# Firm Valuation of Petroleum Geo-Services ASA

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# Executive Summary

**Target Price:** NOK 58.78
Share Price: NOK 44.23

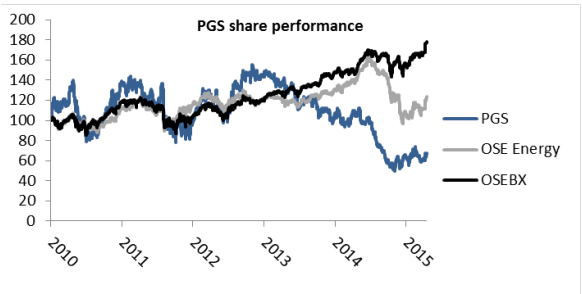
Buy
Hold
Sell

### PGS riding out the storm

Given the tough market conditions expected in 2015, PGS revenues are forecasted to decline by ~15%. Declining day rates and lower expected utilization sees EBITDA margin decreasing to ~44%. Despite this, PGS has a strong balance sheet, with an attractive debt profile which puts them in a position to navigate through the current market environment.

The long-term outlook is however positive as profitability is projected to recover with EBITDA margins bouncing back to ~51%. The delivery of the two new Ramform vessels, combined with increasing demand and higher day rates sees revenues to reach record heights in 2017.

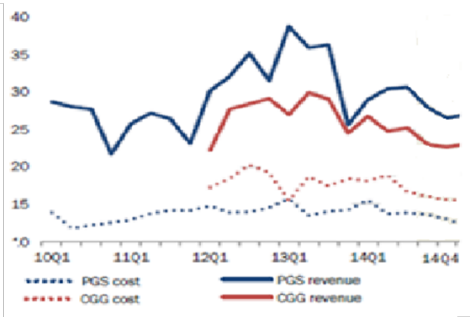
Cost and technology leadership combined with a highly advanced fleet makes PGS the preferred seismic company.




| | |
|---|---|
| Ticker: | PGS.OL, PGS NO |
| Industry | Oil and Gas Services |
| Sector: | Seismic |
| Number of shares: | 217.8m |
| Market Capitalization: | NOK 9,496m |
| Net Debt | NOK 1,038m |
| Enterprise Value 15e: | NOK 17,731m |
| Free Float: | 100% |
| Date for prices: | 16.04.2015 |

### Oil price bottomed out - set to recover

The oil price plummeted in the second half of 2014 reaching $49/bbl. Consequently the petroleum companies cut E&P spending, with the seismic industry being hit hard. We expect the oil price to recover to $75/bbl in 2017 and $81/bbl in the long term, and E&P spending to increase accordingly.

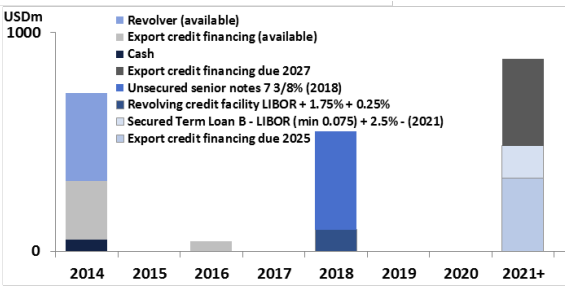



Source: Own creation, Canaccord (2015)

### Valuation and recommendation

Based on our company and market analysis we recommend a BUY with a target price of NOK 58.78, an upside of 33%.

| USDm | 2014 | 2015e | 2016e | 2017e | 2018e | 2019e | 2020e |
|---|---|---|---|---|---|---|---|
| Revenues | 1454 | 1238 | 1402 | 1666 | 1773 | 1864 | 1902 |
| EBITDA | 703 | 546 | 617 | 815 | 914 | 984 | 1014 |
| EBIT | 104 | 69 | 131 | 284 | 348 | 395 | 410 |
| NOPAT | 61 | 50 | 95 | 208 | 254 | 288 | 299 |
| Free cash flow (FOCF) | (136) | 68 | (145) | 112 | 191 | 239 | 230 |
| | | | | | | | |
| EPS | (0.23) | (0.03) | 0.16 | 0.62 | 0.83 | 0.99 | 1.04 |
| EV/EBITDA | 3.21 | 4.16 | 4.04 | 3.04 | 2.62 | 2.43 | 2.36 |
| EV/EBIT | 21.64 | 33.03 | 19.08 | 8.71 | 6.87 | 6.06 | 5.84 |
| | | | | | | | |
| ROIC | 2.1% | 1.7% | 3.0% | 6.4% | 7.7% | 8.5% | 8.7% |
| ROE | -2.7% | -0.4% | 1.8% | 6.7% | 8.3% | 9.8% | 9.9% |
| Div Yield | 1.7% | 0.8% | 1.2% | 1.9% | 2.6% | 13.5% | 12.7% |
| NIBD | 1,038 | 1,038 | 1,258 | 1,243 | 1,158 | 1,158 | 1,158 |




Source: Own creation, PGS Annual report

| Ticker | Coupon | Maturity | Price | Yield | Spread | Priority | Amount | Moody's | S&P |
|---|---|---|---|---|---|---|---|---|---|
| PGS | 7.375% | 01.09.2018 | 107.375 | 10.29 | 8.87 | Senior Unsecured | USD 450m | Ba2 | B+ |

# Table of Contents

# 1.0 Introduction

## 1.1 Introduction/Motivation

This thesis is an analysis of Petroleum Geo-Services (PGS), which is a Marine geophysical company that focuses on a broad range of seismic and reservoir services. The motivation for picking this topic is based on a number of reasons:

We find the art of valuation both interesting and challenging as it requires a large extent of interdisciplinary skills, and it allows us to investigate several aspects of a company in depth. Furthermore, we have both signed jobs within the financial sector, and see this as an opportunity to jumpstart our careers.

The plummeting oil price in the second half of 2014 has influenced the world economy heavily as several countries are highly dependent on the oil price. According to the UN one of the main challenges going forward will be to ensure that energy commodities are discovered and extrapolated in order to cover the needs of the growing population (Rogers et. al, 2008). Since oil and gas are currently the most needed energy sources globally and is expected to remain so in the future, exploring new areas that can hold vast amount of oil and gas reserves is crucial. Hence, the seismic industry plays a vital part in ensuring that future needs are met (Oil & Gas Journal, 2014). Furthermore, the high volatility in the market may give rise to changes in the industry structure, i.e. in form of consolidations, and thus making it a highly interesting sector to analyze.

Norway is currently the world's 16th largest producer of crude oil (CIA, 2015), and thus the performance of Oslo Stock Exchange (OSEBX) is highly reliant on the development of oil and gas prices. PGS is the 8th most traded stock on the OSEBX in the Norwegian market (PGS Annual Report 2014), and among the listed seismic companies, we consider PGS to be the most interesting company to analyze. This is because PGS is a central player in ensuring continued supply of energy resources, and one of the trendsetters in vessel technology and oil & gas exploration. Their continuous focus on providing the most technologically advanced seismic services, with the highest capacity of streamers and newest fleet, puts PGS in an advantageous position for future growth.

## 1.2 Problem Statement

The purpose of this paper is to assess the fair value of the PGS stock. This in order to provide a basis for investment decisions that could generate value for investors seeking exposure in the marine seismic segment. Both the strategic and financial context of PGS will be analyzed to provide investors with the best analytical platform. Hence we have formulated the following problem statement.

***What are the main value drivers affecting Petroleum Geo-Services' share price, and what is the theoretical value of Petroleum Geo-Services per April 16th 2015?***

To support the main problem statement, a number of sub questions will be investigated. These questions will also serve as a formal structure of the paper.

*Background information*

In order to undertake the most accurate valuation possible it is important to develop an in-depth knowledge of the seismic industry, the different segments, and the historic developments. Furthermore, information concerning the historic development of PGS and the structure of their business is crucial. The section aims to identify and answer the following questions:

- What characterizes the marine seismic operations and activities?
- What are PGS' characteristics and how has the firm developed?
- Who are PGS' peers and competitors?

*Strategic analysis*

This section of the paper investigates how macro-economic factors influence PGS' value creation looking at the supply/demand relationship in the market. The internal analysis investigates how PGS use their resources and capabilities given the macro environment in addition to competitive environment in the industry.

- What external macro factors affect PGS and their performance?
- What external micro factors affect PGS and their performance?
- Do PGS have a competitive advantage?

*Financial analysis*

Historical financial data provides a good reference point as to estimating future performance. Thus the financial analysis aims to uncover PGS' past performance and the reasons for the development.

- How profitable has PGS been over the selected historical period compared to their peers?
- What are the underlying reasons for the development in financial performance?
- What are the risks associated with investment in PGS, and how does this compare to that of their peers?

*Forecasting*

This section ties together the findings from the strategic and financial analysis in order to provide a realistic forecast of future cash flows. The sum of the parts approach is applied as each of PGS' segments are forecasted individually and then added up.

- How will the market outlook affect the future FCF of PGS?
- How will PGS' key value driver's change in the foreseeable future?

*Cost of capital*

Estimating WACC through CAPM, capital structure and debt return. This is done through both collecting historical data and assessing the forward looking trends in the market.

- What WACC is connected with an investment in PGS?

*Valuation*

The theoretical share price of PGS can be calculated through various valuation models. In order to ensure the validity of our forecast three models will be used; Discounted Cash Flow (DCF), Economic Value Added (EVA) and relative valuation.

- What is the theoretical value per share of PGS using the Discounted Cash Flow and Economic Value Added model?
- How sensitive is the determined value to fluctuations or changes in the central value drivers?
- What is the Enterprise Value of PGS using relative valuation through multiples?

## 1.3 Methodology

*Theory and models*

As the seismic industry is heavily influence by macro-economic factors, the Shipping Market Model, developed by Martin Stopford, is used to identify and analyze the main drivers. The framework provides a tool for analyzing the relationship between supply and demand in commodity industries. The demand for seismic industry is a function of offshore activity. We have thus taken a top down approach in analyzing the oil price and key factors driving the oil price and consequent E&P spending. In order to determine the supply we will look at the decision makers and how they affect the market dynamics.

Porter's Five Forces is used in order to understand the industry structure and its dynamics, and how this shapes the competitive environment. This in turn identifies the profitability of the industry, and how PGS is positioned relative to its competitive environment.

The VRIO framework is used to analyze PGS' resources and capabilities. Each individual source is identified by looking at the PGS value chain and categorized according to the following bracket: vessel, technology, MultiClient, financial, and organization. Each is then evaluated separately according to the questions of value, rarity, inimitability and organization, in order to determine whether it provides PGS with a sustainable or temporary competitive advantage (Barney and Hesterly, 2012).

There are many valuation and financial statement analysis theories developed in academia. We have chosen to use the framework and approach developed by Plenborg and Petersen (2012) as their theory concurs with the consensus on valuation theories. The operating profitability analysis is carried out through the use of the DuPont model.

The SWOT framework is used to summarize our findings in the strategic and financial sections, and lays the foundation for the forecasting.

We have used three different valuation approaches, the DCF, the EVA and relative valuation through trading multiples, to estimate the value of the firm.

The DCF model determines the enterprise value through the use of the free cash flows of the firm. Cash flows are forecasted over a set time horizon equal to the business cycle of the firm, and Gordon's Growth Model is used to calculate the terminal value. The EVA model determines the value of a firm based on the after tax operating income, subtracting the charge for the cost of the capital employed (Brealey et al, 2014). As both the DCF and the EVA model are based on the same inputs, they will provide the same share price. The relative valuation is a quick way of estimating the enterprise value of the firm through the use of peer multiples. Forward looking multiples have been applied as they are more accurate than backward looking multiples (Koller er al, 2010). EV/EBITDA, EV/EBIT and EV/Sales are the multiples used for valuation.

*Data Collection*

This paper is written from an investment perspective. We make the implicit assumption that the market is semi-strong efficient and therefore only use publicly available and historical information as a foundation for our analysis. As the valuation of PGS involves a financial and strategic aspect, both quantitative and qualitative data are used. Our data sources of information are annual reports, market data and equity research reports from investment banks. These findings will then be complemented with academic theory as well as financial articles and literature. Moreover, the sources we use will be referenced by the APA method.

*Criticism of sources*

As mentioned in the previous section, some information published by the company itself is used in this paper. PGS may have incentives to promote themselves as an attractive company in order to enhance their image. This could lead to certain biases, so to ensure that the validity of this paper is uninhibited, the authors will therefore remain cautious when treating such information. Statistical or historical data used, are collected from several independent sources to prevent bias in the estimates. Other sources are also scrutinized to assess their trustworthiness, accurateness and other prejudices.

## 1.4 Delimitations

In order to make the collection of information and analysis manageable, and at the same time provide a valid response to the problem statement, some limitations and assumptions have been necessary:

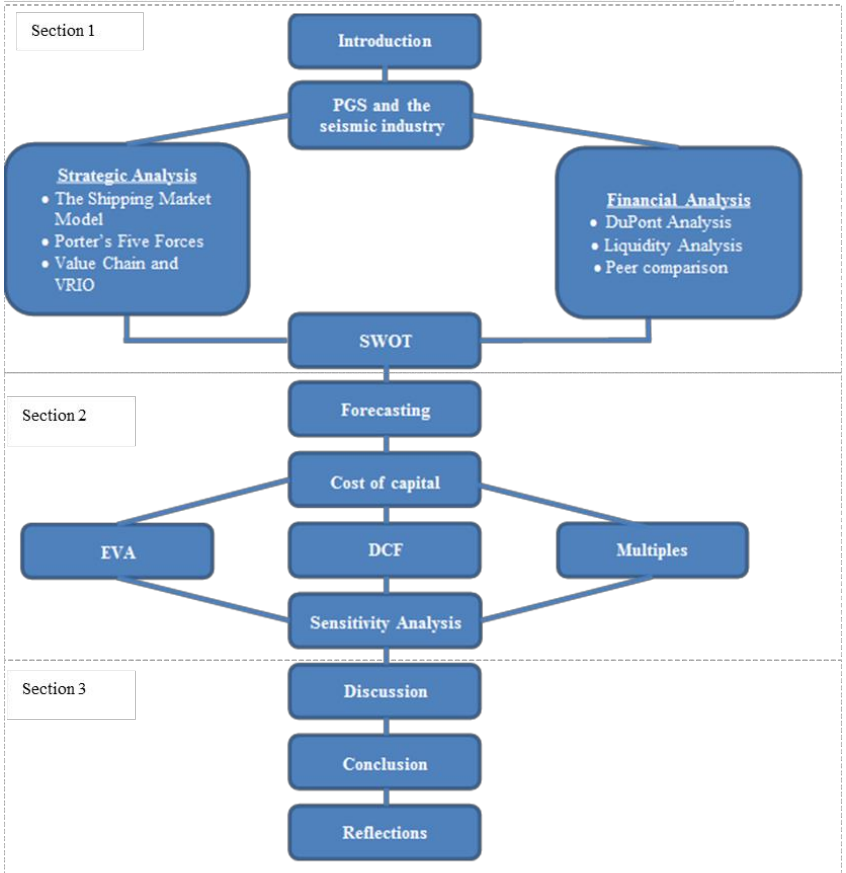
- Only publicly available information has been used in the analysis
- The cut-off date has been set to April 16, 2015, which is the day after the release of the latest annual report. Hence, no information after this date has been used in the analysis.
- 5 years of historical data has been used, as this will give a good portrayal and comprehension of the cycle in the industry.
- Capital structure is rebalanced every year in the WACC calculation.
- All cash is paid out as dividends, as it does not affect the firm valuation

Forecasting assumptions are highlighted as they occur in the appropriate sections.

## 1.5 Structure

The structure of the paper is illustrated in figure 1.1. Each section analyzes different aspects that lay the foundation for the following section. This gives the paper consistency, and makes it easy to follow.

**Figure 1.1 – Structure of the paper**




Source: Own creation

# 2.0 Petroleum Geo-Services and the seismic industry

## 2.1 Petroleum Geo-Services (PGS)

PGS was formed in 1991 after a merger between Geoteam and Precision Seismic and was listed on the OSEBX the following year. During the 1990's the company grew exponentially through mergers, acquisitions and divestments of less profitable ventures such as their onshore business in 2009/2010. The customers are mainly Oil Exploration and Production companies to which PGS provide seismic services. The fleet operates in 25 countries worldwide, with its headquarter located in Oslo, Norway. PGS employs over 2000 people and is the 8th largest firm in the energy sector on the OSEBX, as shown in figure 2.1. The stock is listed on the OSEBX under the ticker PGS and it also trades over the counter in the US under the ticker PGSVY.

Figure 2.1 – Top 10 Energy Companies listed on OSEBX (as of April 16, 2015)

| Rank | Name | Ticker | Market Cap. (MNOK) |
|---|---|---|---|
| 1 | Statoil | STL | 499,064 |
| 2 | Seadrill | SDRL | 46,393 |
| 3 | Subsea 7 | SUBC | 26,488 |
| 4 | TGS-NOPEC Geophys | TGS | 17,417 |
| 5 | DNO | DNO | 14,143 |
| 6 | Aker Solutions | AKSO | 13,772 |
| 7 | Det norske oljeselsk | DETNOR | 10,951 |
| 8 | Petroleum Geo-Serv | PGS | 9,496 |
| 9 | Ocean Yield | OCY | 7,739 |
| 10 | Hafslund | HNA | 6,896 |

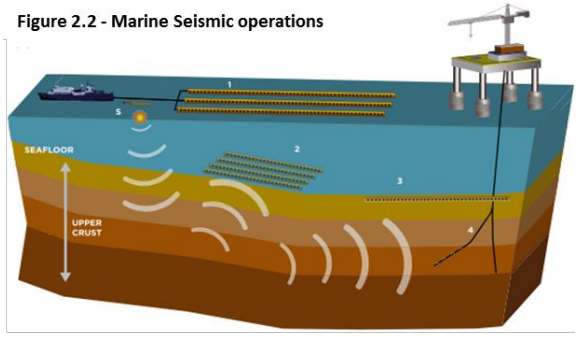
Source: Own creation, oslobors

In 2013 PGS was the 8th most traded share on the OSEBX, trading approximately 1.5 million shares a day. In 2014 the volume increased to 2.4 million shares per day (PGS Annual Report, 2014). This increase is closely linked to the significant changes in oil price and market outlook, which will be discussed in section 3.1. The current market cap is NOK 9,496m, which corresponds to $1,542m and the total operating revenue was $1,453m in 2014 (Yahoo Finance). Before analyzing PGS' operations, we will take a closer look at what seismic actually is.

