuations we see are relative.

Relative valuation offers an apparent ease of use, and can be done with less information and quicker than the intrinsic valuation. Relative valuation is more inclined to reflect the mood of

¹⁷² NOK/USD 13 June 2014 is 6.0038 <http://www.norges-bank.no/no/prisstabilitet/valutakurser/usd/>
http://www.oslobors.no/markedsaktivitet/stockOverview?newt_ticker=SIOFF

the market.¹⁷³ The pitfalls are i.e. differences in accounting practice and selecting the appropriate ratios with consistency in defining the denominator and the numerator.

A comparable firm is one with growth potential, risk, and cash flows similar to the firm being valued. This paper will nevertheless follow the convention of selecting a peer group from the same sector as comparable firms. The peers from the cost of equity section will be used.

Research supports the use of harmonic means and finds that it generates more accurate estimates of value than multiples based on the mean, median and value weighted average.¹⁷⁴

The table below is prepared on the basis of annual reports and estimations from Reuters and Fearnley Securities AS.¹⁷⁵ SIOFF is again included in the peer group using the same argument as in the cost of capital – that SIOFF is the best match for SIOFF.¹⁷⁶

Company	EV/Sales	EV/EBITDA	EV/EBIT	P/B	P/B	Reuters	Fearnley	Fearnley
	31.12.2013	31.12.2013	31.12.2013	31.12.2013	08.05.2014	P/B MRQ 10.06.14	EV/EBITDA 2013E	P/B 2013E
Deep Sea Supply	10,29	25,12	53,87	0,93	0,74	0,79	7,4	0,9
DOF	2,81	8,82	14,31	0,55	0,48	0,9	8,7	1
Farstad Shipping	3,59	9,43	16,52	0,75	0,69	0,63	8,3	0,7
Havila Shipping	4,86	9,99	13,65	0,12	0,12	0,5	9,3	
Solstad Offshore	4,03	9,19	12,72	0,93	0,85	0,79	7,8	0,9
Siem Offshore	4,62	11,59	24,27	0,78	0,71	0,71	12,1	
Mean ex DESSC	3,98	9,80	16,29	0,63	0,57	0,71	9,24	
Harmonic mean ex DESSC	3,83	9,71	15,46	0,36	0,35	0,68	9,03	
Mean	5,03	12,35	22,56	0,68	0,60	0,72	8,93	0,88
Harmonic mean	4,28	10,82	17,54	0,40	0,39	0,69	8,71	0,86

MRQ = most recent quarter

Deep Sea Supply (DESSC) is excluded from the peer group due to the discrepancy between the figure based on the annual report and the figure from Fearnley. DESSC sold 15 vessels and the management company in May 2013. It was sold to DESS BTG, of which DESSC owns 50 %. This may be the part of the explanation for the difference in the ratio. The ratios in the following calculations are based on the harmonic mean ex-DESSC from the table above. The P/B ratio is the harmonic mean taken from the Reuters column dated the 10 of June 2014.

¹⁷³ Damodaran, A. (2006) **Damodaran on Valuation**. 2nd ed. New Jersey, John Wiley & Sons, Inc. 236

¹⁷⁴ Petersen, C.V. & Plenborg, T. (2012) **Financial Statement Analysis**. Harlow, Pearson Education Limited p. 234

¹⁷⁵ Fearnley Offshore Supply **OSV Sector outlook 4q13 previews** (24 February 2014)

<http://www.reuters.com/finance/stocks/financialHighlights?symbol=DESSC.OL> and the Annual Reports for the selected companies

¹⁷⁶ Titman, S. & Martin, J. (2014) **Valuation: The Art and Science of Corporate Investment Decisions**. 2nd ed. Harlow, Pearson Education Limited p. 117

Valuation based on multiples.¹⁷⁷

SIOFF	Average multiple for Comparables	SIOFF's Number	SIOFF's Valuation	Debt	Equity
Sales	3,83	2133411	8174350	6103277	2071073
EBITDA	9,71	850692	8262983	6103277	2159705
EBIT	15,46	406180	6278015	6103277	174737
Book Value	0,68	4829776			3275452
Average Valuation					1920242
Debt					6103277
Average Valuation ex EBIT					2502077
Number of shares 1000'	389078				
Value per share NOK	6,430784719				

EBIT is taken out of the calculation due to the different accounting practice for depreciation between SIOFF and the remaining peers.¹⁷⁸ The EV/EBITDA versus EV/EBIT for SIOFF versus the peers is also reinforcing this assumption.

The enterprise values are used for the first three ratios instead of market price, to detach the effect of capital structure. The ratios are held up against typical values to control for sensibleness.¹⁷⁹

The market value of SIOFF was NOK 9.65 at the beginning of 2014 and NOK 8.82 the 08th of May 2014. This is considerable above the result from the relative valuation, and may be due to the strong growth in SIOFF relative to the peer group. A multiple is a function of growth, risk and the potential to generate cash flow. SIOFF is also increasing the exposure to the more profitable subsea segment.

12 Sensitivity analysis

The value is sensitive to changes in parameters. Key parameters like WACC, revenue growth and growth in the stable mature phase, and EBIT/revenues are displayed below.

¹⁷⁷ Penman, S.H. (2013) **Financial Statement Analysis and Security Valuation**. 5thed. New York, McGraw-Hill Companies, Inc. p. 77

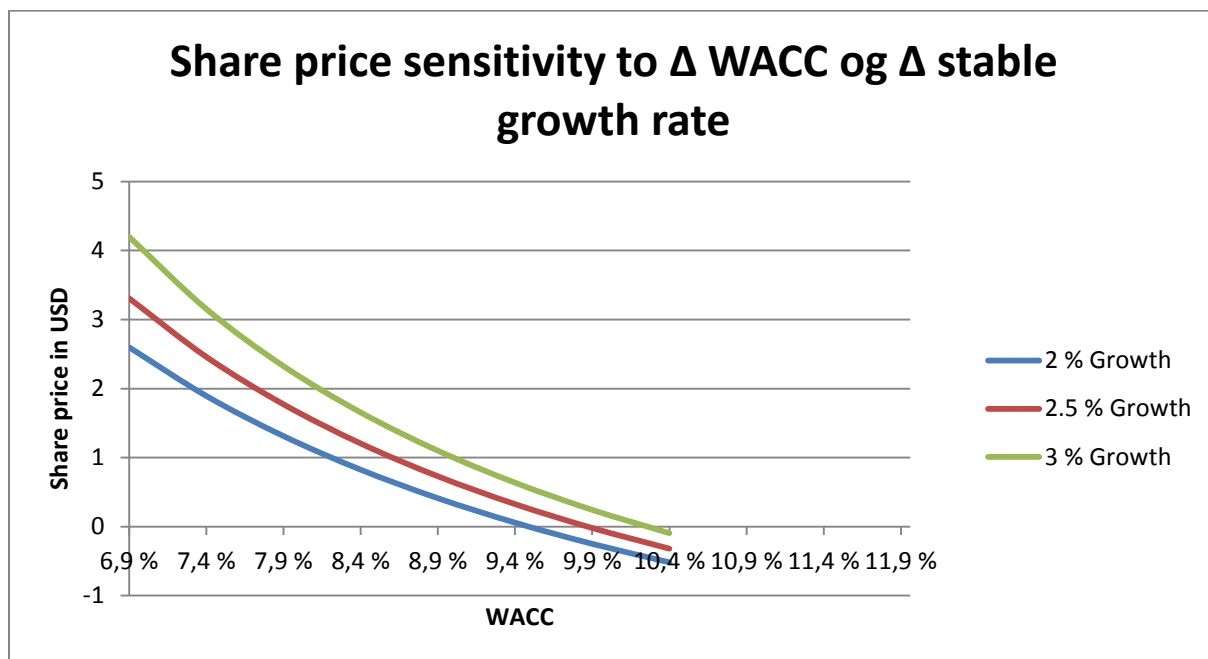
¹⁷⁸ See discussion around depreciation in the financial statement section.

¹⁷⁹ Penman, S.H. (2013) **Financial Statement Analysis and Security Valuation**. 5thed. New York, McGraw-Hill Companies, Inc. p. 79-80

The terminal growth is set to 2.5 %. This rate is based on the expected growth rate in the economy.¹⁸⁰

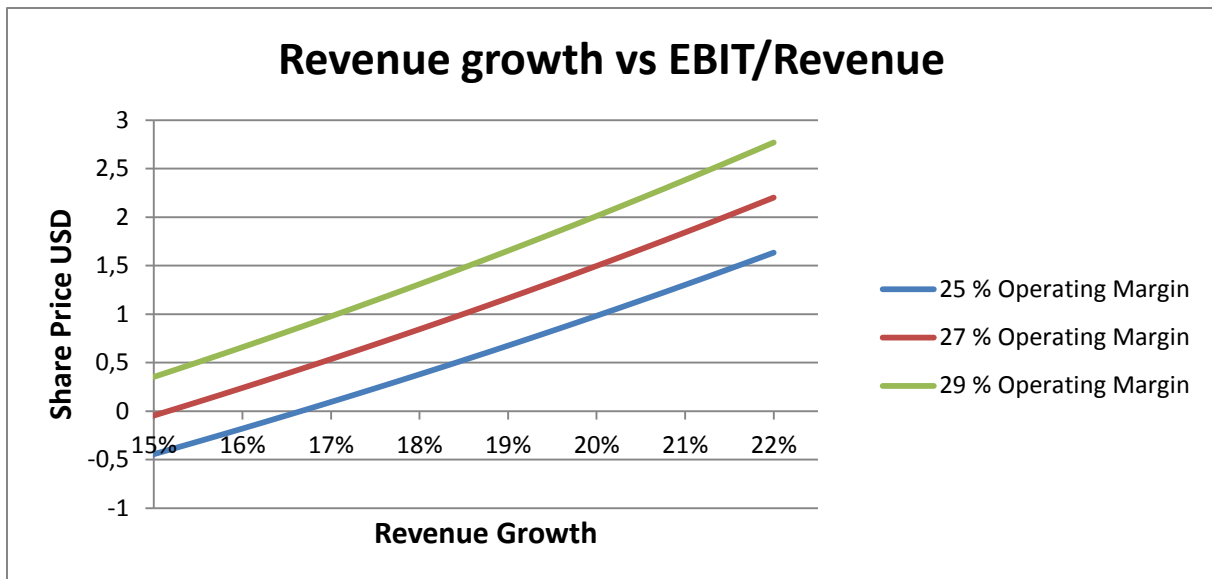
Small changes in the WACC and the growth rate in the stable mature phase translate into large changes in share price.

The share price is increasing as WACC is decreasing, and the share price is increasing at an even steeper rate as the difference between WACC and the stable growth rate decreases.



Another important driver for value is the revenue, which derives from the development in dayrates. The shareprice is again very sensitive for changes in revenue, and the operating income share of the revenue labeled operating margin in the chart below.

¹⁸⁰ PWC and NFF (2012) **Risikopremien i det norske markedet 2012 og 2013 (The risk premium in the Norwegian market)** p. 16



13 Conclusion

The purpose of this thesis was to estimate the intrinsic value of Siem Offshore. The salient point is whether the market conditions will improve sufficiently to enable the vessel owners in the OSV business to cover the cost of capital. The necessary internal improvements will most likely be implemented. There is no incentive for the owners not to manage their resources in the best possible way to increase margins towards sustainable profitable levels.

The result from the business and macro overview calls for caution with regard to profitability and the balance between demand and supply. The world economy is continuing the recovery. The demand for hydrocarbons will remain, but the prices are falling in the short term, but picking up again in the longer run. E&P is very sensitive to changes in the price of oil and gas, especially in arctic frontiers and in ultra deep water areas. This makes it difficult to predict anything more than sustainable profitability with no excess returns above the cost of capital.

Mr Stensrud is making an interesting and valid argument when he points to the price of steel and the basic cost of shaping this steel into an operable vessel. In this perspective the share price is clearly undervalued. On the other hand the Senior Research Analyst of IHS, David Hunter is shrugging his shoulders in reply to a question regarding the capability of the OSV

market to absorb all the newbuilds.¹⁸¹ Mr Hunter is following the OSV market in particular. IHS, former Petrodata, is tracking every vessel worldwide and is the main supplier of data to the business.