## 2.2 Marine Seismic operations and activities

One of the most common uses of marine seismic activities and operations is to gain knowledge about geological structures in the ground. It entails the exploration of what commodities and minerals that exist in the depths of the ocean floor. Thus the oil industry use seismic surveys to locate new oil & gas reservoirs. The companies map what commodities

Figure 2.2 - Marine Seismic operations

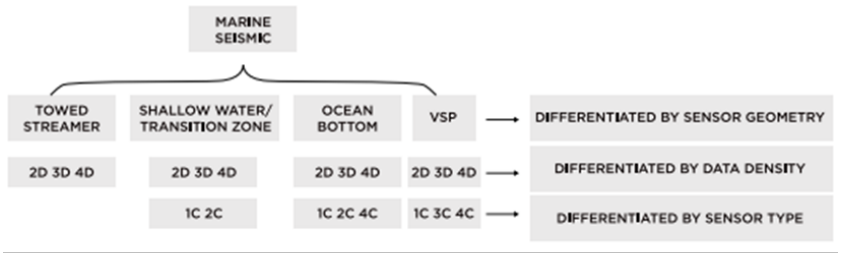



Source: International Association of Oil & Gas Producers

and minerals that exist beneath the surface by sending pressure waves that are reflected back when it meets a geological boundary, as illustrated in figure 2.2. The time it takes to reflect the wave gives us information about how far down the commodities are located. The quality of the data that is received depends on the survey type.

All surveys involve a source and some type of receiver or sensor. The surveys are differentiated on the basis of 1) the geometry of the receiver system 2) the density of measurements made over a given area 3) the type of sensor used (OGP, 2011) Figure 2.2 shows the different geometries used while surveying, and figure 2.3 shows the different survey types. PGS mostly use the towed streamer method, but also has some presence in ocean bottom seismic, especially in Brazil.

**Figure 2.3 - Marine Seismic operations**




Source: International Association of Oil & Gas Producers

Density of the measurement is the second way to differentiate the surveys. 3D surveys typically have a much denser number of measurements than 2D surveys, which results in better quality pictures. 4D surveys have a higher density than 3D, as they have multiple data points over the same location over a longer period of time.

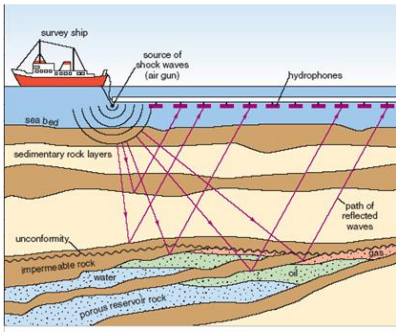
Thirdly, surveys are differentiated by the use of sensors. In marine seismic, the sensor is a hydrophone, also known as a streamer, which detects the pressure fluctuations in the water cause by reflected sound waves. The streamer is typically 3-8 kilometer long, but can be up to 12 kilometer long depending on the searching area. In ocean bottom surveys, the receiver system typically consists of a hydrophone and a 3-component geophone at each receiver station, and is processed as a 2 or 4 component data (OGP, 2011).

*2D vs 3D surveys*

As the focus on quality has increased over the last couple of years, the differences between 2D and 3D survey results have proven more important than before.

2D seismic surveys involve acquiring data sending vertical waves covering a small area, as the vessel has to be located above and close to the searching area, as shown in figure 2.4. The survey records data through a two-dimensional vertical cross-section. These surveys have provided valuable information on locations and geological structures. However, in certain areas, where the sub-surface is more complex, 2D surveys have proven to be inadequate. More detailed seismic information is required in these areas, and thus the use of three-dimensional surveys is required to improve the pictures.

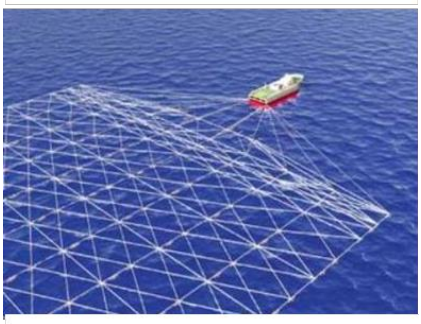
**Figure 2.4 - 2D seismic survey**




Source: Rambuenergy

Hence, the main advantage of 3D surveys is that it provides more detailed pictures of the sub-surface than 2D. This makes the interpretation both easier and more accurate. One of the biggest differences between 3D and 2D surveys is that 3D surveys use a grid of geophones and vibration source points to gather data over an area rather, as shown in figure 2.5, rather than a than a single cross-section (Community information paper, 2010). Secondly, the 3D surveys are also able to take pictures from different angles, while 2D has certain restrictions with respect to positioning.

**Figure 2.5 - 3D seismic survey**



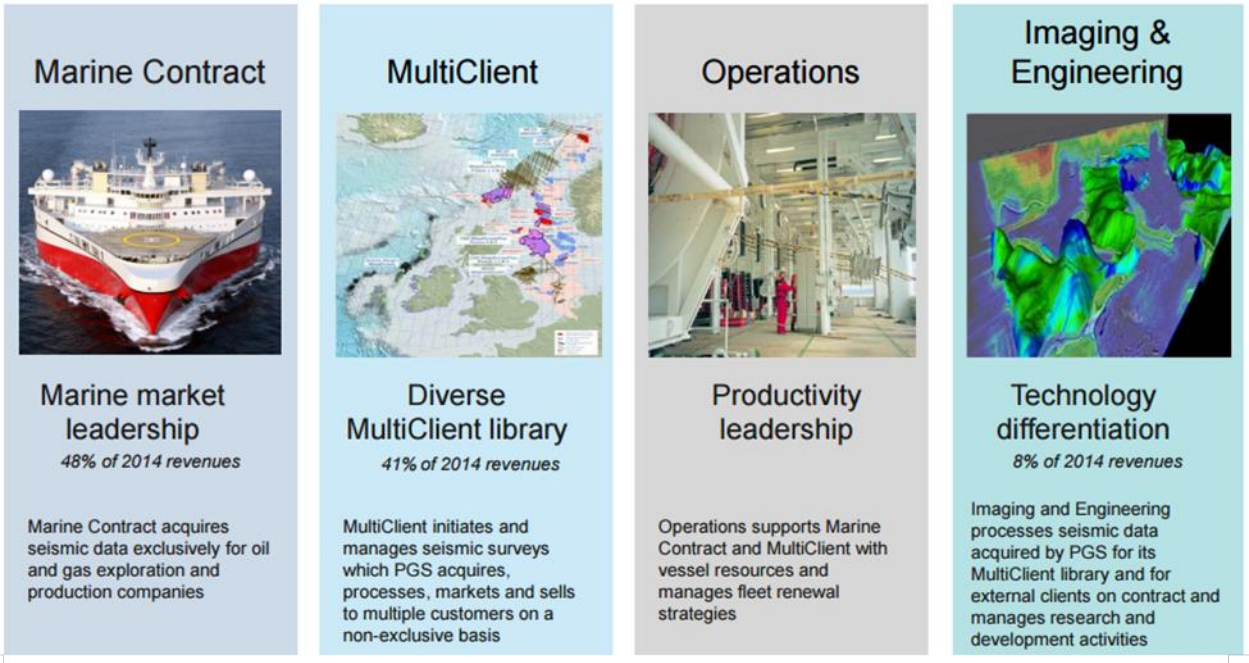
Source: Rambuenergy

After scanning certain areas and processing the images they acquire, the seismic companies sell this information to key industries with a demand for seismic data, which in most cases is the oil & gas industry.

## 2.3 PGS segments

PGS divides their operations into four main segments, shown in figure 2.6. As Operations is a support function for the other segments, we have defined their operating segments as 1) Marine Contracting 2) MultiClient 3) Imaging, Engineering and other

**Figure 2.6 – PGS segment information**




Source: PGS Capital Markets Day Presentation

*Marine contracting*

E&P companies may typically choose to access seismic data on either a proprietary or MultiClient basis. Proprietary seismic involves contracting a seismic company who will acquire and process data on behalf of the petroleum company, who will take full and exclusive ownership of the data (TGS Annual Report, 2013). There are different ways of obtaining the proprietary data; PGS' Marine Contract focuses on streamer seismic, towed streamer electromagnetics and permanent reservoir monitoring (PGS Annual report, 2014). The marine surveys are conducted by deploying submersible cables and acoustic sources from marine vessels that sends pressure waves to scan the ocean floor, as described in the previous section. One of the operating advantages PGS possesses is that no other fleet in the industry delivers comparable cost-effectiveness. There are three main factors that make this possible: The Ramform Advantage, the GeoStreamer Edge and the market polarization. These factors are described in detail in the PGS fleet description in section 3.3.2

*Multiclient*

The Multiclient model is significantly different than the proprietary model, as ownership of the data is retained with the seismic company. Thus, instead of selling the proprietary rights of the data, it is licensed on a non-exclusive basis to multiple E&P companies. The cost of this approach is substantially lower, as no ownership rights are transferred. The model is split into two different parts: pre-funding and late sales. Prefunding is when one or more of the E&P companies commit to license the data before it has been acquired. The level of prefunding helps potential investors assess the risk levels, as customers can evaluate whether or not enough of the expenses are covered before committing to a project, and secondly ensure a fair book value of the library. Late sales are sales that are made after the data acquisition has commenced.

*Imaging, Engineering and Other*

Imaging and Engineering processes seismic data acquired by PGS for its MultiClient library and for external clients on contract and manages research and development activities. The Imaging division focuses on delivering geophysical solutions with improved seismic imaging and characterization. Hence, the Geostreamer technology, which delivers a range of previously unrealized opportunities for better reservoir interpretation and characterization, is a result of the development in the Imaging division (PGS Annual Report, 2014).

The purpose of the Engineering division is firstly to develop geophysical technologies and services that enhances PGS' leadership position in operational efficiency, and secondly to differentiate their service capabilities in complex reservoirs. Hence developing new technologies that provide solutions to address the geophysical challenges for a diverse customer base is the number one priority in the division.

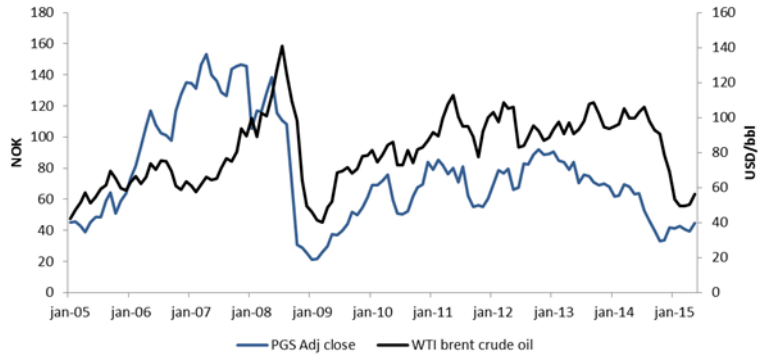
Operations support both Marine Contract and MultiClient with vessel resources and manage fleet renewal strategies. Hence, the focus in this division is to maximize efficiency and productivity of the other divisions in a safe manner. Safety is one of the cornerstones in PGS' operations, and they are among the best-in-class performance when it comes to HSEQ. This is one of the reasons why technical downtime has steadily decreased over the years. Additionally, the operational downtime is reduced

further as the GeoStreamer technology widens the weather window substantially (PGS Annual Report, 2014).

## 2.4 Historic development of the Seismic industry

Energy companies have been using seismic imaging services for about 80 years with the simplest and oldest form of seismic work being 2D (Chevron, 2015). By the early 1980s, the advancements in technology introduced 3D seismic imaging providing even more detailed data and this form is the most common type of survey taking place in today's market. Further development in technology in recent years has introduced 4D seismic, which has made exploration in previously inaccessible areas possible. One of the key demand factors of the seismic industry is the oil price. How the development in the share price of PGS is correlated with the oil price is illustrated in figure 2.7

**Figure 2.7– Oil price development vs PGS share**




Source: Own creation, YCharts, Yahoo Finance

This relationship is a result of the affect the oil price has on the petroleum companies' revenues that affect their E&P spending, which drives 2/3 of seismic demand. This relationship will be further analyzed in section 3.1.

In the period from 2005 to the 1st July 2008 the oil price reached an all-time high. The petroleum companies invested heavily in their E&P spending and day rates reached record heights with average day rates for the industry reaching $350k (Pareto, 2015). As a result of the financial crisis, the oil price plummeted in 2008. Consequently, total E&P capex budget for the petroleum companies declined by 13% YOY from 2008-2009, with seismic E&P declining by 18% (Swedbank, 2015). As the oil price began to recover from March 2009, so did the E&P budgets with positive developments YOY up until

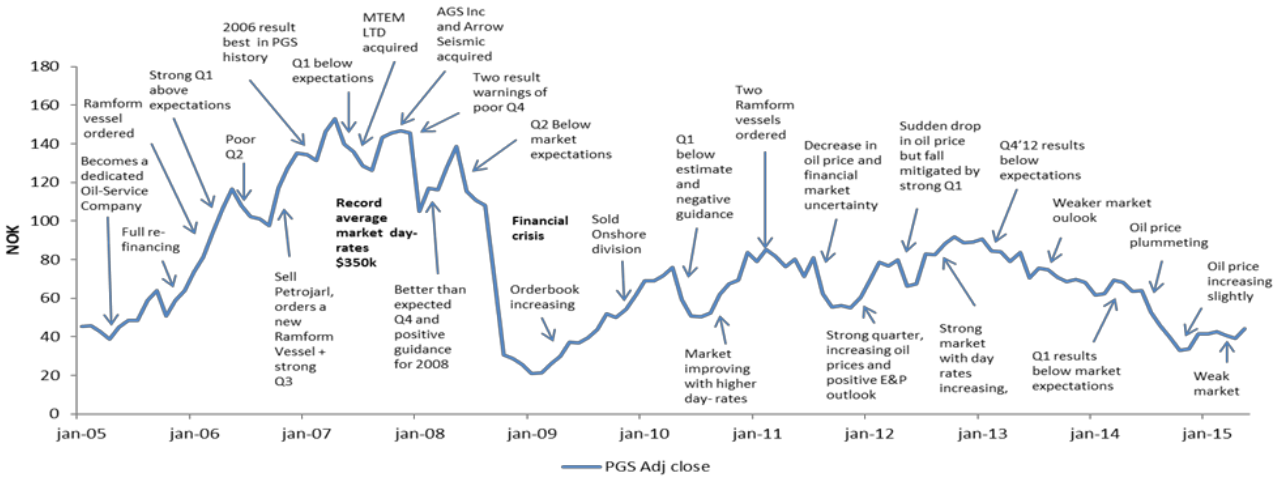
2013 with growth slowing down from 2012. Net supply growth in the seismic industry was positive from 2009-2013 with the amount of streamers in the market place stabilizing from 2012 (Pareto, 2015).

The sharp decline in oil prices in the second half of 2014, bringing prices back to 2009 levels, has once again had a negative impact on the E&P spending and seismic demand. Seismic E&P capex for the petroleum companies was down 10% YOY 2013/2014 and is expected to decline by 20% YOY 2014/2015 as oil prices are expected to remain low (Swedbank, 2015). The seismic industry is thus facing a challenging market short term with oversupply in the market place and low day rates.

## 2.5 PGS share development and major historical events

The history of PGS can be explained through the development of the share price. Figure 2.8 illustrates the development over the last 10 years, highlighting major events that caused fluctuations in the price. A full summary of the historical events can be read in appendix 1.1.

**Figure 2.8– Share price development 1/1/05-15/04/16**




Source: Own creation, Dagens Næringsliv, PGS, Yahoo Finance

PGS became a dedicated oil-service company in March 2005 after selling off their exploration and production company Pertra. Since then the company has grown by expanding and renewing their fleet as well as M&A activity and divesting non-core businesses. With an initial price of NOK 42 in March 2005, the share rose rapidly in a strong market with growing day rates and high exploration activity due to the high oil prices. The PGS share reached a record high price of NOK 153 in April 2007. Not

meeting market expectations, combined with two result warnings towards the end of 2007, saw the share price decline significantly. However a strong start to 2008 with high order books and beating market estimates saw the share price rice once again. As the financial crisis hit, resulting in low oil prices, the PGS share price plummeted and bottomed out in January 2009 at NOK 21, ~86% lower than the record and ~84% lower than the price 8 months earlier.

Since the financial crisis the share has risen steadily, omits some setbacks in mid-2010 and 2011, but has never reached previous heights despite reporting EBITDA above 2007 numbers. The highest share price since the financial crisis was achieved in October 2012 at NOK 91. The latest sharp decline in oil prices in the second half of 2014 has seen the PGS share decline sharply once more to a price of NOK 33 in October. The share did however increase slightly towards the end of the year despite the oil price continuing its fall. This was a result of PGS having positioned themselves for the tough market conditions going forward, announcing cuts in capex and postponing delivery of the two new vessels to late 2016. As the oil price bottomed out in March 2015 it has again started to rise reaching 56.69 USD/bbl on 16$^{th}$ of April. The PGS share consequently also started to rise again closing at NOK 44.23 on 16$^{th}$ of April.

## 2.6 Peer group and competitors

A vital part of the presentation of PGS is to analyze their relative performance to their peers in the seismic industry over an historic period. The peers will be used for relative comparison and benchmarking in the strategic and financial analysis as well as valuation through multiples. Hence, it is imperative that the selected peers of PGS are as related as possible with regards to core operating activities, capital structure as well as their scope and scale. This is necessary to get an accurate benchmark of performance (Koller et al, 2005).

The seismic industry is one with high-density, dominated by six players that provide the majority of the supply of 3D 6+ streamer vessels globally. The six players are WesternGeco (a subsidiary of Schlumberger that specializes in seismic activities), CGG, Polarcus, Dolphin Group, Seabird and China Oil Field Services. In addition TGS is a pure Multiclient company that competes with PGS in this segment.

The structure of the different companies in the industry however varies significantly. WesternGeco is a subsidiary of Schlumberger while China Oil Field Services seismic business is only one of the many divisions of this company. They are therefore not directly comparable and hence not part of the peer group. However as they compete in the industry contributing to the supply/demand dynamics they are considered as competitors. TGS is also considered to be a competitor as they only provide MC services, which is only one segment of the seismic industry.

Our peer group is thus made up of CGG, Dolphin, Polarcus and Seabird. All of these companies are pure seismic companies and therefore similar in terms of operating activities. We do however acknowledge the individual differences among the peers especially in terms of market capitalization. Below is a brief overview of each peer as well as the competitors.

*Peer group*

CGG is an integrated geoscience company, which provides geological geophysical and reservoir capabilities to its broad base of customers primarily from the global oil and gas industry. The company operates its business through three segments: Equipment, Acquisition and Geology, Geophysics & Reservoir (CGG Annual Report, 2014). CGG is the closest peer to PGS in terms of market capitalization and market share of streamers. They have 13 3D vessels and provide both Marine Contracting and MultiClient services. CGG also deliver onshore seismic services through 7 land crews (CGG Q4, 2014). Vessel production rate was 84% in 2014. Operating income for 2014 was $3,095m and the market capitalization as of cutoff date was $1,236m (Yahoo finance).

Dolphin Group ASA is a holding company that is engaged in the operation of seismic vessels and offers contract seismic surveys, multi-client projects and processing services. It operates through four segments: Marine Contract, Multi-Client, Processing & Imaging, and Processing Software (Dolphin

Annual Report, 2014). The Dolphin fleet consists of 5 High-end 3D vessels, 1 Mid-size 3D vessel and 1 Ice-class 2D vessel (Dolphin Annual Report, 2014). Operating income in 2014 was $440.2m and market capitalization as of cutoff date was $93.1m (Yahoo finance).

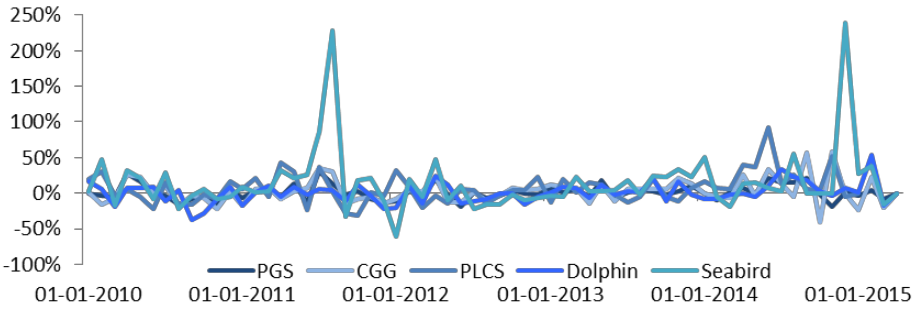
Polarcus

Polarcus Ltd. is a marine geophysical company, which provides towed streamer data acquisition used by oil and gas companies to evaluate hydrocarbon plays and prospects ahead of drilling, and to determine size and structure of known reservoirs in order to maximize field recovery and production rates. It operates through the Contract Seismic Services and Multi-client Projects segments (Polarcus Annual Report, 2014). They have 7 3D vessels with specialized arctic capabilities. Vessel production rate was 77% in 2014. Operating income was $0.466m in 2014 and market capitalization as of cutoff date was $33.8m (Yahoo finance).

SeaBird Exploration

SeaBird Exploration Ltd. engages in providing offshore multidisciplinary geophysical services. It offers marine two and three dimensional seismic data; and associated products and services for the oil and gas industry. The Seabird fleet consists of one 3D vessel, six 2D vessels and one 2D/3D shallow water vessel (Seabird Annual Report, 2014). Total revenue $0.129m in 2014 and market capitalization was $1.38m (Yahoo finance)

**Figure 2.9 – PGS share performance vs peers**




Source: Own Creation, Yahoo Finance

As Figure 2.9 indicates, the competitors and peers follow the same cyclical trends due their similar exposure to the macroeconomic environment and are highly correlated with PGS. PGS does not seem

to consistently outperform their competitors with regards to stock price movements, but neither do any of the other firms. Seabird seems to be the most volatile share in the peer group.

*Competitors*

WesternGeco is the world largest seismic company and is a wholly owned subsidiary of Schlumberger Limited. It was formed in 2000, and offers services and products that enable accurate measurements for the most detailed images of subsurface geology and rock properties (Schlumberger Annual Report, 2014). The Marine Seismic acquisition division has 15 vessels in total as of the end of 2014 with 9 being survey vessels and 6 source vessels.

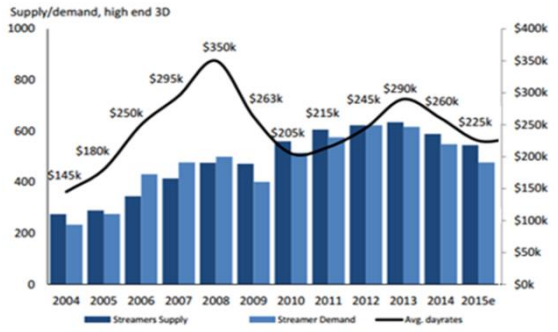
China Oilfield Services Ltd. is an investment holding company, which engages in the production, development and exploration of oil and gas. The company operates through four segments: Geophysical & Surveying Services, Drilling Services, Well Services and Marine Support & Transportation Services. The Geophysical & Surveying Services segment involves marine seismic data collection and surveying; seismic data processing and interpretation; and land-based and underwater engineering services. The Geo & Survey division has 7 seismic vessels as of 2014 (China Oilfield Services Annual Report, 2014).

TGS-NOPEC Geophysical Co. ASA engages in the provision of geoscientific data products and services to oil and gas exploration companies. The firm offers onshore and offshore seismic data, digital, downloadable oil and gas well data, interpretation products, marine time processing, marine depth imaging, four dimensional and multi-component processing, land imaging, reservoir analysis, and PRIMA exploration software. TGS outsource all data acquisition and does not own any acquisition equipment or have seismic crews on the payroll (TGS Annual Report, 2014).

## 2.7 Business cycle

The seismic industry is as previously highlighted strongly correlated with the oil price and consequent E&P spending. Accordingly the supply and demand relationship and subsequent day rates level are affected by movements in the oil price. As we can see from 2.10 illustrating the supply/demand of streamers and average day rates for the high-end 3D surveys, the industry seem to have a business cycle of 5-6 years. The historic share price development of PGS as presented in section 2.5 confirms this cycle.

Figure 2.10 – Historical market day rates

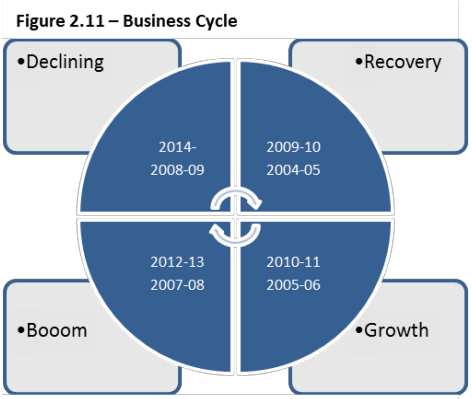



Source: Pareto, 2015

In order to make the most accurate forecast possible and prevent wrong forecasting basis it is crucial to understand the PGS business cycle. Because growth, profitability and risk may vary substantially over time, it is important to get an underlying understanding of the cycle and thereby cover both upturns as well as downturns (Petersen and Plenborg 2012). By taking this approach we will identify the current stage of the cycle and obtain information regarding how the firm manages to adapt to changes in the economic environment. Furthermore, it will mitigate the risk of forecasting earnings that are either too high or too low (Petersen and Plenborg 2012).

The Seismic industry is currently in a declining stage of the cycle with a challenging market with falling demand and over supply of streamers. The future development of the market will be analyzed in the following sections.

Figure 2.11 – Business Cycle




Source: Own creation

# 3.0 Strategic analysis

## 3.1 The Shipping Market Model

In order to analyze the macroeconomic environment and understand the market outlook of PGS, we have used the Shipping Market Model framework, developed by Martin Stopford in 1997, instead of the traditional PESTEL framework. We believe this is a better fit given as the seismic industry is highly dependent on the relationship between supply and demand, and driven by day- and utilization rates. All of these items are key drivers in the Shipping Market Model, thus enabling a thorough analysis of the seismic industry. As the model is intended for traditional shipping markets, such as bulk, tank and container, we have made some adjustments in the model (Appendix 3.1) to make it applicable for the research exploration vessel (REV) market.

The model will identify and analyze how supply and demand factors interact and in turn affect the day rates and utilization rates, which will be the building blocks in the forecasting section. Additionally, the findings may help understand the present industry forces and the attractiveness of the industry, which will be elaborated upon further in the Porters 5 forces framework in section 3.2.

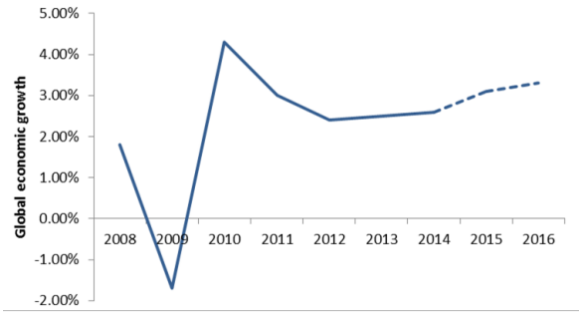
### 3.1.1 Demand for REV

Demand for REVs, with respect to both long-term and short-term contracts for seismic services, is unpredictable and quick to change. This became evident in the second half of 2014. There are several factors causing demand fluctuations, yet the most important is the global level of E&P, which is closely linked to the oil& gas price. As the cash flow of most oil & gas service companies is highly dependent on the global economy and the oil & gas price, we will start by looking at the key factors affecting them.

#### 3.1.1.1 The global economy

In 2014, the global economy continued to expand at a moderate and uneven rate due to prolonged recovery process from the financial crisis and some geopolitical conflicts in various areas of the world. As shown in figure 3.1 the world GDP is expected to grow at 3.1% and 3.3% in 2015 and 2016

Figure 3.1 – Growth of world gross product, 2008–2016a

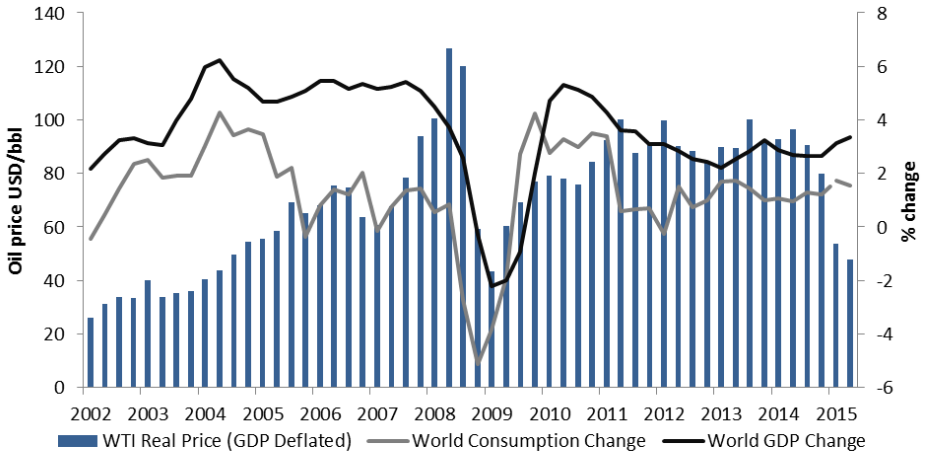



Source: Own Creation, WSJ (2014)

respectively (United Nations, 2015). According to the Wall Street Journal (2014), one of the most important factors that will determine the development of the global economy in the next years iwhether the oil price tumble is driven by a supply glut or drop in demand.

Figure 3.2 shows that the strong relationship between world GDP change and consumption change did not, and is not expected to, change despite the plummeting of the oil price. Both ECB President Mario Draghi and U.S. vice chairman says that lower oil prices may encourages spending and is more likely to increase GDP than reduce it (WSJ, 2014).

**Figure 3.2 – Oil price vs Consumption/GDP change**




Source: Own Creation, WSJ (2014)

### 3.1.1.2 Random shocks

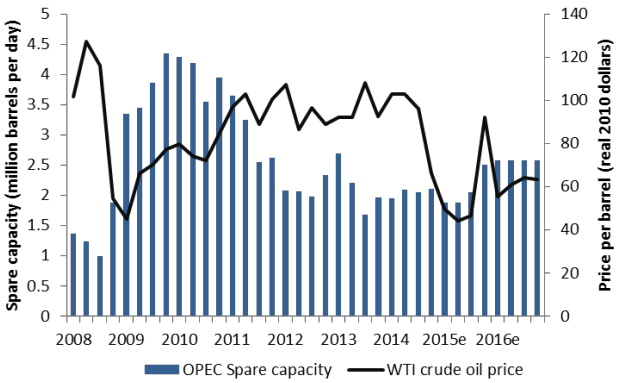
Discussing the impact of random shocks, such as weather changes, wars and commodity price changes, is crucial when analyzing the development of the oil price. The most important influence on the REV industry is economic shocks, which disturb the business cycles (Stopford, 2009). There are several examples of how these events may impact business environment, as seen in the oil crisis in 1979 and the financial crisis in 2008. Yet, one of the more recent examples is the Libya conflict, where a large number of barrels of crude were destroyed due to ongoing hostilities between militants and government forces.

### 3.1.1.3 Commodity prices

*Oil prices*

The oil price rose markedly in the decade to 2008 due to three main factors. Firstly, the efficiency improvements could not offset the upward pressure from a growing world population and rising GDP per capita in the non-OECD countries. This caused an increase in demand, which led to a higher oil price. Secondly, the cost of oil production, both to operate current capacity and develop new supply, rose strongly as new resources became more costly to access (Fournier, J. et al. 2013). Thirdly, OPEC's low spare capacity in the years before the financial crisis caused the oil price to remain high (EIA, 2015).

Figure 3.3 – Spare capacity vs oil price




Source: Own Creation, EIA (2015)

Oil prices fell sharply in the second half of 2014, bringing the four-year price per barrel of around $105 to an end. Recently the price has dropped by approximately 55% to $56.69 (Gillespie, 2015), which is much larger than the non-oil commodity price indices compared to early-2011 peaks. This may be an indication of the end to the "super cycle", where the oil price traded above $100 USD/bbl. (World Bank, 2015). Thus, looking into the main reasons for the sharp decline in oil prices is essential to be able to understand what drives the price and to be able to forecast the future oil price.

*Reasons for the sharp decline in oil prices and future outlook*

According to the World Bank (2015), the four main reasons for the price drop are: 1) Trends in supply and demand 2) Changes in OPEC´s objectives 3) receding geopolitical concerns about supply disruptions 4) U.S. dollar appreciation.

Firstly, the recent development in the global markets of greater than anticipated supply and less than anticipated demand has resulted in high spare capacity and thus low oil prices. One of the main reasons for the oversupply is that the U.S shale oil production has delivered better than expected results. Demand, on the other hand, has been low due to slowdowns in the German and Chinese economy. Gas

consumption has stagnated due to more fuel efficient cars in the U.S and countries such as Iran and Indonesia has cut back on subsidies for fuel users (United Nation, 2015).

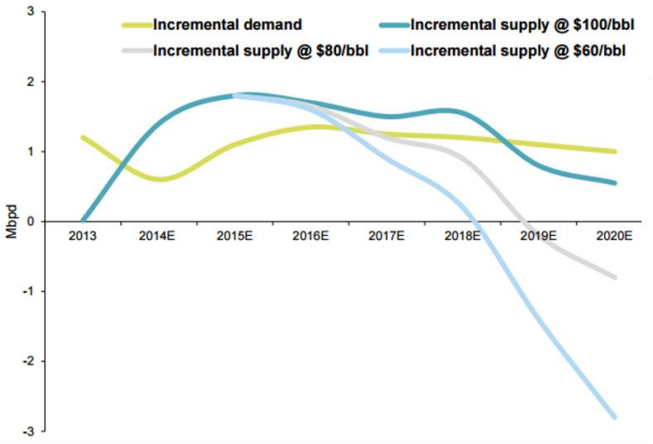
Secondly, there were expectations that OPEC would cut production as the oil price started to decline, to keep the price within a certain band. As no action with regards to production cuts was taken in the meeting in November 2014, and the major oil producing countries decided to keep production at the same level, the oil price went into a free fall. Hence, OPEC´s decision to maintain its production level of 30 mb/d has been seem upon as a significant change in the cartel´s policy objectives from targeting oil price band to maintaining market share (World Bank, 2015).

Thirdly, supply disruptions from conflicts around the world in the second quarter in 2014, such as the Middle East, Libya and Ukraine, did not materialize and thus did not affect output levels to the extent that was expected.

Lastly, the dollar appreciated by approximately 10 percent against the major currencies in the second half of 2014. This had a negative impact on the oil export to other countries as their purchasing power decreased, leading to further decrease in demand. Frankel (2014) argues that U.S. dollar appreciation, caused by different monetary policies in the United States, Euro Area, and Japan, played an important role in the general decline of commodity prices.

Looking forward, BP predicts that oil will make up roughly 30% of that primary energy in 2035, which makes it the most important source of energy also twenty years from today (BP 2015). Thus, one of the most uncertain and most discussed questions at the time is whether or not the global oil price will remain low in the years to come. If history is an indication for the future, then oil prices will eventually rise again, though it could take some time. Even though analysts are

Figure 3.4 – Current oil price not sustainable




Source: Own Creation, PGS Presentation

split on what direction the oil price is moving in the years to come, most agree that the current oil price, of $56.69, will create supply shortfall, which is not sustainable in the future.

Yet, predicting the future price is difficult as random events, such as accidents, unplanned maintenance, technical problems, labor strikes, political unrest and weather related supply losses, may have unforeseen consequences on the price development. Some of the things that can lead the prices to rise are that conflicts break out again in Libya or Iraq, hampering production, the Chinese and the European economies could rebound quicker than anticipated, or Saudi Arabia could decide to cut back production. The biggest short-term threat however is Iran. Their capacity is much larger than its production, but their export opportunities are restricted due to sanctions from the Western countries. If a new deal is made with regards to their nuclear program, and the sanctions are eased, Iran may double their current exports from 1.2 million barrels a day, which will force the oil price further down (Lund, 2015).