The well specified fleet in Siem Offshore will most likely find employed, but will the rates defend the extra cost of a high end vessel?

The sensitivity analysis demonstrates that the value is very sensitive to even small changes in any of the key parameter. This means that the valuation is associated (tied up) with a fair amount of uncertainty.

The DCF is the basis for this valuation and is consequently given the largest weight, with the relative valuation regarded as a supplement. Based on the result from the DCF valuation (80% weight) and the relative valuation (20 % weight) the estimated value per share is $0.8 \times 7.72 + 0.2 \times 6.43 = 7.46$

The estimated value in this paper is below the analyst's estimates. According to Møller and Kaldestad many valuations tend to be on the positive side. They are pointing to weakness in the analysis and several behavioral biases and analyst's being overly optimistic. They claim that the real life probability distribution usually have fat tails on the left side. The probability for disaster is greater than the probability for very good news. They justify this view by referring to catastrophe scenarios and Taleb's black swans. Competition from new players and substitutes further complicates the picture in the long run.¹⁸²

Based on the findings, assumptions and estimates throughout this paper the recommendation to investor is – Sell.

¹⁸¹ IHS Breakfast briefing in Stavanger on March 26, 2014. Subject; Offshore Rig Market, Supply Vessel Trends and more from IHS Petrodata Experts.

¹⁸² **Praktisk Økonomi & Finans** (2/2011) Tema Verdsettelse p. 60-65

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UiS http://dl.dropboxusercontent.com/u/8078351/teach/moa370_2013/index.html

Rekneskapsanalyse og verdivurdering BUS 440 Professor Kjell Henry Knivsfå at
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15 Appendix

15.1 Financial Statement Appendix

Fra: Glenn Pettersen [<mailto:Glenn.Pettersen@siemoffshore.com>]

Sendt: 16. mai 2014 11:34

Til: 'Geir Vidnes'

Emne: RE: årsrapporter

Hei,

Dette dokumentet inneholder noe om norsk tonnasjebeskatning som det meste av vår flåte er underlagt (ref. effektiv skattesats).

Mvh

Glenn Pettersen

Fra: Glenn Pettersen [<mailto:Glenn.Pettersen@siemoffshore.com>]

Sendt: 23. april 2014 13:17

Til: 'Geir Vidnes'

Emne: RE: årsrapporter

Hei,

Jeg har forhørt meg slik at vår tax manager ser på dette.

Kommer tilbake så snart jeg får noe derfra.

Mvh

Glenn Pettersen

Fra: Glenn Pettersen [mailto:Glenn.Pettersen@siemoffshore.com]

Sendt: 16. mai 2014 11:53

Til: 'Geir Vidnes'

Emne: RE: årsrapporter

Hei,

Som børsnotert selskap, kan vi ikke gå ut med mer informasjon enn hva vi gir til markedet/offentlig.

I forbindelse med å finne marginalsattesats er som regel dine egne argumentasjoner og vurderinger viktigs ifm denne typen oppgaver, men også ispedd faktiske forhold i de enkelte regioner. Derfor er ikke faktisk sattesats utslagsgivende. (snakker av erfaring).

I det store og hele vil ikke sattesatsen materielt være utslagsgivende for din verdivurdering, noe du også vil se dersom du gjør sensitivitetsanalyser.

Mvh

Glenn Pettersen

Reformulated Balance Sheet (Amounts in USD 1000)							
Net Operating Assets	2007	2008	2009	2010	2011	2012	2013
Operating Assets							
Deferred tax assets	3328	3430	4888	6254	6254	6885	11770
Intangible assets	9232	9232	9232	8903	29441	30020	29737
Vessel under construction	79724	161596	208511	105991	105199	108430	127711
Vessel and equipment	421389	452402	761921	1268799	1414548	1260118	1440332
Capitalized project cost	2910	1206	546	19102	13570	12153	11027
Investment in subsidiaries	0	0	0	0	0	0	0
Investment in associated companies	15718	15432	25352	28591	4218	4222	20951
Long-term receivables	2369	3287	8013	9197	7674	7111	6639
Accounts receivable	49793	36119	47907	53290	46544	44221	53198
Other short-term receivables	20191	39279	50151	23035	30730	38461	32737
Inventories	2102	1215	1943	4399	9249	7772	7555
Non-current asset held for sale	800	800	800	0	0	53604	18121
Total operating assets	607556	723998	1119264	1527561	1667427	1572997	1759778
Operating Liabilities							
Tax liabilities	8925	4027	2589	1936	13337	6799	6679
Pension liabilities	840	480	235	512	199	742	2778
Accounts payable	9478	5292	8148	7119	7311	5377	16253
Taxes payable	15260	13351	13290	14955	3160	8856	3759
Total operating liabilities	34503	23150	24262	24522	24007	21774	29469
Net Operating Assets	573053	700848	1095002	1503039	1643420	1551223	1730309
Financial Obligations & Owners Equity							
Financial Liabilities							
Borrowings (non-curr)	244704	250410	403134	739095	839031	714699	863074
CIRR loan	93467	66482	73225	65006	56469	53194	41718
Deferred CIRR	23429	22278	3627	3259	2891	2523	2155
Other non-current liabilities	344	284	1772	6878	17865	14992	18826
Borrowings (curr)	23891	28286	43036	71125	95472	82287	98426
Derivative financial instruments (curr lia)	0	30801	0	0	10171	12339	11085
Other current liabilities	19413	16215	32194	32528	44874	50882	44061
Total financial liabilities	405248	414756	556988	917891	1066773	930916	1079345
Financial Assets							
CIRR loan deposits	93467	66482	73225	65006	56469	53194	41718
Derivative financial instruments (curr ass)	15598	0	401	3731	0	5829	0
Cash	188308	73371	91088	115185	136635	107068	101206
Total financial assets	297373	139853	164714	183922	193104	166091	142924
Net Financial Obligations	107875	274903	392274	733969	873669	764825	936421
Equity							
Paid-in capital	335607	335598	482697	537212	537664	534964	526236
Other reserves	-15306	-31200	-8646	-7859	-11628	-11366	-19769
Retained earnings	130983	103415	205805	215967	208676	225824	250161
Shareholders Equity	451284	407813	679856	745320	734712	749422	756628
Noncontrolling interest	13895	18131	22872	23750	35038	36976	37260
Total Equity	465179	425944	702728	769070	769750	786398	793888
NFO + CSE (common equity) = NOA	573054	700847	1095002	1503039	1643419	1551223	1730309
Net Operating Asset (NOA) is the net investment in the business (in the operating activities)							
Net Financial Obligation is the net debt position							