Furthermore, as many of the leading oil supplying countries, such as Russia, Iraq and Saudi Arabia, will most likely keep up their production as their budgets are heavily reliant on income from their oil exports, there is reason to believe that the oil price will remain below $70 throughout 2015. This is because of the spending cuts by oil producers, such as Royal Dutch Shell PLC (Scheck, 2015), and secondly due to the sharp decline in the number of rigs drilling for crude oil. However, we believe the oil price has bottomed out and will increase slowly in the next few years. In table 3.5 we have summarized the price expectations from different brokerage firms, and we will use the average price when forecasting E&P spending and demand for the REVs.

**Figure 3.5 – Oil Price Forecast**

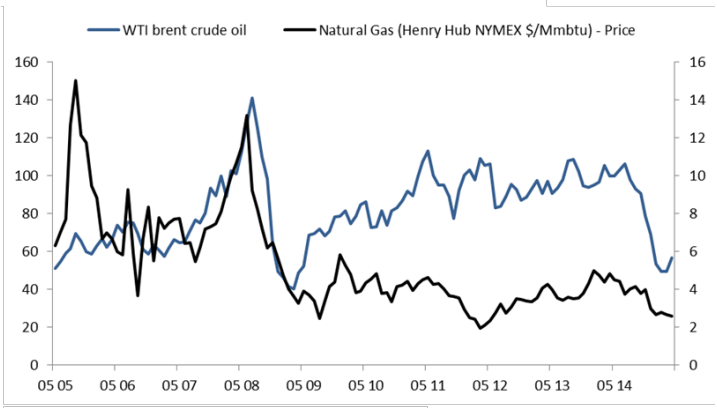
| Oil Price Forecast, real terms (in $/bbl) | 2015 | 2016 | 2017 | Long term |
|---|---|---|---|---|
| Nordea Markets | 65 | 75 | | |
| ABG Sundal Collier | 63 | 75 | 90 | 80 |
| Swedbank | 66 | 86 | 90 | 90 |
| DNB Markets | 66 | 79 | 81 | 83 |
| IEA | 55 | 62 | 67 | 71 |
| EIA | 58 | 75 | | |
| **Average** | **62** | **75** | **82** | **81** |

Source: Own Creation, equity research

*Gas prices*

The market for natural gas, which is mainly driven by market supply and demand, has many of the same drivers as the oil market, since the same factors affect the E&P spending and demand. Hence, oil and gas can to some extent be considered to be substitutes, as an increase in price of oil will lead to an increase in demand for gas, and consequently drive the prices in the same direction. However, this is not always the case as shown in figure 3.6, where the price correlation has decreased over the last year. Some of the differences in price development can be explained by factors that influences supply and demand.

**Figure 3.6 – WTI vs Henry Hub**

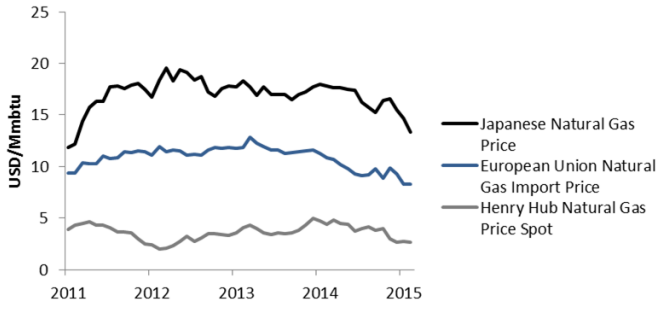



Source: Own Creation, Factset

Two of the main supply side factors affecting the gas prices are the level of production and the amount of gas stored. Hence, both volume and mode of transportation are important factors determining the price. As the two main ways of transporting gas are through pipelines and vessels, gas prices are more dependent on the distance between the reservoir and consumer and therefore also the mode of transportation than oil prices. Looking at the demand side factors, the level of economic growth and competition with other fuels are two of the main drivers influencing the gas price. A third factor is variations in weather, which leads to higher consumption of natural gas for heating and air conditioning, consequently affecting demand, and thus also the price.

However, even when there is a good match between supply and demand, regulations and lack of infrastructure hinders fully efficient transportation of gas in certain regions and countries. This is some of the explanation why gas prices vary in different geographical areas, which is illustrated in figure 3.7. One

**Figure 3.7 – Geographical gas prices**



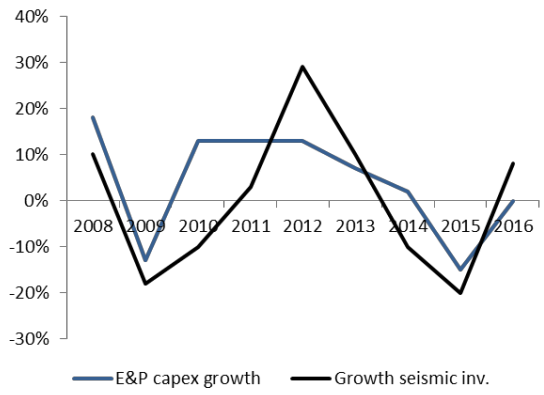

Source: Own Creation, Yahoo Finance; Ycharts

of the main reasons why the gas price is so low in the U.S. compared to Europe and Japan, is due to the surplus of shale gas. As regulations regarding gas transportation are expected to loosen up in the near future, and there will be better transportation opportunities from the U.S. to Japan, it is likely that the gas prices around the world converges.

### 3.1.1.4 E&P Spending

As the oil price is the most important factor affecting E&P spending, the plummeting price of brent crude has lowered the budgets for future spending. As we can see in figure 3.8, E&P capex grew by 2% in 2014, but is expected to decrease by 15% in 2015. This is only the seventh time in the 30-year history of its survey that global spending is estimated to fall. History shows that spending has risen by more than 10 percent the following year (Reuters, 2015). The figure also show that seismic, which only makes up a small part of total E&P, has declined more than the overall E&P spending in downturns. The high volatility is due to the nature of the seismic industry, as it is often the first to get cut in tough times, but also experiences more upside when the oil companies are doing well. Based on the seismic contractors' backlogs and tendering activity, the seismic market is expected to decline by approximately 19% in 2015 (Swedbank, 2015).

**Figure 3.8 – E&P Capex growth vs. seismic investment**




Source: Own Creation, Swedbank

*Break even rate of production*

Looking forward, the most important measure is the break-even rate of production. This is because the world's biggest petro states need to sell oil at a certain price to balance their budgets (Bentley et al, 2015) If the oil price drops below this point, E&P activity will decline as the cost per barrel is higher than the sales price. Since there is a wide gap between the prices at which the different producers break even, analyzing the different country's break even rate and the consequences it has on the overall economy is essential for future E&P spending. OPEC's decision not to cut production has raised the break even rates in most countries, especially affecting those heavily reliant on income from oil production.

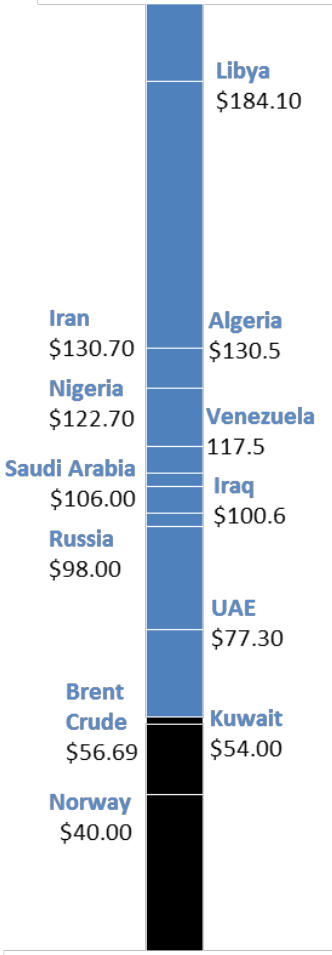
Libya's oil production has been relatively stable since the fall of Mohammad Gadhafi in 2011, but has recently started rising, and is considered one of the reasons why the oil price has dropped. Given the political unrest in the country, Libya's budget is more reliant than ever on oil prices to rise back up.

Saudi Arabia is still the world's leading oil producer and has been OPEC's de facto leader for the last two decades (Bentley et al, 2015). However, they have been unsatisfied with the other participants, as several of its allies among the Gulf States have failed to stick with the agreed upon output in the region.

As oil and gas make up the main source of Russia's foreign currency reserves, the fall in oil prices has had a severe impact on Russia's economy. At the current price level Russia risk falling into recession, and if the price falls further it could drive the country into crisis.

The drop in oil prices has also slowed down activity in Norway. However, the size of the Norwegian oil fund coupled with a healthy economy in other sectors implies that the slowdown will not have any major short-term consequences.

**Figure 3.9– Breakeven rate of production**




Source: Own creation, Bentley et al. (2015)

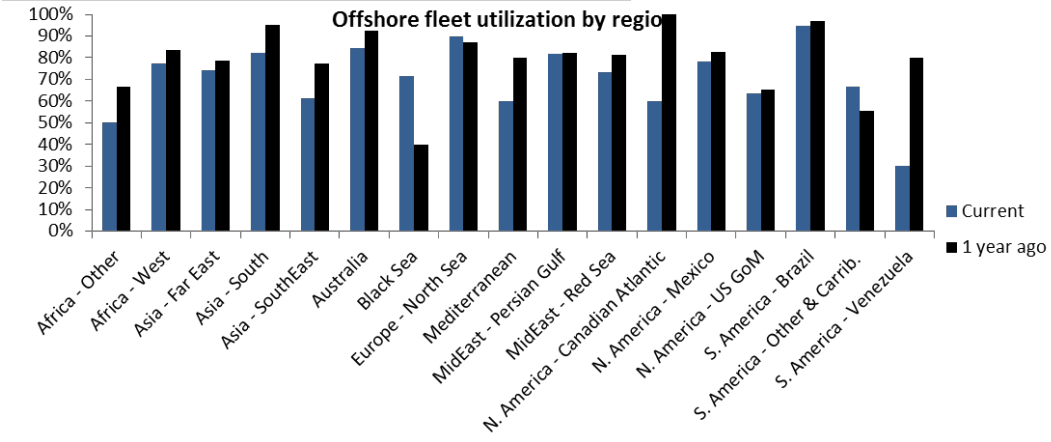
Since the oil price in the U.S. varies depending on the region, so does the break even rate of production. Rystad Energy (2015) estimates the WTI breakeven oil price to be in the range of $42-$80 and the average rate to be at $58/bbl. However, this makes more than half the areas where oil is produced uneconomical, given today's oil price of $56.69. This can lead oil and gas companies to cut E&P spending in North America by 30% if the oil price remains within $50-$60 per barrel range (Reuters, 2015).

On aggregate, this would mean that spending across the globe would fall about 9 percent to $619.43 billion in 2015 (Reuters, 2015). This has led several companies to cut their budgets and reduce the number of rigs used for drilling in several countries, as it proves uneconomical at current prices.

*E&P activity*

The global offshore drilling fleet consists of 1479 units operated by 58 different contractors, where nearly 40% of global supply is controlled by the ten largest companies (Rigzone, 2015) The plunging oil prices is bad news for the offshore contract drillers, as the activity levels decreases and puts pressure on day rates. Many companies have to renew contracts on existing rigs at significantly lower rates, and 2015 could prove even more painful as more rigs may have to exit the market. One such example is Statoil, who are reducing the number of drilling rigs up to 20-25 percent in certain areas (Bloomberg, 2015). Figure 3.10 shows that utilization rates have decreased in all regions, other than the Black Sea and South America – Caribbean, which is a result of demand and spending cuts (Rigzone, 2015).

**Figure 3.10 – Offshore fleet utilization by region**



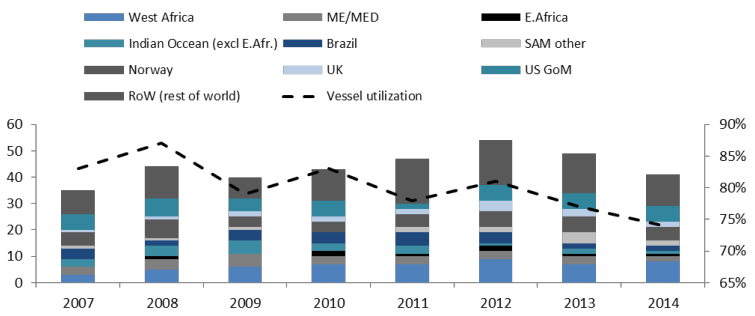

Source: Own Creation, Rigzone (2015)

Hence, as the demand for seismic services is low at the current oil price, and rigs are being removed from the market, we do not expect the number of production wells to increase significantly in the short-term. This is because of the lower demand for exploration and development of new reservoirs, as producers remove the rigs with the lowest productivity and move production to core areas.

### 3.1.1.5 Regional demand

Figure 3.11 below shows the development in the 3D vessel demand by region and utilization for the 3D fleet. As illustrated overall demand and utilization is expected to recover in 2016, which is mostly due to the recovering E&P activity and increasing oil price. The complete demand overview can be seen in appendix 3.2. The four most important areas are West Africa, Northwestern Europe, North America, and Middle East.

**Figure 3.11 – 3D vessel demand by region**




Source: Own Creation, Swedbank

*West Africa*

The West African region has been the region with the most exciting growth over the last few years. It is the largest survey size area, with respect to sq. km, with projects starting 2013 or later, covering roughly 340,000 sq. km (Hunter et al, 2014). Profitability increased slightly year-over-year in the first half of 2014 as some delayed projects got off the ground (Hunter et al, 2014). Delayed projects, as a result of local government policies, have been a problem historically in the African region. Hence, bureaucracy and political unrest are two of the major uncertainties that may influence the demand going forward. In the near-term the West-African demand is expected to be the area suffering the most from the cuts in E&P spending and thus 2015-commitments have decreased more than in the rest of the world.

*Northwestern Europe*

As demand was weak during the winter months in 2013/2014 in most parts of the world, work started early in the North Sea. 19 3D vessels were operating in the region early in 2014, and as demand was falling in certain places, additional vessels entered the market in the middle of the year (Hunter et al, 2014).

The trend in Norway over the last years has been a move towards the Barents Sea. Group shooting has proven to be efficient and Statoil, which is the dominant oil company in the area, occupies several vessels from most of the major seismic companies. Future demand looks weak, with few tenders. Hence revenues are expected to suffer from tougher competition resulting in lower prices. In the UK the two major companies are BP and Total, accounting for all the 3D demand in 2014. However, there are also scheduling for several 2D projects, such as WesternGeco's six month survey off West of Scotland, which is a relatively unchartered area (Hunter et al, 2014). The outlook is more positive than in Norway due to successful licensing rounds recently. Activity started picking up in other countries, such as Ireland and Netherlands as well in 2012-2014, but is expected to stay flat or decline slightly in the upcoming years due to the spending cuts.

*North America*

Even though North America is the smallest area, roughly 22,000 sq. km, the demand for vessels in this region makes it one of the most important survey areas. When PGS and CGG shifted their spare capacity to projects in the wide-Azimuth (WAZ) in the US Gulf of Mexico, the number of seismic vessels ballooned in 2013 (Hunter et al, 2014). The consequences therefore become even harsher in this area when the oil price plummeted and the E&P budgets were cut. Thus, the company that suffers the most from this development is WesternGeco as they have 5 of their vessels operating in this area (Schlumberger Annual Report, 2013)

*Middle East*

As oil prices continue to fall, oil and gas companies in most parts of the world exercise fiscal policy. The exception appears to be the Middle East, where spending is expected to increase by 15% (Addison, 2015). All the leading oil companies, Saudi Aramcro, Abu Dhabi National Oil Co. and Kuwait Co, have expressed that they plan on increasing spending in 2015. This is because Saudi Arabia, Kuwait and UAE decided to keep activity at elevated levels and secondly due to lower volatility in the National oil companies (NOC) spending (Baker Hughes, 2015). The size of the NOC's capital programs make it difficult to change spending from year to year as projects often take longer to finish due to the complexity. The question is how long Saudi Arabia will be willing to absorb $55 oil, but given the

huge cash reserves, it is well equipped to handle it if they want to. Hence, spending is expected to remain high also in the time to come even if the oil price does not recover to 2012-2013 levels.

#### 3.1.1.6 Effects of changes in demand

Even though the global economic outlook is positive, low oil prices and E&P spending is a major concern for the seismic market going forward. Customer demand is projected to fall around 15-20% in 2015, which is broadly consistent with a 30% fall in exploration spending (accounts for around two-thirds of seismic demand). Given weak deep-water economics, the demand for marine contracting may fall even more than that (Canaccord, 2015). If this happens, prices will remain at trough levels for longer than anticipated. Hence, decreasing demand, which creates excess capacity and consequently lowering prices, puts pressure on the seismic companies. Thus, it is not unlikely that there will be consolidation in the industry unless demand picks up. However, the outlook is not exclusively negative, as activity is expected to pick up slowly in 2016 based on higher expected oil price and increasing E&P spending.

### 3.1.2 Supply of REV

As the construction time of the seismic vessels typically range between 1-2 years, the supply of REV's is characterized as a slow response to changes in demand. Less than a year ago, the seismic market was attractive, leading companies to expand their fleet and making large investments to become more competitive. However, given the current market situation and the future outlook, there is an excess supply of vessels competing for fewer and fewer contracts. Hence, several companies have delayed the delivery of newbuilds, as they will cannibalize the market. Once built, the vessel has a physical life of 15-30 years, so responding to a fall in demand is a lengthy business, particularly when there is a large surplus to be removed (Stopford, 2009).

When evaluating the current production level of REVs, we will look into the four decision-makers that control and influence supply: ship-owners, shippers/charters, the bankers who finance shipping, and the various regulatory authorities who make rules for safety (Stopford, 2009):

1. The ship-owners are the primary decision makers who decide when to order new vessels, and when to scrap old ones. Given the poor market conditions, fleet expansion seems like an unprofitable and unlikely solution, as return on capital most likely will be below the WACC.

2. Shippers may influence ship-owners by issuing time charters, or become ship-owners themselves. This leads to a decrease in orders of new REVs, as shippers can use the spot-market. Since the outlook for the seismic market is uncertain, there are fewer long-time contracts available, which weaken the companies' backlogs and consequently result in lower supply.
3. Bankers who finance shipping discuss to what extent ship-owners can access new capital to invest in new vessels. In weak markets, both access and service of debt is limited, which reduces supply growth and sometimes leads to scrapping of old vessels.
4. Lastly the regulatory authorities affect the supply through safety and environmental legislation, which affects the transport capacity of the fleet. Companies are expected to perform their operations in line with the HSEQ requirements.

#### 3.1.2.1 World fleet

The global fleet has grown by nearly 20% since the beginning of 2010 (Hunter et al, 2014), and is highly correlated with the world economic performance and E&P spending. Thus, the heavy expansion in the early 2000's was dependent on two factors; the increasing day rates, which made it attractive to spend the free cash flow on building new vessels, and the high growth in E&P spending. However, the current market conditions have resulted in a contraction of the fleet size, as more vessels are scrapped than being built. Thus the overall supply of 3D vessels with 6 streamers is expected to decrease by 15% before the end of 2015 (Canaccord, 2015). Moreover, weaker backlogs and lower expectations in the upcoming 12 months tones down future expansion plans for the world fleet further.

#### 3.1.2.2 Shipbuilding

As the seismic market was very attractive over last few years, with high demand for high-spec vessels, most seismic companies ordered new vessels or renewed their fleet to take advantage of the opportunities. Hence, the REV market has undergone a shift towards more modern, high-end vessels. This was a change that started while spending was at its high, as companies started demanding vessels that can scan areas that earlier were inaccessible. As the oil price plummeted and E&P spending decreased, many companies are left with high-end vessels that were costly to build standing idle. Consequently poor market conditions and oversupply of vessels in the market has caused many of the firms to cut the planned newbuilding programs, and thus only a few vessels were delivered to the

market in 2014 (figure 3.12). The short-term future production of vessels is not expected to change as it is highly dependent on the performance of the oil companies, as they are the main buyers of seismic data.

Figure 3.12 – Newbuilds in 2014

| 2014 | Owner | # of streamers | Year | Time |
|---|---|---|---|---|
| Ramform Atlas | PGS | | 14 | 2014 Q1 |
| Sanco Sword | DOLP | | 12 | 2014 Q2 |
| Amazon Warri | WG | | 14 | 2014 Q3 |
| Hai Yang Shi Yo | COSL | | 12 | 2014 Q4 |

Source: Own Creation, Canaccord

Furthermore, since seismic marine contracting is normally the first segment to feel the pinch when spending budgets are trimmed (Pareto Securities, 2014), vessel production will be reduced until oil prices rebounds and demand goes back up. However, since shipbuilding is a long-cycle business and the time lag between ordering and delivery is between 1-2 years, there were still delivered four vessels in 2014, even though there was excess supply.

### 3.1.2.3 Fleet productivity

The productivity rates among the seismic companies varies widely as some companies have a fleet consisting of new high-spec vessels, while others have older, less advanced vessels that spends more time inshore. Given the structural shift in the industry towards high end vessels, discussed in section 3.1.1 (demand), most fleets are equipped with more streamers per vessel than earlier. Secondly, the vessels have become more advanced and are able to access areas that were inaccessible before, thus leading to more opportunities and higher productivity.

Operating at a level close to full productivity is more important than ever in order to cope with decreasing demand and tighter margins. Hence, limiting yard time is crucial as this sets the upper limit for productivity. The weak market outlook causes productivity levels to dip below what is economically profitable for several companies and hence raising the question of whether they would be better off retiring the vessels.

### 3.1.2.4 Scrapping and losses

The supply of new ships is also dependent on the balance between deliveries of new ships and deletions from the fleet in the form of ships scrapped or lost at sea (Stopford, 2009). The scrapping of high end REVs have been low historically, since the seismic companies have had strong backlogs and yard time has been kept at a minimum. However, scrapping has become an increasingly important issue in the

market after the drop in activity in the second half of 2014. Table 3.13 is an overview of the vessels that have been removed in the last year.

Figure 3.13 – Scrapping in 2014

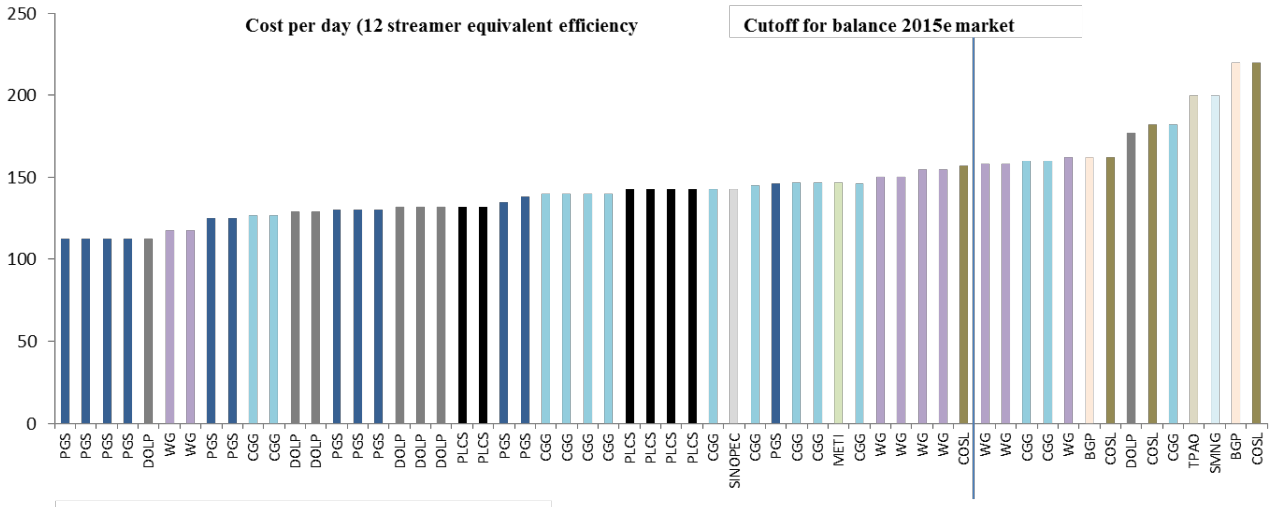
| 2014 | Operator | # of streamers |
|---|---|---|
| Symphony | CGG | 10 |
| Geowave Voya | CGG | 10 |
| Veritas Vantag | CGG | 10 |
| Viking II | CGG | 10 |
| Western Spirit | WG | 8 |
| Geco Triton | WG | 10 |
| WG Cook | WG | 10 |
| WG Amundsen | WG | 10 |
| Western Mona | WG | 12 |
| Western Reger | WG | 10 |
| Atlantic Ecplor | PGS | 6 |

Source: Own Creation, Canaccord

Most ships have a scrapping age around 15-30 years, but predicting when a ship actually will be scrapped is a complex process as ships have different specifics (PGS CMD, 2014) The main determinants in this process are age, technical obsolescence, scrap prices, current earnings and market expectations (Stopford, 2009). In the current market, the oldest ships are forced out as the cost of routine maintenance increases and ships with superior technology replace them. This is not because the demand for newbuilds is high today, but because the supply is a lagging response to the high demand that existed 1-2 years ago as discussed in section 3.1.1.2. CGG is one among many that has announced that they are cutting their fleet in the year to come. Their total fleet is expected to be cut to 11 vessels from 13 in 2015 and down from 18 in the end of 2013 (Benoit et al, 2015).

Scrapping prices is also a factor to consider in the decision of whether or not to scrap. Thus, the metal price is an important factor as the scrapped ships are sold to shipbreakers, who resell the steel to the industry. As several companies are forced into scrapping, the price of scrap metal has decreased due to high supply, which ultimately leaves the companies in a vicious cycle of selling at depressed prices or operating at a high cost. Thus, the last and most important decision in the scrapping process is what the owner's expectations are for the future. If the owner believes that the oil price and E&P spending will bounce back up, scrapping ships is an unlikely decision as long as the company's finances can sustain the losses until the demand reaches profitable levels. However, we believe that E&P spending will remain low in the upcoming year, and that several vessels are not going to be profitable to operate, due to the high running cost. Hence, WesternGeco and CGG are the two companies are expected to have the most vessels exiting the market in 2015 as shown in figure 3.14 (Swedbank, 2015).

Figure 3.14 – Global 3D fleet (cost efficiency per vessel)



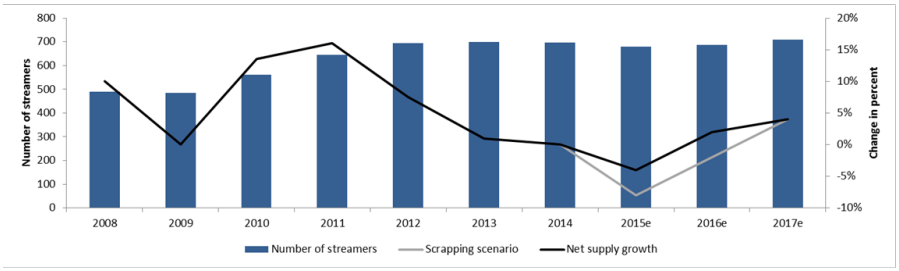

Source: Own Creation, Swedbank

### 3.1.2.5 Effects of changes in supply

Responding to the overcapacity of vessels in the market is one of the major challenges facing the seismic companies in the near future. The falling demand results in lower prices, which causes several vessels to become unprofitable to operate and consequently being taken out of production temporarily or scrapped. Another concern is bank forbearance on debt, particularly with the weaker seismic players, as this could keep capacity in the market for far longer than is economically rational (Canaccord, 2015). This is only related to existing vessels, as return on newbuilds is poor, and it therefore is unlikely that new vessels will be built in the next 1-2 years.

However, as we can see in 3.15 the number of streamers in the market has remained relatively stable since 2012 and is expected to stay around the current level in 2015-2017. This is because there is a higher streamer/vessel ratio than earlier. Hence, if the market conditions improve, the seismic companies may enjoy a higher productivity level than earlier.

Figure 3.15 – Supply side is low




Source: Own Creation, Swedbank

### 3.1.3 The day rate mechanism

The day rate mechanism, which links supply and demand, is the third part of the shipping market model. This is when a contract is formed between the seismic companies and the oil companies based on negotiation between the two parties. Factors discussed in Porter's five forces are essential when deciding on the terms of the contract. The outcome of the negotiations will have an influence the main drivers of the industry, which we consider to be 1) Day rates 2) Utilization.

#### 3.1.3.1 Day rates

The day rate varies depending on the duration of the contract, contract terms, and the specific vessel specifications (Hunter et al, 2014). There are two types of markets available to the vessel owners: the spot-market, characterized as contracts lasting less than thirty days, and the term-market, which is contracts lasting longer than thirty days. The choice of market, which depends on the interaction between supply and demand, will have an impact on the day rates charged by the vessel owners. Supply is closely linked to the global economy and oil price as they are dependent on capital for newbuilds. Hence, ship-owners are more reluctant to ordering new ships given the low margins and increasing yard time. Demand is price sensitive given the nature of the seismic industry. This is because the oil companies are less willing to invest in exploration projects when the upside potential is low due to low oil prices.

The petroleum companies use the two markets for different purposes, the spot-market for short-term operations, and the term-market to cover long-term demand. The day rates in the two markets can differ significantly, as the bargaining power of the vessel owner has been significantly higher historically in the spot-market than in the term-market, as the petroleum company needs a service done quickly. However, as demand has decreased considerably the second half of 2014 and beginning of 2015, also the spot market prices has been reduced since competition for contracts have increased among the seismic companies, as discussed further in Porter's Five Forces. The term-market on the other hand often offers lower day-rates, but over a longer term, which limits yard time for the boats. As supply has no difficulty keeping up with demand in the long-term in both markets, especially under the current conditions, we consider the upside potential in 2015 day rates to be limited (Stopford 2009). However, we expect day rates to slowly recover from 2016 and onward.

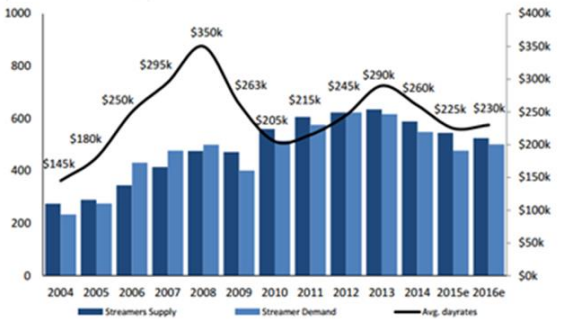
Lastly, as day rates fluctuate substantially and range from 60,000 – 400,000 as shown in table 3.16, determining an average day rate will not be a useful measure (Hunter et al, 2014). Hence the individual vessel specifications, with respect to number of streamers, efficiency and effectiveness, are important factors when the day rate is determined. As many of the 2D vessels are expected to exit the market in 2015/2016, we consider the 3D day rates to be most important in the industry going forward. Graph 3.17 shows how the day rates have fluctuated relative to the market balance between demand and supply.

**Figure 3.16 – Day rates**

| Dayrates | | | |
|---|---|---|---|
| Vessel type | Specification | Low end (USD) | High end (USD) |
| Source | N/A | 60,000 | 120,000 |
| 2D | Low | 70,000 | 90,000 |
| 2D | High | 90,000 | 125,000 |
| 3D | Low | 100,000 | 180,000 |
| 3D | Med | 200,000 | 260,000 |
| 3D | High | 290,000 | 350,000 |
| 3D | V/high | 340,000 | 400,000 |

Source: Own Creation, IHS Petrodata

**Figure 3.17 – Supply/demand high end 3D**

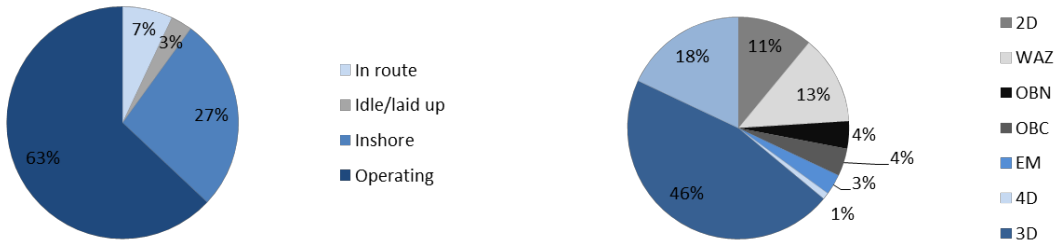



Source: Own Creation, IHS Petrodata

### 3.1.3.2 Utilization

Utilization is measuring the efficiency of the fleet; how many days the vessels are active versus how many days they are idle in ports or in the yards for service. Given the cuts in E&P spending, utilization has decreased as companies have difficulties filling up their orderbooks. This has led to utilization rates being at historic lows in Q'1 2015 (Pareto seismic, 2014). Figure 3.18 shows the total fleet status in 2014, where 3D surveys make up nearly half of the activity.

**Figure 3.18 – Utilization**




Source: Own Creation, IHS Petrodata

In the term market, most vessels have close to 100% utilization, while it is usually lower in the spot market. Secondly, there is a significant difference in utilization between the new high-spec vessels and the old less advanced ships. There are two reasons for that; firstly because the new ships are more

effective, resulting in better scanning of the sea, and also more cost efficient which makes the seismic company better off. Secondly, the newer vessels can operate in areas that were inaccessible for scanning before. The more advanced vessels has since 2010 enjoyed utilization rates around 80-85% (PGS Annual Report, 2014), while the global seismic fleet has averaged around 60% historically (Hunter et al, 2014).

However, utilization rates are expected to remain low and decrease slightly in 2015, causing many of the older vessels to exit the market. Also the newer vessels' utilization is expected to drop and the guidance for the high-spec vessels in the upcoming year is at 70-75%. Steaming time is expected to remain around the same level, around 7-10%, while the standby time is increasing to 15-20% due to weak vessel booking (Swedbank, 2015). However, utilization is expected to recover in the long-term as a consequence of increasing demand.

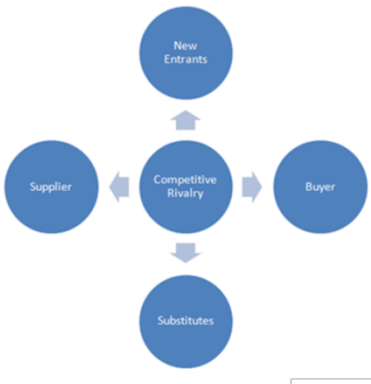
### 3.1.4 Conclusion

The outlook for the seismic industry is mixed; positive global economic outlook bodes well for future investments and access to capital. On the other hand, low oil prices and cuts in E&P spending (which accounts for two-thirds of seismic demand) has resulted in lower demand for seismic services, and thus led to excess capacity in the market. We believe the oil price will rebound, but that it will be a timely process and that E&P spending will remain low throughout 2015. Hence the capacity needs to adjust in order to respond to the falling demand. Given the low shipbuilding activity and increasing scrapping of vessels, especially among the three largest players, we believe that the market has committed to addressing this issue in the upcoming quarters. However, fewer tenders and tougher competition for the bids have caused day rates to drop and utilization rates to historic low levels. Thus, based on the unfavorable outlook for E&P spending, weak market balance, and low orderbooks in the industry, we believe the seismic market will struggle in the short-term, before rebounding in 2016 and onwards.

## 3.2 Porters 5 forces

In order to understand industry competition and profitability, one must analyze the underlying structure by looking at the five forces that shape competition (Porter, 2008). Understanding your competitors is key in driving sustainable profitability and economic prosperity, as it helps in understanding the true profitability prospects and hence the attractiveness of an industry. The five forces are; threat of substitute products or services, threat of new entrants, bargaining power of buyers, bargaining power of suppliers and competitive rivalry, as seen in figure 3.19 (Porter, 2008). Each of these will now be analyzed in turn for the seismic industry to determine PGS' competitive environment.

Figure 3.19 Porters 5 Forces




Source: Own Creation, Porter 2008

### 3.2.1 Threat of substitute services

The marine geophysical companies provide specific services to the petroleum clients and there are no available substitutes in terms of how to obtain seismic data, and exploring for offshore hydrocarbons in different provinces around the world. Onshore exploring activity can however be seen as a possible substitute service and PGS sold this business area towards the end of 2009. However, sources of oil and gas onshore are limited and offshore activities therefore still remains as the main area for exploring.