From Consolidated Income statement (Amounts in USD 1000) FCF (direct metod Bernt Arne Adjusted)	2005	2006	2007	2008	2009	2010	2011	2012	2013
Operating Revenue	13233	73554	159342	192773	183558	228302	340628	368213	363995
Gain/(Loss) on sale of assets (Equipment revenue)	0	11160	-254	-8011	1047	6281	75	13692	29827
Gain on sales of interest rate derivatives (CIRR)	0	0	54	342	6097	368	368	368	368
Gain/(Loss) on currency exchange forward contracts	-3085	20789	39618	-47308	52805	-4789	1450	12479	-7756
Total Revenue	10148	105503	198760	137796	243507	230162	342521	394752	386434
Operating expences	12617	53074	79543	105035	125624	153660	217676	257864	241292
EBITDA (SIOFF har løftet EBITDA opp noen hakk)	-2469	52429	119217	32761	117883	76502	124845	136888	145142
Depreciation and amortization	1972	10895	18961	32080	37191	59286	81348	82749	75841
EBIT (Operating Income/Profit)	-4441	41534	100256	681	80692	17216	43497	54139	69301
Tax rate (marginal tax)	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14
Theoretical tax	-622	5815	14036	95	11297	2410	6090	7579	9702
NOPAT (or NOPLAT)	-3819	35719	86220	586	69395	14806	37407	46560	59599
Tax (Reported)	-898	-1219	-12617	-1950	1831	-622	-2653	-4016	3585
Effective tax rate	0,20220671	-0,02934945	-0,12584783	-2,86343612	0,02269122	-0,03612918	-0,06099271	-0,07417943	0,05173086
Depreciation	1972	10895	18961	32080	37191	59286	81348	82749	75841
Increase/(Delta) (operating) working capital	NA	5680	12470	13820	4614	-21047	5056	47765	-49526
Capex (Investement in Property, Plant and Equipment)	NA	211844	282222	143261	392965	482200	220774	-69869	274211
Free Cash Flow (To Firm)	#VERDII	-159550	-164571	-96775	-281765	-429155	-96963	246943	-188297

15.2 Cost of Capital Appendix

Damodaran, A. (2013) **Equity Risk Premiums (ERP): Determinants, Estimation and Implications – The 2013 Edition** (March 2013) p. 46 which again is based on Fernandez et al. (2012) **Market risk premium used in 82 countries in 2012: a survey with 7192 answers** (November 23 2013)

Table 10: Survey Estimates of Equity Risk Premium: By Region

Row Labels	Number	Average ERP	Median ERP
Africa	9	8.62%	8.59%
Developed Markets	20	6.06%	6.01%
Eastern Europe	12	7.63%	7.96%
Emerging Asia	13	7.60%	7.42%
EU Troubled	5	7.16%	6.81%
Latin America	15	9.67%	9.49%
Middle East	8	8.43%	8.88%
Grand Total	82	7.77%	7.76%

- Survey premiums: Earlier in the paper, we referenced a paper by Fernandez et al (2013) that surveyed academics, analysts and companies in 82 countries on equity risk premiums. The reported average premiums vary widely across markets and are higher for riskier emerging markets, as can be seen in table 10.

Again, while this does not conclusively prove that country risk commands a premium, it does indicate that those who do valuations in these countries seem to act like it does.

Ultimately, the question of whether country risk matters and should affect the equity risk premium is an empirical one, not a theoretical one, and for the moment, at least, the evidence seems to suggest that you should incorporate country risk into your discount rates. This could change as we continue to move towards a global economy, with globally diversified investors and a global equity market, but we are not there yet.

The tables below are from the Knivsflaa;

FORSLAG TIL RATING PÅ BASIS AV **FIRE** FORHOLDSTAL

Rating	Likviditets- grad 1 lg1	Rentedekningsgrad (etter 28% skatt) rdg	Eigenkapitalprosent (I høve til TK) ekp	Netto drifts- rentabilitet ndr
AAA	11,600	16,900	0,940	0,350
	8,900	11,600	0,895	0,308
AA	6,200	6,300	0,830	0,266
	4,600	4,825	0,755	0,216
A	3,000	3,350	0,660	0,166
	2,350	2,755	0,590	0,131
BBB	1,700	2,160	0,440	0,096
	1,450	1,690	0,380	0,082
BB	1,200	1,220	0,320	0,068
	1,050	1,060	0,270	0,054
B	0,900	0,900	0,220	0,040
	0,750	0,485	0,175	0,026
CCC	0,600	0,070	0,130	0,012
	0,550	-0,345	0,105	-0,002
CC	0,500	-0,760	0,080	-0,016
	0,450	-1,170	0,030	-0,030
C	0,400	-1,580	-0,020	-0,044
	0,350	-1,995	-0,100	-0,058
D	0,300	-2,410	-0,180	-0,072

Median mellom BBB-selskap

Grenseverdi mellom BBB og BB

Rating	Likviditetsgrad 1 lg1	Rentedekningsgrad (etter 28% skatt) rdg	Eigenkapitalprosent (i høve til TK) ekp	Netto driftsrentabilitet ndr
AAA	11,600	16,900	0,940	0,350
	8,900	11,600	0,895	0,308
AA	6,200	6,300	0,850	0,266
	4,600	4,825	0,755	0,216
A	3,000	3,350	0,660	0,166
	2,350	2,755	0,550	0,131
BBB	1,700	2,160	0,440	0,096
	1,450	1,690	0,380	0,082
BB	1,200	1,220	0,320	0,068
	1,050	1,060	0,270	0,054
B	0,900	0,900	0,220	0,040
	0,750	0,485	0,175	0,026
CCC	0,600	0,070	0,130	0,012
	0,550	-0,345	0,105	-0,002
CC	0,500	-0,760	0,080	-0,016
	0,450	-1,170	0,030	-0,030
C	0,400	-1,580	-0,020	-0,044
	0,350	-1,995	-0,100	-0,058
D	0,300	-2,410	-0,180	-0,072