Another group of substitutes besides fossil energy is other energy sources such as renewables, which has gained significant focus over recent years due to the negative environmental effect of fossil energy. Despite this focus and the research on alternative energy sources, the world is still heavily reliant on oil and gas. Fossil fuels is the dominant form of energy with a share of 86% in 2013 and forecasted to account for 81% in 2035 (BP, 2015). The threat from alternative energy sources at the moment is thus weak. The drop in oil & gas prices seen towards the end of 2014 has further weakened the threat from alternative sources, as oil has become a more affordable source of energy to the consumer. The need for further oil exploration in the future is therefore necessary to meet the forecasted energy demand.

In conclusion, the threat from substitute services is at the moment considered low.

### 3.2.2 Threat of new entrants

The level of entry barriers present in an industry and the reaction new entrants face from existing companies determines the threat of entry in an industry (Porter, 2008). High barriers lead to lower competition and thus better profitability prospects for already existing firms. In the marine seismic industry there are a number of factors that affect the threat of entry, such as vessel capacity, complexity of operations, capital requirement, technology and other legal requirements.

Having technologically advanced vessels in the seismic market that can tow and handle the greatest amount of streamers is crucial in order to provide high quality images for the oil & gas companies efficiently. These vessels are highly complex to produce and due to these complexities the construction time is typically between one-two years. They also require huge investments, as we can see from the cost of PGS Ramform vessels amounting to $250 million (PGS Q1, 2013). Additionally, the complexity of operations in the marine seismic industry is high, as the vessels are very intricate. They therefore require highly skilled labor to operate the advanced machinery and equipment onboard. Thus, the capital requirement of the industry is very high. However, certain players within the industry lease their vessels used in their operations.

The seismic market is as mentioned previously highly dependent on advanced technology, using this in the exploration process and when acquiring seismic data. Providing 2D and 3D imaging, depth imaging, all with high resolution, requires advanced technology and is vital to succeed. Having proprietary technology can thus result in cost or quality advantages for the companies currently operating in the industry. New entrants would accordingly have to bypass such advantages when entering the market, which is arguably very difficult. The technological requirement in the seismic industry therefore provides a high barrier to entry. There also exist some legal restrictions that heighten the barriers to entry since the technology is usually patent protected. Additional laws and legal requirements that influence the possibility of entering the seismic market are the strict requirements in terms of protecting the environment and also the crew working on vessels.

As a result of the fall in oil & gas prices, the E&P spending has seen a sharp decline with multiple oil companies reducing their spending. This has in turn put pressure on the margins in the industry and

reduced the utilization rates. Based on the current market conditions combined with the high barriers to entry for the seismic industry, we can conclude that the threats of new entrants are low.

### 3.2.3 Bargaining of power of buyers

"Buyers are powerful if they have negotiating leverage relative to industry participants, especially if they are price sensitive, using their clout primarily to pressure price reductions" (Porter, 2008:83).

The main clients for seismic companies are the oil E&P companies which can be divided into International Oil Companies and National Oil Companies. Their E&P spending is the driver of how much contracts that are allocated to seismic exploration activities and therefore the activity level of the seismic companies. The E&P spending of the oil companies is a function of the oil & gas prices, which again affect the bargaining power. In a bull market where oil prices are high the oil companies are willing to invest in E&P activities and are focused on finding new oil reserves. This increase in demand for seismic vessels also decreases the available capacity, and thus leads to higher day rates on vessels. Conversely, in a bear market with low oil & gas prices and consequently low E&P spending, there is excess supply. This leads to low utilization rates and the competition among the seismic companies for contracts are high leading to lower day rates. This relationship is the most important mechanism determining the bargaining power between oil and seismic companies. Up until the sudden downturn in oil prices the high oil prices resulted in high utilization and day rates for the seismic companies, leaving the seismic companies with a high bargaining power. However this has now changed and in the current market place the oil & gas companies have a high level of bargaining power.

The size of the oil companies also indicates high bargaining power. Furthermore, the service offered by the seismic companies is highly differentiated in terms of the knowledge and complexity of the services they provide. This results in a number of seismic companies having a unique value proposition that the oil & gas companies cannot easily replicate. This can be seen for example with PGS' GeoStreamer technology (PGS, 2014). As a result there seems to be few possibilities for the buyers to play one vendor against another.

A buyer group is price sensitive if the service they purchase from the industry is a significant fraction of its cost structure or procurement budget (Porter, 2008). For the petroleum companies, the capital and exploration expenditure is small relative to the overall budget of the companies. Looking at Exxon Mobil as an example, we can see that they spent $7,1m out of a total E&P budget of $42,5m, which only equals 16.8% of exploration, in 2013 (Exxon operation and financial review, 2013). If we look at this as a fraction of total cost of Exxon it only equals 1.9%. In a bull market demand is relatively inelastic to price changes, as it only accounts for a small part of petroleum companies' expenses, and secondly because there are few substitutes available. However E&P spending is one of the first areas to get cut in a bear market with low oil & gas prices. This is because when evaluating the revenues, the most important measure is the break-even rate of production as discussed in section 3.1.1.4. One can therefore argue that the buyers are price sensitive in a bear market, which is the current market condition. On the other hand, even in a bear market there is a tradeoff between quality and price, as the petroleum companies are highly dependent on the quality of the data the marine seismic companies deliver. This favors the high end vessels and the most cost efficient fleet within this market, as the low end vessels become too costly to operate (section 3.1.2.4).

As a last resort, companies can choose to vertically integrate (Stuckey and White, 1993). This is credible if they believe vendors are too profitable. Schlumberger is an example of a large petroleum company that has vertically integrated into the marine seismic industry through their subsidiary WesternGeco

In sum looking at the negotiation power and price sensitivity of the petroleum companies, we conclude that the buying power is relatively high.

### 3.2.4 Bargaining power of suppliers

Seismic companies depend on a wide range of different suppliers for inputs. We consider the most important supplier to be the shipyards constructing the highly complex vessels, as these are crucial to the seismic companies' operation. The vessels are also the main cost driver for PGS and thus have a major impact on the profitability of the firm. The bargaining power of the shipbuilding companies is a question of capacity, with oil and gas prices influencing the willingness from the shipyards to produce

more vessels and the demand for newbuilds. In a bull market with high oil & gas prices, the seismic industry is experiencing high levels of demand and consequently the demand for newbuilds increase. This in turn leads to under capacity for the shipyards and thus upwards pressure on the prices of newbuilds. Reversely, in a bear market, as we are experiencing now, the demand for new builds is low as previously discussed in the shipping market model.

The top 10 shipbuilding companies in the world are all located in Asia with South Korea and Japan being especially prominent (marineinsight.com). The shipbuilding companies do not however depend heavily on the seismic industry itself, as much of its revenues come from shipbuilding for other industries. Moreover, building seismic vessels seems attractive for the shipbuilding companies due to the complexity leading to a high price per vessel. Furthermore, the seismic companies do not have other suitable providers for the vessels they require, thus there is a mutual dependency between the industries. However, as the cost of the vessels is substantial, the seismic companies highly price sensitive, which again lowers the bargaining power of the suppliers.

Another important input for the seismic companies is the labor cost as the highly complex vessels requires skilled personnel. The high oil prices and activity levels in the seismic industry over recent years has provided a strong demand for skilled labor and competition between companies to recruit enough skilled employees. This has however now turned as a result of the tough market conditions present and the cost cutting focus within the oil & gas industry with people getting fired to further cut costs. As a result skilled employees are now taking whatever jobs they can get making their bargaining power low.

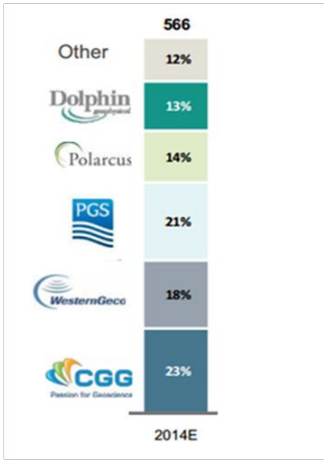
In sum we therefore conclude that the supplier power in the seismic industry is low.

### 3.2.5 Rivalry among existing competitors

An industry's profit potential depends on the intensity of the competition and the basis on which the companies compete (Porter, 2008). The marine seismic segment of this industry is characterized as one with high-density and few key players with six companies providing the majority of the supply of 3D 6+ streamer vessels. In terms of market share of streamers, the main market players are CGG (23%),

PGS (21%), WesternGeco (18%), Polarcus (14%) and Dolphin (13%) (Dolphin, 2014) (Figure 3.20). The competition within the industry is therefore relatively high as the players have similar market power.

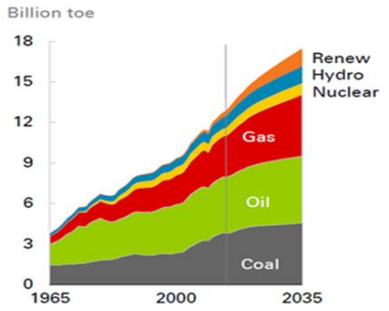
Figure 3.20 - Market share, # of practical streamers – 3D fleet




Source: Own Creation, Dolphin, 2014

High utilization rates and strong backlogs combined with low running cost per vessels are key factors for success for seismic companies. The industry is commonly associated with huge initial investments from both the support companies as well as the oil & gas companies. It is also an industry with highly complex operations with exploration taking place in harsh environments featuring deep waters and complicated geologies. 3D surveys make up nearly half of the activity in 2014, and going forward the 4D segment is expected to become more prominent and take up more of the activity.

Figure 3.21 – Consumption by fuel




Source: BP, 2015

The seismic industry is currently in a challenging period as a consequence of the lower oil price resulting in cautious spending from the oil companies. However looking at the industry outlook from a long term perspective, the prospects are promising. As figure 3.21 illustrates, the consumption trend for both oil and gas have an upwards trend going forward, thus oil companies will have to continue exploring for oil and gas resources in order to meet demand. In terms of industry growth, petroleum companies E&P spending have increased by 10-13% per year from 2010-2012, but slowed to 7% in 2013 and slowed further to 2% in 2014 (Swedbank, 2015). With the fall in oil & gas prices in the second half of 2014, a sharp decline in global E&P spending is expected with a fall of 17% to $571 billion in 2015 based on a study of 476 oil & gas companies' E&P capex budgets (Oil & Gas Journal, 2015). This is based on an average oil price of $70/bbl in 2015 and represents the third largest decline in global capex since 1985 (Oil & Gas Journal, 2015).

As seismic demand correlates with petroleum companies E&P spending as previously outlined, the industry environment is going to be tough in 2015. The fight for market share and contracts will increase in the upcoming year and going forward as a result of the excess capacity of vessels in the marketplace. Capacity reduction will therefore be needed to balance the market. In periods of excess capacity, exit barriers of an industry have significant importance as the profitability of healthy competitors suffers because the sick ones hang one (Porter, 2008). There is a well-developed second hand market for vessels organized through shipbrokers. However as there is a constant focus within the seismic industry on having the newest and most modern fleet possible, older vessels might not be as attractive, and fewer transactions may thus occur. This means that there are some costs associated with leaving the industry. It is expected that vessels will be taken out of the market to reduce the overcapacity, which in turn could affect the second hand market prices negatively, making the cost associated with leaving the industry even higher.

In sum, the competitive environment in the seismic industry is very high.

### 3.2.6 Conclusion

In this analysis we have identified the micro factors that shape the industry environment through Porters five forces. The analysis shows that the threat of substitute services is low because of no direct substitutes available. The threat of new entrants is also low, as there are significant barriers to entry. This is a result of vessel capacity and availability, the complexity of operations, and that the advanced technology is protected by patent laws. In addition, the tough market conditions with pressure on margins are making the industry non attractive. The bargaining power of buyers is considered to be relatively high as the negotiating power of the buyers is considered to be high, while at the same time not being too price-sensitive. The supplier power is also low resulting from low levels of demand for newbuilds given current market conditions and with the marine seismic companies being highly price sensitive. The competitive rivalry is very high and will increase further due to the slowdown in E&P spending by the petroleum companies. In addition, high costs of exiting the industry are also present. The overall assessment of the competitive environment is that the existing players face a tough market environment in the next year, which will put pressure on profitability. However, the structure of the

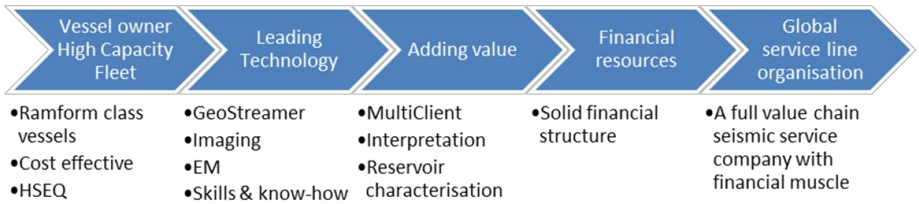
industry offers great potential for existing players if the market conditions improve, while it is unattractive for potential new players to enter, given the high barriers within the industry.

## 3.3 Internal analysis

### 3.3.1 Value Chain

Having analyzed the balance between supply and demand in the REV market and the competitive environment we will now turn to analyze the internal resources and capabilities of PGS. By looking at the value chain of PGS we are able to identify the core resources and analyze how these are utilized in order to generate returns.

Figure 3.22 – PGS Value chain




Source: Own Creation, PGS (2014)

The most important factor for being successful in the seismic market is the composition of the fleet in order to meet the demand from the oil companies, both in a bear and bull market. Furthermore, the outbound logistics of PGS have to strategically utilize the fleet through the business cycle, with the winter season having the lowest activity level. Thus, they have to evaluate whether to allocate vessel time to marine contracting or pre-funding MultiClient operations.

Focus on operational excellence is essential in order to succeed in the tough competitive marketplace that PGS operate in order to secure marine contracts from the oil companies. Thus, having the best quality equipment with the best technology to obtain high quality seismic data, combined with skilled labor is critical. Moreover, having a management team identifying key geographical areas for growth and having the connections to be part of the important bidding processes and government licensing rounds is vital. Lastly, in order for PGS to take advantage of the capabilities and resources of their value chain, a solid financial structure is needed.

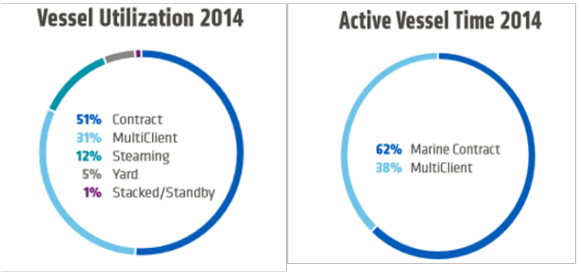
### 3.3.2 VRIO

The elements of the PGS value chain will now be analyzed through the use of the VRIO framework (Barney, J.B and Hesterly, W.S, 2012). The framework is used in order to identify the key aspects of the internal capabilities of PGS, and identify sources of competitive advantage.

#### 3.3.2.1 Vessel owner & high capacity fleet

The main driver of revenues for PGS is the fleet. The fleet consists of 12 vessels, whereas 10 of them are operating, and they are the only seismic operator to use vessels with the Ramform design. Figure 3.23 shows that PGS had vessel utilization of 82%, excluding steaming, which is among the highest in the industry.

**Figure 3.23 – Vessel allocation**




Source: Own Creation, PGS Annual Report, 2014

The Ramform vessels have a competitive advantage because of their ability to tow the highest amount of streamers in the industry, and secondly because they facilitate rapid streamer deployment and retrieval, leading to high levels of productivity. Measured in terms of unit production cost, no other fleet in the industry delivers comparable cost-effectiveness, as other companies cannot deliver comparable unit production cost numbers (PGS Annual Report, 2014). Vessels with the Ramform design also provide a more detailed picture of subsurface geological conditions for interpretation, than fleets relying on 2D surveys. As there has been an increasing focus on data quality over the last few years, this further favors the PGS fleet. Also, the capability to complete large surveys in short time is another advantage of the Ramform vessels. This has been especially important as the average survey size has nearly doubled over the last five years (PGS Annual Report, 2014).

Furthermore, the fleet is modern with high end vessels, which is beneficial as oil companies have recently increased focus on exploration of new hydrocarbon resources in areas featuring deeper waters, harsher environments, and complicated geologies. It does however remain to be seen how the focus will be for the oil & gas companies with the new challenging market, but the emphasis on cost effectiveness will continue to be present.

PGS has a vessel investment strategy of only investing in own capacity when differentiation can be achieved. Their newbuild program focus is on reducing average age, and increasing the streamer per vessel ratio, with the maintenance of critical mass rather than market share. Since 2008, 5 new Ramform vessels have been added to the fleet, which has decreased the average fleet age significantly to approximately 9 years in the end of 2014, which is among the lowest in the industry (PGS Annual Report, 2014). The delivery of two new Ramform class vessels in 2016 continues this strategy and the average vessel age will then be 10 years, with average number of streamers per vessel above 13, which is an increase of 50 percent since 2012 (PGS Annual Report, 2013). Having 4 vessels of the Ramform class will enable economies of scale, in terms of crew training and vessel repair.

The investment strategy also involves retiring capacity when it becomes non-competitive. The poor market conditions have resulted in stacking of two of the low-end vessels, Pacific Explorer and Nordic Explorer, and Atlantic Explorer was de-rigged from 3D operations to 2D. Further, the delivery of Ramform Tethys and Ramform Hyperion was rescheduled to Q1 and Q3 2016, due to lower bidding activity (PGS CMD, 2015). Hence, Q3 2016 marks the end of the current newbuild program, and the main focus from there on will be to capitalize on the benefits of a GeoStreamer equipped fleet (PGS Annual Report, 2014).

The new vessels also contribute to the Health, Safety, Environment and Quality (HSEQ) focus of PGS management and board of directors. Safety and crew comfort are two of the main investment rationale for the continued investment in the Ramform design. The vessels have a wider back-deck working space and automated handling of the equipment make the operation of the large streamer spread safer and more efficient (PGS, 2013).