Median mellom BBB-selskap

Grenseverdi mellom BBB og BB

FORSLAG TIL RATING PER 2013T

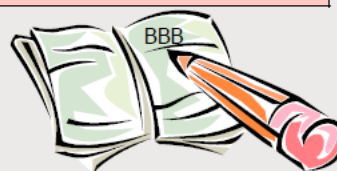


SYNETISK RATING	FORHOLDSTAL	RATING	Korleis finne snittet?
Likviditetsgrad 1	0,691	CCC	CCC + A = B + A = BB + A = BBB
Rentedekningsgrad	12,862	AAA	AAA - A = AA - A = A - A = BBB
Eigenkapitalprosent	0,455	BBB	BBB = BBB = BBB = BBB
Netto driftsrentabilitet	0,140	A	A = A = A = A
GJENNOMSNITTSRATING			BBB+

JAMFØR TABELLEN PÅ FØRRE PLANSJE

→ Ein passende rating for Telenor er

BBB+



Det inneber at sannsynet for konkurs innan 30.09.2014 er kring **0,2%**. **Telenor er svakast på likviditet i balansen med rating CCC**

08-75

FORSLAG TIL RATING OVER TID



Basert på utviklinga i fire forholdstal vil ei passende syntetisk rating **over tid og i høve til bransjen** vere:

Vekt		0,050	0,100	0,150	0,200	0,250	0,250	←
Syntetisk rating	SYMBOL	2008	2009	2010	2011	2012	2013T	VEKTA
TELENOR								
Likviditetsgrad 1	Ig1	CCC	B	CCC	CCC	CCC	CCC	CCC
Rentedekningsgrad	rdg	AA	AA	AA	AA	AA	AAA	AA
Eigenkapitalprosent	ekp	BBB	BBB	A	BBB	BBB	BBB	BBB
Netto driftsrentabilitet	ndr	BBB	BBB	BBB	BBB	BBB	A	BBB
GJENNOMSNIITSRATING		BBB	BBB	BBB	BBB	BBB	BBB	BBB
Bransjegjennomsnitt - verdivekta								
Likviditetsgrad 1		B	B	B	B	B	B	B
Rentedekningsgrad		A	AA	AA	AA	AA	AA	AA
Gjeldsprosent		BBB	BBB	BBB	BBB	BBB	BBB	BBB
Netto driftsrentabilitet		BBB	BBB	BBB	BBB	BBB	BBB	BBB
GJENNOMSNIITSRATING		BBB	BBB	BBB	BBB	BBB	BBB	BBB

08-76

RATING FRAMOVER I TID

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Likviditetsgradsrating	CCC	B	CCC	CCC	CCC	CCC	<div style="border: 1px solid black; padding: 5px; text-align: center;"> RATING FRAMOVER ER BASERT PÅ BUDSJETTERT FRAMTIDSREKNESKAP </div>											
Rentedekningsgradsrating	AA	AA	AA	AA	AA	AAA	AAA	AA	AA	AA	AA	AA	AA	AA	AA	AA	AA	AA
Eigenkapitalprosentrating	BBB	BBB	A	BBB	BBB	BBB	BBB	BBB	BBB	BBB	BBB	BBB	BBB	BBB	BBB	BBB	BBB	BBB
Netto driftsrentabilitetsrating	BBB	BBB	BBB	BBB	BBB	A	BBB	BBB	BBB	BBB	BBB	BBB	BBB	BBB	BBB	BBB	BBB	BBB
Gjennomsnittsrating	BBB	BBB	BBB	BBB	BBB	BBB	BBB	BBB	BBB	BBB	BBB	BBB	BBB	BBB	BBB	BBB	BBB	BBB

Likviditetsprognose, soliditetsprognose og
framtidrating
vert omhandla i føreling 15

08-80

RATINGKLASSER OG SANNSYN FOR KONKURS

RATING	STATISTIKK FRÅ S&P	SANNSYN p
AAA	0,0000	0,0000
AA	0,0002	0,0002
A	0,0008	0,0008
BBB	0,0026	0,0026
BB	0,0097	0,0097
B	0,0493	0,0493
CCC	?	0,1261
CC	ccc/c = cc?	0,2796
C	?	0,5099
D	?	0,8554

dvs, sannsynet for konkurs **eitt** år fram i tid; p aukar avtakande med tida

Med rating A-har TEL ein svært liten konkursrisiko, kanskje på **0,2%** eller der ikring

Statestikk for p vert også presentert i føreling 09

08-70

4.5

OPPSUMMERING ekk OG mik

	2008	2009	2010	2011	2012	2013	SNITT
Nibor-rente, 3 måneder	0,059	0,026	0,027	0,030	0,024	0,020	0,031
- Kreditrisikopremie i bank	0,006	0,006	0,006	0,006	0,006	0,006	0,006
= Risikofri rente før skatt	0,053	0,020	0,021	0,024	0,018	0,015	0,025
- 28% skatt	0,015	0,006	0,006	0,007	0,005	0,004	0,007
= Risikofri rente etter skatt	0,038	0,014	0,015	0,017	0,013	0,011	0,018
+ Justert beta	?	?	?	?	?	?	1,070
· Risikopremie etter skatt	0,047	0,057	0,060	0,056	0,057	0,060	0,056
+ Illikviditetspremie	0,000	0,000	0,000	0,000	0,000	0,000	0,000
= Eigenkapitalkrav	?	?	?	?	?	?	0,078
+ Illikviditetspremie minoritet	0,030	0,030	0,030	0,030	0,030	0,030	0,030
= Minoritetskrav	?	?	?	?	?	?	0,108

KJENNER SÅ LANGT BERRE GJENNOMSNIITTS-
KRAVET – IKKJE KRAVET ÅR FOR ÅR;