In conclusion, the analysis suggest that the fleet is a main strength of PGS, and highly valuable. The design and capacity is rare and the patent protection of the Ramform design makes it hard and costly to imitate which make it a temporarily competitive advantage. PGS's entire fleet is shown in figure 3.24

Figure 3.24 – Fleet overview

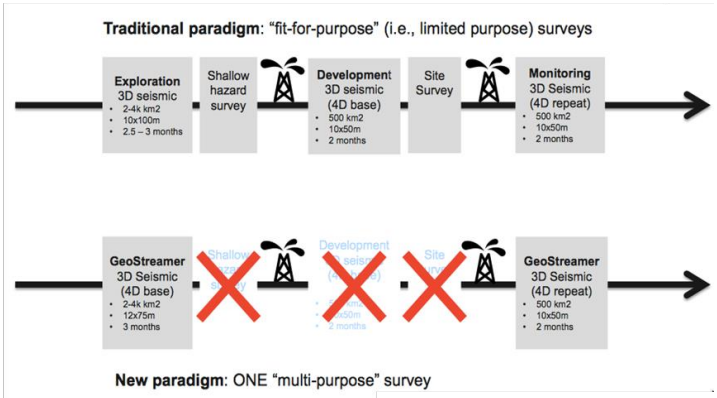

Source: PGS Presentation – UBS European Mid-Cap Oil Conference

### 3.3.2.2 Technology

One of the key differentiators in the seismic industry is achieved through technology. With the GeoStreamer PGS have established themselves as a leading innovator, and continuing this position is a key strategic objective for PGS. Furthermore, as demand for scanning in areas that were earlier inaccessible has increased, the requirement for GeoStreamer quality data with higher resolution, better depth imaging and superior operational efficiency compared to conventional streamers, further favors PGS' technology offering. The dual sensor streamer technology has been recognized as the leading technology among the leading oil companies. The GeoStreamer is also the leading technology for 4D applications with approximately 65% of all broadband 4D projects to date carried out using GeoStreamer (PGS CMD, 2015).

PGS' leading position in innovation is proven further with the development within the multi component streamer market. This true broadband seismic market is a new area with a technology that creates a new paradigm with one "multi-purpose" survey, making the exploration process more efficient. This is because the" multi component streamers record two sets of discrete measurements allowing for a suite of imaging products, which are not possible with pure hydrophone streamer systems" (PGS CMD, 2015). Furthermore, PGS have several new technology lined up with towed stream electromagnetics, permanent reservoir monitoring (PRM) and OptoSeis Land 3D, which provide great value potential and growth opportunities. The new "multi-purpose" paradigm is illustrated in 3.25.

Figure 3.25 – Seismic paradigm shift




Source: PGS (2015)

With the tough market present in 2015 it is vital to be able to provide high quality data in a cost effective way to win contract bidding. PGS is well positioned for this environment due to this lead in technology combined with the modern vessels. Hence, one can argue that the competitors have to invest substantially in technology in the near term, to modernize their streamer pool in order to adapt to the new environment and the new paradigm. The patent protection of the GeoStreamer technology also provides further protection against imitation.

In sum, the technology is a main strength of PGS and a highly valuable asset. The patent protection and the advanced technology make it hard and costly to imitate for competitors. This lead in development will make the other companies lag a couple of years behind PGS. We therefore see PGS' technology as a temporary competitive advantage.

Figure 3.26 – Seismic Vessels Have to Fill All Roles – Competitive Advantage

| Survey type | Requirements | PGS Capability |
|---|---|---|
| Large low cost scanning 3D | Large vessels 12+ streamer capacity, wide spreads, SWIM imaging | ✓ |
| 4D | Ultra-high streamer count, industry leading broadband technology for 4D purposes | ✓ |
| True Broadband imaging | Multi component streamer technology, suite of imaging technologies to maximise value | ✓ |
| Full Azimuth surveys | Large homogenous fleet, experience, survey planning competence, track record | ✓ |
| Frontier | High enduarance, technical redundancy, support experience in remote areas | ✓ |
| High density reservoir work | Ultra-high streamer count with low streamer separations, multi component technology | ✓ |
| Smaller surveys | Global fleet ti minimise steaming, fast deployment and retrieval systems | ✓ |
| Longer offset | Large vessels, 12+ streamer capacity, wide spreads, large reels capacity | ✓ |

Source: Own creation, PGS, 2015

#### 3.3.2.3 Adding value - MultiClient and Imaging & Engineering

The MultiClient library of PGS is another key resource and revenue driver of PGS. This business area manages and licenses seismic data that PGS acquires on a non-exclusive basis as explained previously in section 2.3. As PGS is a vessel owner, with a high capacity fleet they are able to allocate capacity between contracting and MC according to demand, thus keeping steaming time at a minimum. Combining the unique vessels with the GeoStreamer technology gives PGS a competitive edge in acquiring high quality seismic data. PGS have seen average pre-funding levels of 140% in the period of 2010-2014 (PGS, 2010-2014). This indicates that oil and gas companies are willing to invest in PGS' MC activity, and trust that they will get quality data, which in turn ensure them exploration success. The lead in innovation will only contribute further to this going forward.

The high end vessels and GeoStreamer technology together with and imaging & engineering department also provide PGS with a MC library of the highest quality. Having an attractive library is vital, especially with MC late sales where oil companies buy finished processed seismic data. The fact that MC late sales remained high despite the downturn in the second half of 2014 confirms the attractiveness of the MC library.

The analysis suggests that the MC capabilities are seen as valuable and strength to PGS. As a result of the link between technology, vessels and MC performance, the MC resource is seen as a temporary competitive advantage.

#### 3.3.2.4 Financial Structure

PGS' has a strong balance sheet, which makes them well positioned for the current tough market place. Shareholder equity is 54% of total assets with a liquidity reserve of $454,7m (PGS Annual Report, 2014). The funding of $267m for the remaining yard payments for the delivery of the two new Ramform vessels in 2016 is secured, ensuring the continuation of the vessel investment strategy (PGS, 2014). They also have a conservative leverage policy in place keeping the NIBD/EBITDA below 2.0x in a weak market, and looking at the 2014 numbers they were at 1.5x. PGS have also been able to exploit different sources of funding with term loans, revolving credit facilities, Japanese ECF and

senior notes creating an attractive debt structure with no maturities before 2018 and an average remaining maturity of 5 year (PGS Annual Report, 2014).

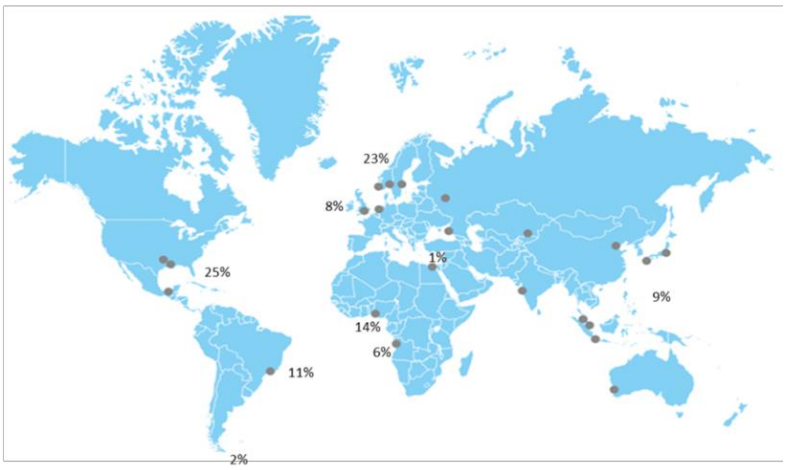
In conclusion, PGS has a solid financial structure and these financial resources are valuable however they are neither rare nor costly to imitate among its competitors resulting in a competitive parity.

### 3.3.2.5 Global Service Line Organization

*PGS Globally:*

PGS offers a broad range of products including seismic and electromagnetic services, data acquisition, processing, reservoir analysis/interpretation and multi-client library data, operating all over the world in order to meet global demand for seismic services (PGS Annual Report, 2014). PGS employs over 2000 people and has a presence in 21 countries with regional centers in London, Houston and Singapore with the company's headquarters being located in Oslo, Norway. Figure 3.27 illustrates where the different offices of PGS are located as well as the different markets and their revenue contribution for 2014.

**Figure 3.27 – PGS Offices and Revenue Contribution**




Source: Own creation, PGS Annual Report, 2014

*Board structure and executive management*

PGS is a public limited company with a single tier board and a senior management team reporting directly to the CEO (PGS Annual Report, 2014). The whole organizational structure can be seen in appendix 3.3. As shown in table 3.28, PGS's board consists of eight board members, whereof five own shares in the company. The small size means that the PGS board is less prone to free rider problems, than larger boards.

**Figure 3.28 – Board of Directors**

| Name | Position | Number of shares |
|---|---|---|
| Francis Gugen | Chairman | 30,000 |
| Harald Norvik | Vice Chairman | 8,000 |
| Carol Bell | Director | 5,000 |
| Holly Von Deursen | Director | 2,000 |
| Daniel Piette | Director | 10,000 |
| Inger Skaug | Director | 0 |
| Walter Qvam | Director | 0 |

Source: Own Creation, PGS Annual Report, 2014

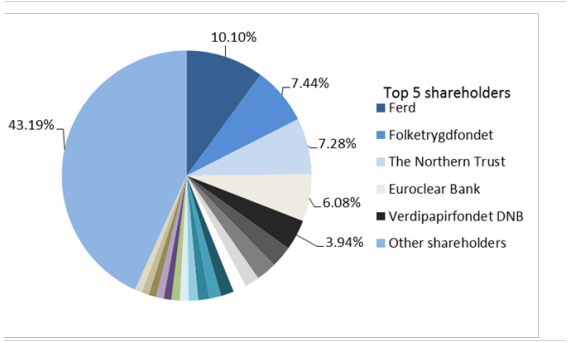
Furthermore, as the CEO is not a director, he cannot influence the board in the same way as he may have, had he been a board member. All directors are independent of the company's management, and also of the major business relations and shareholders. Thus, board members are not allowed to be executives, and neither to perform paid consultancy work for the company. Consequently the board has a strong monitoring function, ensuring that maximization of shareholder value (Thomson and Conyon, 2012).

The executive management team consists of ten members, where the majority has been with the company for several years. All the top senior management has extensive experience within the oil and gas industry with background from large firms such as Aker Maritime and Hydro. Consequently, we believe that the senior management team will be able to steer PGS through the tough market conditions and continue to grow the company long term.

*Ownership structure*

Figure 3.29 shows the ownership structure of PGS. The top 20 shareholder control approximately 56% of the shares outstanding and the top 5 owns 35%. Having no single large owner is typical for the seismic companies, and both Dolphin and CGG have similar ownership structures as PGS. The fairly concentrated ownership structure means that there are higher incentives to monitor the actions made by management by the top five owners. Given the tough conditions in the seismic market, there is little room for management to carelessly spend money on questionable projects. The advantage of not having one single large owner is that there is no entrenchment effect, which occurs when there is one large shareholder that has so much control that it can control the actions made by management (Thomson and Conyon, 2012).

**Figure 3.29 – Ownership structure**




Source: Own Creation, PGS Annual Report, 2014

The large proportion of institutional investors (58.9%) can also be seen as a positive aspect from a shareholder perspective. Institutional investors serve as intermediate agents for their customers and hence work towards achieving the maximum return for their clients (Thomson and Conyon, 2012).

Even though there is speculation that there will be consolidation in the industry, we believe that PGS is in a good position to handle potential changes in the market, and thus that the ownership structure should not be affected noticeable in the time to come.

*Strategy and objectives*

A clear strategy with defined objectives on how to successfully reach the company goals is imperative in order to create value for the shareholders. Hence it is important to understand PGS' strategy and objective when valuing the company. PGS' strategic ambitions are anchored in five core pledges (PGS Annual Report, 2014):

- *To care:* PGS' vision is to be a pioneer in HSEQ in the world-wide geophysical industry with zero injury to people and minimum harm to the environment.

- *To deliver productivity leadership:* Keep PGS' productivity leadership position achieved by the Ramform vessels with GeoStreamer technology. This is crucial given the trend towards larger surveys and shorter cycle times between award of a license and the required drilling of the first well. When adding capacity, PGS takes a long term view and invests through the cycle, backed by a solid balance sheet. The Company will only add capacity when differentiation can be achieved over a substantial part of the useful life of the vessel, offering the prospect of a satisfactory and sustained return on capital employed (ROCE).

- *To develop superior data quality:* Oil companies are ultimately seeking superior data quality. The ability to deliver an ever clearer, more informative seismic image requires successful product innovation. PGS focus on continuous product innovation as technology is an important differentiator.

- *To innovate:* Operational innovation is another important differentiator. PGS was the first company to deploy vessels capable of towing more than 20 streamers and the Company delivers unique reservoir focused solutions.

- *To perform over the cycle:* The seismic market is cyclical by nature. PGS aims to perform over the cycle and mitigate its exposure to industry cyclicality by investing through the cycle. Capacity will only be added when differentiation and satisfactory ROIC can be achieved, maintaining a strong balance sheet. Furthermore PGS takes a proactive approach to capacity and capital allocation between MultiClient and Marine contract work.

The objective to keep the position as productivity leader in industry seems like a natural goal given the vessel investment strategy and current fleet. Given the market environment identified in the Shipping Market Model, having a cost efficient fleet will be apparent to overcome the current climate, as well as having enough capacity to take advantage of future opportunities. The PGS fleet also puts the firm in a good position to meet its HSEQ ambitions. As identified earlier in the VRIO analysis, innovation and providing superior data quality is crucial. PGS address both these factors in their strategic ambitions and the firm has been on the forefront of innovation historically. Considering the technology in the PGS pipeline it seems like they will be able to meet the objective. The board of directors and the experienced senior management team have a deep understanding of the seismic market and should be able to make decisions to successfully achieve the objective of performing over the cycle. The actions taken after the latest drop in oil prices and demand, illustrates the capabilities of the board and senior management team.

### 3.3.3 Conclusion

"A firm's potential for competitive advantage depends on the value, rarity, and imitability of its resources and capabilities. However, to fully realize this potential, a firm must be organized to exploit its resources and capabilities" (Barney, J.B and Hesterly, W.S, 2012: p.81). PGS has a strong brand name and reputation and is consistently ranked as a leading marine contractor. Moreover, it has a large customer base, particularly with international oil companies. The combined resources and capabilities identified give the organization the structure to meet the current market requirements with the focus on cost efficiency and high quality data, which we believe are playing to PGS' strengths. The strong fleet and being a vessel owner will give continued flexibility and terms of planning and allocation of vessel time between the segments as well as taking advantage of new regional areas. Additionally, the lead in technology innovation puts PGS in great position to exploit the paradigm shift to broadband seismic.

Moreover the strong financial position also gives PGS flexibility to take advantage of market situation in terms of possible acquisitions as every downturn in a market creates opportunities.
Finally, the organizational structure with a well-structured board in addition to a competent senior management team will enable PGS to meet its strategic goals.

In sum, the internal capabilities are highly valuable to PGS and the combination of all the resources and capabilities are rare among seismic companies and therefor give PGS a temporary competitive advantage in a very challenging marketplace.

**Figure 3.30 – VRIO Summary**

| Resource | Valuable? | Rare? | Imitable? | Exploited by organisation | Competitive implications |
|---|---|---|---|---|---|
| Vessels | Yes | Yes | Long term | Yes | Temporary competitve advantage |
| Technology | Yes | Yes | Long term | Yes | Temporary competitve advantage |
| MultClient | Yes | The quality is superior, but competitors have MC library's | Long term | Yes | Temporary competitve advantage |
| Imaging & Engeneering | Yes | No | Yes | Yes | Parity |
| Financial | Yes | No | Yes | Yes | Parity |
| Organisational | Yes | Yes | Long term | Yes | Temporary competitive advantage |

Source: Own creation, Barney, J.B and Hesterly, W.S (2012)

## 4.0 Financial statement analysis

It is critical to get an in depth understanding of the historical financial performance of PGS in order to accurately forecast future cash flows. The analysis of the financial statements will identify how PGS has created value, recognizing the key value drivers. It will also enable relative comparison of PGS' performance to the peer group identified in section 2.6, with extra focus given to CGG as the most similar firm out of the peers.

The financial analysis is based on numbers taken from annual reports in the period 2010-2014. This time frame corresponds to the business cycle of 5-6 years for the seismic industry (section 2.7). Furthermore, as PGS sold its onshore division at the end of 2009 - beginning of 2010, numbers from before this period will not be comparable or useful for forecasting PGS' future cash flow. We therefore consider the chosen time frame to be sufficient in order to develop and understanding of the historical performance of PGS in relation to the seismic environment.

The financial statements of PGS will be reformulated through separating the operating items from financial items. Subsequently, we will analyze the key ratios and the underlying reasons for the development in PGS' financial performance. Combining the findings from this section with the strategic analysis will then provide the basis for the forecasting drivers. All the reformulated statements can be found in appendix 4.0

### 4.1 Quality of earnings

Accounting quality is a central concept in financial statement analysis as numbers can be distorted by companies trying to make themselves look healthier than what they are (Plenborg and Petersen, 2012). A firm is suspect to analyst expectations regarding for example EPS, and in order to meet market expectations and maintain the current share price, companies may be tempted to manipulate earnings. Given the poor current seismic market, this may be especially important to analyze as several companies will not be able to meet market estimates. The PGS peer group also consists of some smaller companies and a lower market value could in a worst case scenario result in bankruptcy. This section aims to investigate and identify potential red flags in PGS' financial statements.

### 4.1.1 Accounting flexibility in the income statement

Managers have an incentive to report biased accounting numbers as this would improve the financial data and ratios, ultimately leading to a higher share price (Plenborg and Petersen, 2012). We have identified a few potential red flags in the PGS income statement.

The sources of revenue for PGS are driven by day rates, utilization, MC cash investment, pre funding rate and late sales. As contract based work is set at an agreed price and within a specified time period we consider the timing of the earnings to be fairly easy to determine. The same applies to MC cash investment as each party's contribution is recorded at a specific date and the scanning activity is carried out during a set time period. However, late sales recognition of revenue is easier to distort as budget flush is a common feature. This is surplus cash that the companies have not spent and seismic data is easily available and a good investment (PGS IR, 2015). Reporting late sale numbers in Q4 or deciding to push the earnings to Q1 according to needs is therefore possible.

Our analysis identifies that most of the costs are directly linked to operations and activity level, which can be observed through the utilization rates. However, the item amount capitalized to MC library, has fluctuated historically and is difficult to determine. The value is driven by the level of MC cash investment; however the amount reported in the income statement is a decision made by management. As this item also reduced the net cost of sales and consequently EBITDA, it can be used to reach the EBITDA guidance numbers indicated previously to the market.