SJÅ PUNKT 6.1 - 6.2 FOR KORLEIS ME FINN KRAVET ÅR FOR ÅR

7,8%

09-53

DATA FØR SKATT FRÅ USA 2001-2010

BBB = 1,36%, dvs
om lag 1% etter skatt,
jmfør kort krp på førre planseje

Moody	Standard	Type	Credit spreads for given times to maturity						
			1	2	3	5	7	10	30
Aaa	AAA	Industrials	0,29	0,40	0,50	0,50	0,66	0,66	0,81
Aa1	AA+	Industrials	0,37	0,47	0,58	0,60	0,76	0,78	0,93
Aa2	AA	Industrials	0,46	0,57	0,69	0,67	0,84	0,88	1,04
Aa3	AA-	Industrials	0,53	0,64	0,76	0,77	0,94	0,97	1,13
A1	A+	Industrials	0,63	0,75	0,88	0,92	1,05	1,11	1,29
A2	A	Industrials	0,75	0,89	1,01	1,03	1,17	1,23	1,44
A3	A-	Industrials	0,92	1,08	1,18	1,20	1,33	1,38	1,61
Baa1	BBB+	Industrials	1,17	1,40	1,51	1,57	1,65	1,72	1,92
Baa2	BBB	Industrials	1,36	1,59	1,74	1,74	1,88	1,91	2,12
Baa3	BBB-	Industrials	1,66	1,92	2,08	2,14	2,19	2,29	2,56
Ba1	BB+	Industrials	3,05	3,35	3,46	3,50	3,52	3,37	3,67
Ba2	BB	Industrials	3,68	4,15	4,37	4,19	4,11	4,02	4,40
Ba3	BB-	Industrials	4,16	4,78	4,92	4,65	4,56	4,40	5,07
B1	B+	Industrials	5,16	5,47	5,64	5,37	5,26	5,04	5,60
B2	B	Industrials	5,60	6,09	6,19	6,34	5,89	5,74	6,63
B3	B-	Industrials	6,45	7,34	7,54	7,83	7,50	7,72	8,19
Caa	CCC	Industrials	11,00	11,94	11,93	11,73	11,48	11,92	12,93
Ca	CC	Industrials	20,10	21,14	20,71	19,53	19,44	20,32	22,41
C	C	Industrials	29,20	30,34	29,49	27,33	27,40	28,72	31,89
D	D	Industrials	38,30	39,54	38,27	35,13	35,36	37,12	41,37

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NORMAL KRP ETTER SKATT

BUS440 - ESTIMATET

Rating	KORT KRP ETTER SKATT	LANG- TILLEGG ETTER SKATT	LANG KRP ETTER SKATT
AAA	0,002	0,004	0,006
AA	0,004	0,004	0,008
A	0,006	0,004	0,010
BBB	0,010	0,004	0,014
BB	0,027	0,004	0,031
B	0,040	0,004	0,044
CCC	0,079	0,004	0,083
CC	0,145	0,004	0,149
C	0,210	0,004	0,214
D	0,276	0,004	0,280

BBB SKAL HA 1,4%
KRP PÅ LANGE LÅN

[Med eit langt lån med
«gjennomsnittleg»
attverande løpetid]

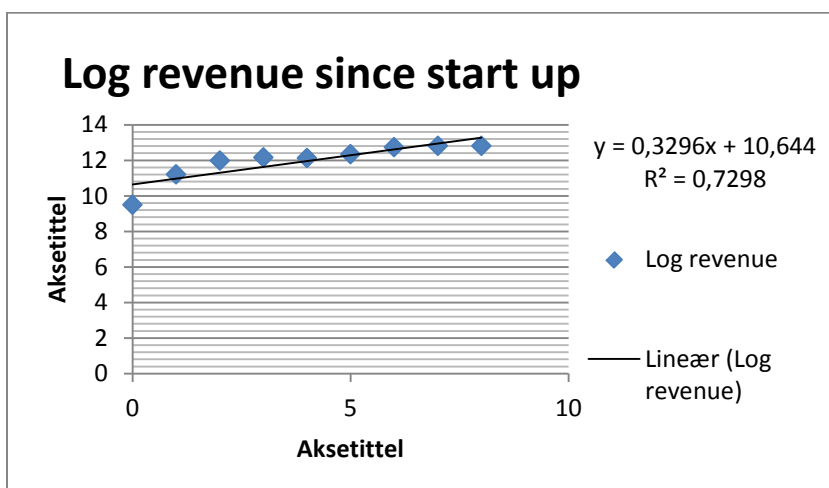
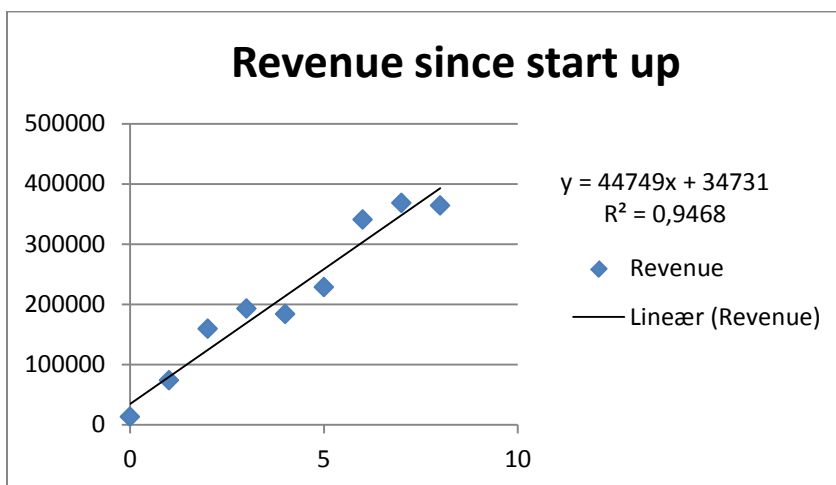
[AA: Kort krp før skatt =
0,004/(1-0,28) = 0,006;
sjå plansje 09-36]

09-57

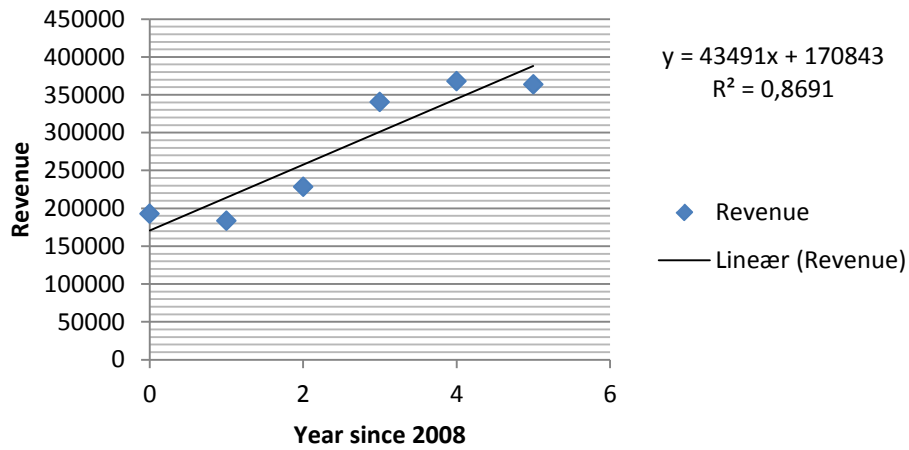
15.3 Growth Appendix

SAMMENDRAG (UTDATA)									
<i>Regresjonsstatistikk</i>									
Multipel R	0,97302832								
R-kvadrat	0,94678411								
Justert R-kvadrat	0,93918184								
Standardfeil	31060,551								
Observasjoner	9								
<i>Variansanalyse</i>									
	<i>fg</i>	<i>SK</i>	<i>GK</i>	<i>F</i>	<i>Signifikans-F</i>				
Regresjon	1	1,2015E+11	1,2015E+11	124,539666	1,0334E-05				
Residualer	7	6753304782	964757826						
Totalt	8	1,269E+11							
	<i>Koeffisienter</i>	<i>Standardfeil</i>	<i>t-Stat</i>	<i>P-verdi</i>	<i>Nederste 95%</i>	<i>Øverste 95%</i>	<i>Nedre 95,0%</i>	<i>Øverste 95,0%</i>	
Skjæringspunkt	34730,8889	19090,942	1,8192339	0,11169385	-10412,0156	79873,7934	-10412,0156	79873,7934	
Year since 2005	44749,4167	4009,89989	11,1597341	1,0334E-05	35267,5101	54231,3232	35267,5101	54231,3232	

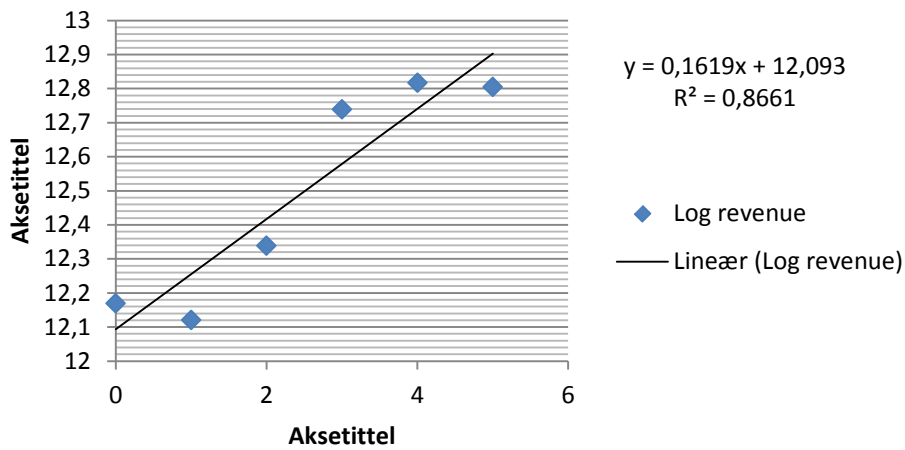
SAMMENDRAG (UTDATA)								
<i>Regresjonsstatistikk</i>								
Multipel R	0,93454199							
R-kvadrat	0,87336874							
Justert R-kvadrat	0,83115831							
Standardfeil	35312,7864							
Observasjoner	5							
Variansanalyse								
	<i>fg</i>	<i>SK</i>	<i>GK</i>	<i>F</i>	<i>Signifikans-F</i>			
Regresjon	1	2,5801E+10	2,5801E+10	20,690832	0,01990523			
Residualer	3	3740978651	1246992884					
Totalt	4	2,9542E+10						
	<i>Koeffisienter</i>	<i>Standardfeil</i>	<i>t-Stat</i>	<i>P-verdi</i>	<i>Nederste 95%</i>	<i>Øverste 95%</i>	<i>Nedre 95,0%</i>	<i>Øverste 95,0%</i>
Skjæringspunkt	161104,6	27353,1667	5,88979702	0,00976879	74054,6156	248154,584	74054,6156	248154,584
Year since 2008	50795	11166,8836	4,54871762	0,01990523	15256,9927	86333,0073	15256,9927	86333,0073



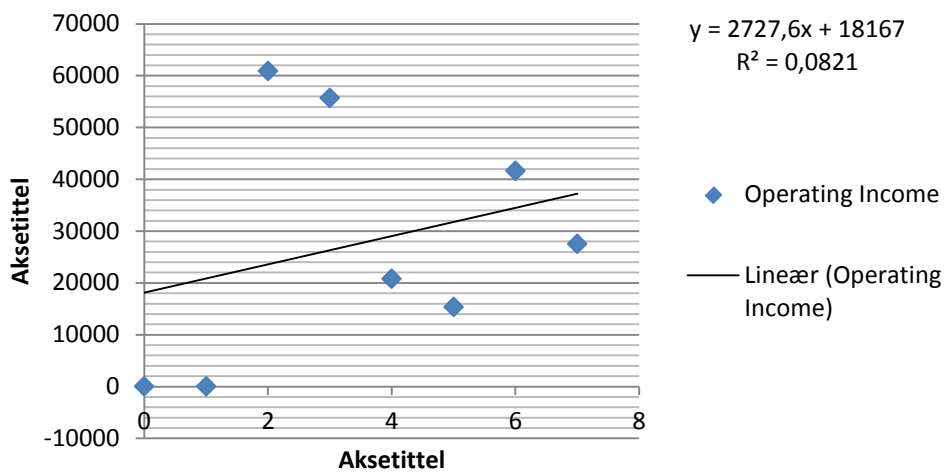
Revenue 2008 - 2013



Log revenue 2008 - 2013



Operating Income



Common Size

	2005	2006	2007	2008	2009	2010	2011	2012	2013	Average from 2009	St.dev	Average from 2007	St.dev.
COMMON SIZE based on Revenue													
Operating Revenue	13233	73554	159342	192773	183558	228302	340628	368213	363995				
Gain/(Loss) on sale of assets (Equipment revenue)													
Gain on sales of interest rate derivatives (CIRR)													
Gain/(Loss) on currency exchange forward contracts													
Total Revenue													
Operating expenses	95,34 %	72,16 %	49,92 %	54,49 %	68,44 %	67,31 %	63,90 %	70,03 %	66,29 %	67,19 %	2,06 %	62,91 %	7,67 %
EBITDA (SIOFF har løftet EBITDA opp noen hakk)	-18,66 %	71,28 %	74,82 %	16,99 %	64,22 %	33,51 %	36,65 %	37,18 %	39,87 %	42,29 %	11,15 %	43,32 %	19,63 %
Depreciation and amortization	14,90 %	14,81 %	11,90 %	16,64 %	20,26 %	25,97 %	23,88 %	22,47 %	20,84 %	22,68 %	2,08 %	20,28 %	4,72 %
EBIT (Operating Income/Profit)	-33,56 %	56,47 %	62,92 %	0,35 %	43,96 %	7,54 %	12,77 %	14,70 %	19,04 %	19,60 %	12,73 %	23,04 %	22,26 %
Tax rate (marginal tax)													
Theoretical tax (estimated to 14 %)													
NOPAT (or NOPLAT)	-28,86 %	48,56 %	54,11 %	0,30 %	37,81 %	6,49 %	10,98 %	12,64 %	16,37 %	16,86 %	10,94 %	19,81 %	19,15 %
Tax (Reported)													
Effective tax rate													
Depreciation	14,90 %	14,81 %	11,90 %	16,64 %	20,26 %	25,97 %	23,88 %	22,47 %	20,84 %	22,68 %	2,08 %	20,28 %	4,72 %
Increase/(Delta) (operating) working capital													
Increase in other operating assets (net of operating liabilities)													
Capex (Investment in Property, Plant and Equipm N/A)	288,01 %	177,12 %	74,32 %	214,08 %	211,21 %	64,81 %	-18,98 %	75,33 %	109,29 %	90,50 %		113,99 %	88,15 %

Growth in EBIT = (aggregated reinvestment rate) x (aggregated ROIC)

	2009	2010	2011	2012	2013	Aggregate	Incl. 2009		
EBIT(1-tax rate) (NOPLAT)	69395	14806	37407	46560	59599	227767	227767		
Capital expenditure (Capex)	392965	482200	220774	-69869	274211	907316	1300281	5,70882838	
Depreciation and amortization	37191	59286	81348	82749	75841	299224	336415	1,47701574	
Delta Operating Working Capital (noncash WC)	4614	-21047	5056	47765	-49526	-17752	-13138	-0,05768183	
Reinvestment	360388	401867	144482	-104853	148844	590340	950728	4,17413081	
Reinvestment rate	5,19327584	27,1426121	3,8623888	-2,25201967	2,49743032	2,592	4,174		
	2009	2010	2011	2012	2013	Aggregate		2014	
EBIT(1-tax rate) (NOPLAT)	69395	14806	37407	46560	59599	227767			
BV of debt (start)	437906	581250	942413	1090780	952690	4005039		1108814	
BV of equity (start)	425944	702728	769070	769750	786398	3453890		793888	
Cash holdings	91088	115185	136635	107068	101206	551182		101206	
Invested Capital	772762	1168793	1574848	1753462	1637882	6907747		1801496	
ROIC	0,08980141	0,01266756	0,02375304	0,02655292	0,03638776	0,03297265			
Expected growth rate (in operating income)	0,46636351	0,34383077	0,09174346	-0,0597977	0,0908759	0,08546057	0,13763214		
	This growth is tax neutral, but the ROIC and reinvestment rate are NOT								

Capex

From Consolidated Statement of Financial Position (Balance) (Amounts in USD 1000)	2005	2006	2007	2008	2009	2010	2011	2012	2013
Net PPE 31/12	39813	240762	504023	615204	970978	1393892	1533318	1380700	1579070
Depreciation Expense	1972	10895	18961	32080	37191	59286	81348	82749	75841
Capex	NA	211844	282222	143261	392965	482200	220774	-69869	274211

Sales to capital

	2009	2010	2011	2012	2013		
Operating Revenue	183558	228302	340628	368213	363995		
Invested Capital	772762	1168793	1574848	1753462	1637882	Average	St.dev
Sales-to-capital Ratio	0,23753497	0,19533142	0,21629262	0,209992	0,22223518	0,21627724	0,01553721

15.4 Sensitivity analysis

WACC vs growth rates in stable phase

				WACC							
	1,286770	0,0694	0,0744	0,0794	0,0844	0,0894	0,0944	0,0994	0,1044		
Growth	0,02	2,64452635	1,95838212	1,39197545	0,91731096	0,51446427	0,16886993	-0,13036608	-0,3915539		
mature	0,025	3,33536286	2,50922819	1,83957402	1,28676995	0,8234966	0,43031067	0,09299834	-0,19907144		
phase	0,03	4,20153859	3,18413869	2,37777959	1,7241442	1,18455457	0,73234781	0,34854784	0,01928232		

Revenue growth and operating margin

1,286770	0,15	0,155	0,16	0,165	0,17	0,175	0,18	0,185	0,19	0,195	0,2	0,205	0,21	0,215	0,22
0,25	-0,44	-0,31	-0,18	-0,04	0,09	0,24	0,38	0,53	0,68	0,83	0,98	1,14	1,30	1,47	1,63
0,27	-0,04	0,10	0,24	0,39	0,54	0,69	0,84	1,00	1,16	1,33	1,50	1,67	1,84	2,02	2,20
0,29	0,35	0,50	0,66	0,82	0,98	1,14	1,31	1,48	1,65	1,83	2,01	2,20	2,38	2,57	2,77