Vessels, as discussed in the market shipping model, have a useful lifetime of 15-30 years. This is a wide span and can easily be taken advantage of when choosing the level of depreciation reported in the income statement. This also applies to the MC data library as the amortization rate of which the seismic data depreciates is a subjective evaluation. Impairment of assets is also a possible item for management to influence as the actual cost may vary significantly. Adjusting all of these numbers affect the EBIT, net income and consequently also the valuation of the firm.

### 4.1.2 Accounting flexibility in the balance sheet

The recorded value of PP&E and MC library on the balance sheet is reliant on the depreciation level reported in the income statement. Hence, the same risks are involved with this reported figure. Additionally the issue of using fair market value versus book value may give different results. This is especially important in the valuation of the vessels and MC library given the falling market demand. As the seismic industry is a commodity industry, heavily influenced by the relationship between supply and demand, one can argue that the today's market values of tangible assets are significantly lower than book values. As the poor market conditions have led to more scrapping, as discussed in section 3.1.2.4 the scrapping prices have an impact on the salvage value. Hence, the book value of the vessels may be too high.

As seismic is a fixed asset heavy industry, intangible assets only accounts for a small portion of the total assets. In PGS's case they only accounted for ~9% of total assets in 2014. Thus, there are limited opportunities to manipulate the total asset value of the firm by adjusting the intangible assets. Still, assets such as goodwill can easily be adjusted based on management's opinions, distorting the value of the assets.

Lastly, there may be an issue of how much of the accounts receivables are actually collectable. In the current market, with tight margins, customer bankruptcy may be an issue. However, as the main customers are large petroleum companies, we do not see this as a big problem.

### 4.1.3 Partial conclusion

The sections above have highlighted potential red flags in the PGS's financial reporting. Hence, we have taken this into consideration when analyzing past numbers in the following section and also in the forecasting. Thus, we have not just used historical averages when forecasting items such as depreciation, MC amortization rates, and amount capitalized to MC Library, but adjusted them on a yearly basis according to capital expenditure and market outlook (appendix 6.3).

## 4.2 Reformulation of financial statements

### 4.2.1 Analytical income statement

The analytical income statement separates every accounting item into either operations or finance in order to obtain better knowledge of the different sources of value creation of the firm (Plenborg and Petersen, 2012). Consequently, we have separated the PGS income statement items according to whether or not they are part of core operations, resulting in the calculation of net operating profit after tax (NOPAT). The following list summarizes the reformulation carried out in the income statement:

- PGS does not differentiate between tax on operations and tax on financial items, hence we need to estimate them separately (Plenborg and Petersen, 2012). We have done this by calculating the tax shield on net financial expenses. The corporate tax rate of Norway each year is used as we do not assume that the company's borrowing costs is distributed the same way as the firm's operating earnings.
- Loss/gain from associated companies is classified as non-core operations as they are not part of the daily operations.
- Items such as interest income and currency exchange loss/gain are all summarized under other financial expenses, net. These are classified as non-core operations.
- Amount capitalized to MC Library is driven by MC cash investment and the activity in the MC segment; hence we classify this as part of operations.

### 4.2.2 Analytical balance sheet

Net operating assets is calculated as the sum of operating assets minus operating liabilities (Plenborg and Petersen, 2012) The invested capital is financed by equity and NIBD and hence net operating assets is the sum of the source of financing. The following classifications are made in order to calculate these numbers.

- As the current liability item, short term debt and current portion of long term debt, are interest bearing we have classified this as an interest bearing debt.
- As it is difficult to split cash reserves such as restricted cash, cash and cash equivalents into operating and excess cash, we have classified all cash items as interest bearing

assets (Plenborg and Petersen, 2012). Even though some of the cash will be used to pay for the new deliveries in 2016, we do not see cash as an operating item.

### 4.3 Operating profitability analysis

Measuring a company's profitability is one of the key areas of financial analysis (Petersen and Plenborg, 2012). In order to illustrate the inter-relationships of ratios that ultimately explain the level of profitability for a company, the analysis is carried out through the use of the DuPont model (Appendix 4.7).

The overall profitability measure for operations is best analyzed by looking at return on invested capital (ROIC). ROIC does however not explain whether profitability is driven by higher revenue and expense relation, or improved capital utilization (Petersen and Plenborg, 2012). To analyze this we need to look at profit margins and the turnover rate of invested capital. The profit margin explains the revenue and expense relation by assessing the ratio between operating income (NOPAT) and revenue. The turnover rate expresses the company's ability to utilize invested capital. Comparing the ROIC to the company WACC tells us the level of ROIC and whether value is created for the shareholders. ROIC also assesses how efficiently PGS and the marine seismic industry allocate their employed capital in operational activities, and value driver divisions. A higher ROIC provides easier access to capital and lower borrowing costs, thus resulting in a higher value of the company (Petersen and Plenborg, 2012).

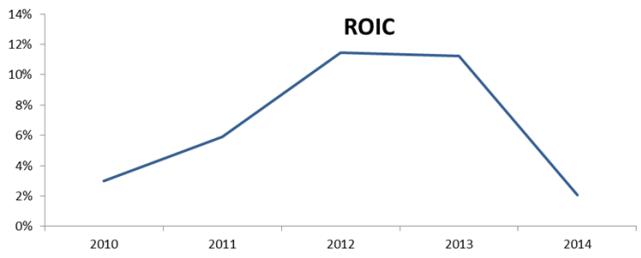
Return on equity (ROE) is the most important ratio from a shareholders perspective when analyzing profitability of a firm. ROE measures the profitability taking into account both operating and financial leverage (Petersen and Plenborg, 2012). The analysis will therefore look at the spread and leverage in order to assess the effect leverage has on shareholder return. Comparing ROE to shareholders required rate of return (re) gives an assessment of the level and development of ROE.

The trend of the financial ratios will be analyzed and explained by development in the marketplace and also company specific events that has affected the performance. Furthermore, the PGS results will be compared to the peer group to see the relative development and whether PGS is outperforming its peers.

## 4.4 Decomposition of ROIC

As we can see from figure 4.1, PGS has had a positive development in the ROIC in the period from 2010-2013 with relative flat development in 2012-2013. This is a result of an increasingly strong seismic market in this period with PGS growing their NOPAT significantly YOY. Moreover, the company's vessel investment strategy, increasing capacity, enables PGS to capitalize on the strong market. The sharp fall in oil prices in the second half of 2014 and the subsequent weak market resulted in PGS' NOPAT plummeting. With invested capital increasing YOY, the ROIC declined sharply in 2014 with PGS delivering a ROIC of 2.1% compared to 11.2% in 2013.

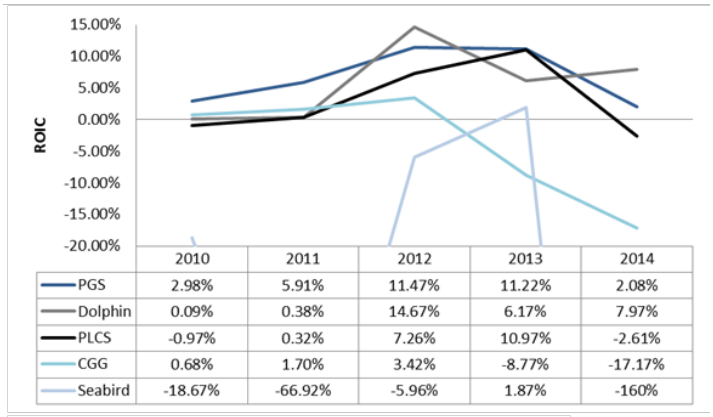
**Figure 4.1 – PGS ROIC**




Source: Own creation, PGS

Figure 4.2 shows that the level of ROIC is highly inconsistent, and varies from company to company in the seismic industry. However, compared to the development in the peer group, PGS moves more or less in line with the trend seen in the market with positive development for each of the peers from 2010-2012. In 2012-2013 PLCS and Seabird are the only two companies with a positive trend, while PGS' ROIC was flat. The tough market conditions for the industry during the second half of 2014 saw the peer group suffering. PGS managed to mitigate the negative effect of the market better than its closest peer CGG, while Dolphin managed to increase their ROIC slightly as the company continued to grow in operations and size.

**Figure 4.2 – PGS ROIC vs peer group**




| | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|
| PGS | 2.98% | 5.91% | 11.47% | 11.22% | 2.08% |
| Dolphin | 0.09% | 0.38% | 14.67% | 6.17% | 7.97% |
| PLCS | -0.97% | 0.32% | 7.26% | 10.97% | -2.61% |
| CGG | 0.68% | 1.70% | 3.42% | -8.77% | -17.17% |
| Seabird | -18.67% | -66.92% | -5.96% | 1.87% | -160% |

Source: Own creation, Company Annual Reports

In order to explain PGS' performance the ROIC will be broken down into profit margin and turnover rate on invested capital.

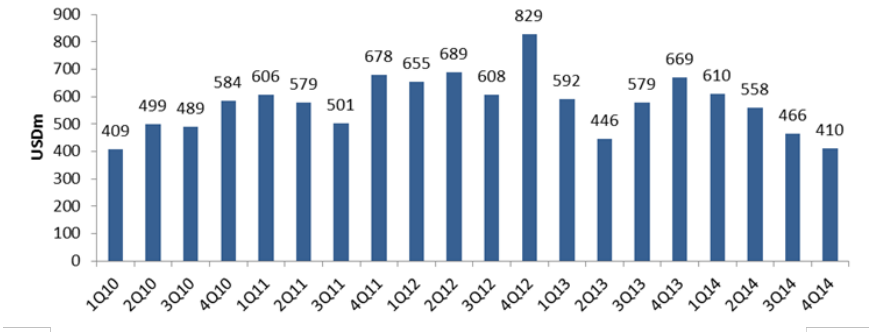
### 4.4.1 Profit margin

#### 4.4.1.1 Development in revenue

After selling off their onshore division at the beginning 2010, PGS has seen a positive development in revenues in 2011 and 2012. Lower MC pre-funding revenues caused revenues to decline by 1% in 2013. The negative trend continued in 2014 with revenues declining 3.2% mainly due to a 19% reduction of MultiClient pre-funding revenues compared to 2013; however this was partially offset by increased marine contract revenues (PGS Annual Report, 2014). The new vessel investment strategy over the same period has seen the fleet being renewed with four new vessels being delivered, while at the same time scrapping four vessels. The compounded annual growth rate over the period has been 5.1% compared to 7.2% for CGG which is the closest competitor. PLCS and DOLP are excluded as they began operating in 2008 and 2010 and the growth rates are thus not comparable. The CAGR in revenue does however not tell us anything about the margins of the businesses hence this will be analyzed in section 4.4.1.6.

The order book of PGS tells us how much of the fleet that is booked going forward. Hence it gives an indication of the activity levels expected and consequently revenue for PGS. Figure 4.3 illustrates the development if PGS' order book historically by quarter since 2010. The backlog end-2014 was USD410m, almost 40% down compared to 12 months ago and lowest since pre-financial crisis levels (DNB Markets 2015).

**Figure 4.3 – PGS Order book**

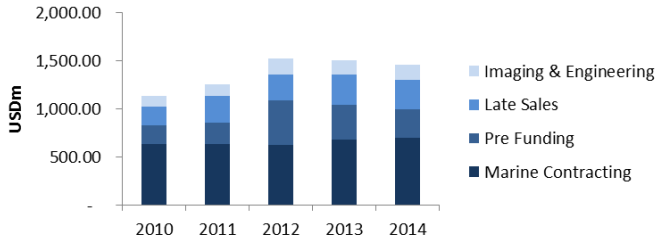



Source: Own creation, PGS Quarterly Reports

### 4.4.1.2 Revenue by segment

The revenue for PGS can also be split into segments in order to see which areas that are driving the development in revenue. The contribution of each segment is illustrated in figure 4.4. Marine contracting has on average contributed to 48% of revenues over the last 5 years while MC has contributed to 42%. The imaging & engineering segment is consistently contributing approximately 10% of total revenues over the last five years.

**Figure 4.4 – PGS Revenue by segment**

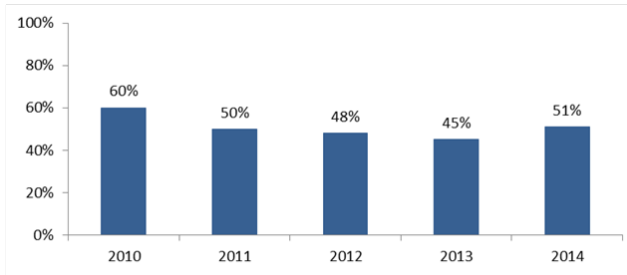



Source: Own creation, PGS Annual Reports

*Contracting:*

The drivers of the contracting revenue are utilization rates and price per streamer month. As we can see from the revenue split above in figure 4.4, the revenue level for the marine contracting segment is pretty stable. The 3% growth in contracting revenue in 2014 compared to 2013 is a result of PGS allocating more capacity to contract activities as seen in figure 4.5. Utilization rates in 2014 were back at levels last seen in 2011.

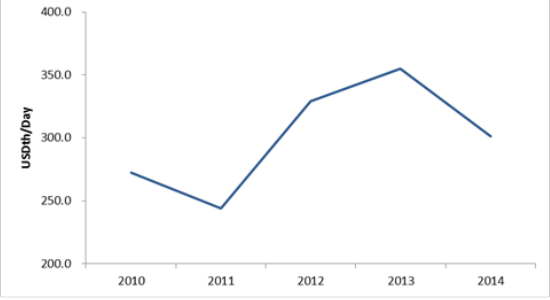
**Figure 4.5 – Marine Contracting utilization**




Source: Own creation, PGS Annual Reports

The 3 % growth in revenue was however partially offset by lower prices with the contracting segment only delivering breakeven margins in q4. This is comparable with the trough seen at the end of 2011, when PGS was close to breakeven for two quarters (Canaccord, 2015). Marine Contract's operating margin for the full year 2014 ended at 15%, significantly lower than 2013 which reflects lower

**Figure 4.6 – Day rates USDth/Day development**




Source: Own creation, PGS Annual Reports

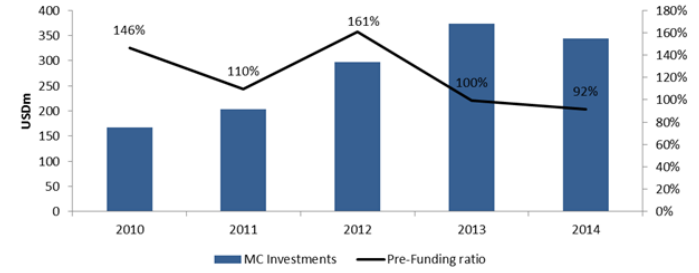
prices caused by a deteriorating market (PGS Annual Report, 2014). Figure 4.6 illustrates the development in day rates for the contracting segment.

*Multiclient:*

The MC pre-funding revenue is driven by pre-funding rate and MC cash investments. The segment is the most volatile, with high pre funding levels in a bull market where oil companies are more willing to use their E&P s pending on locating new areas. Reversely in a bear market the willingness declines and thus also demand. This is apparent in 2012 with PGS reporting record high revenues, with pre-funding alone accounting for 30%, and the pre-funding rate averaging at 161% for the year.

In 2014 however, when the market declined, we see that revenues from pre-funding only accounted for 20% of total revenues. Furthermore, pre-funding levels were only at 92%, which is below PGS' target of 100%. This results from lower pre funding revenues than anticipated for the Triton survey in the Gulf of Mexico. PGS experienced a wait-and-see attitude among clients due to an overlapping survey from a competitor as well as some delayed revenues on MultiClient projects acquired in Q4 (PGS Q4, 2014). The development in MC investments and pre-funding ratios is illustrated in figure 4.7

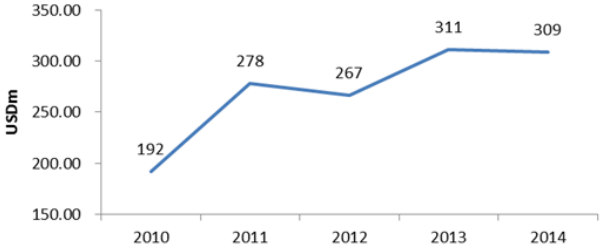
**Figure 4.7 – MC Investment and Pre-Funding development**




Source: Own creation, PGS Annual Reports

The late sales portion of the MC segment is more stable. However, as PGS have increased their MC library with even more high quality data, the late sales have increased over the last five years reaching $309m, surpassing pre funding revenues for the first time. The late sales revenue thus held up quite well despite the

**Figure 4.8 – Late sales development**



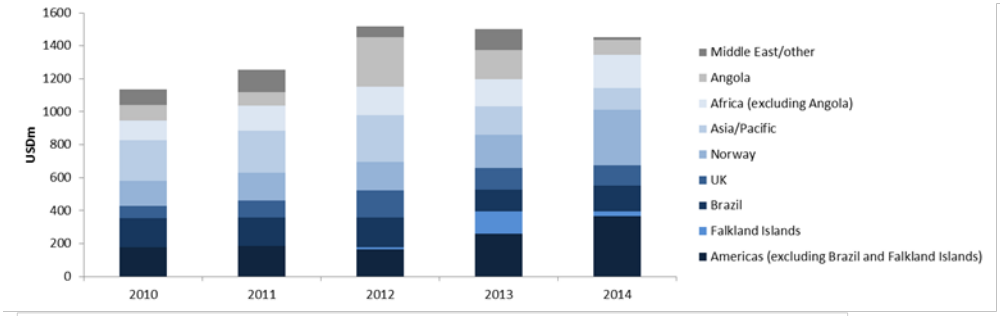

Source: Own creation, PGS Annual Reports

tough market conditions in the second half of 2014 confirming the attractiveness of PGS' MultiClient library.

#### 4.4.1.3 Revenue by geographical

The PGS revenue can also be split into the geographical areas they operate. As we can see from figure 4.9, Americas, excluding Brazil and Falkland Islands, have had a strong development in revenue driven by the high demand in the Gulf of Mexico over the last 3 years (Section 3.1.1.5). The important Norwegian market in the North Sea has had a more stable development over the last 4 years. However the revenue from this market increased significantly in 2014, explained by the demand for 3D vessels with activity moving to the Barents Sea. The demand thus remained high despite the weak conditions towards the end of 2014, which can be further explained by the low break even rate of production in the Norwegian market (section 3.1.1.4). The West African region has been the region with the most exciting growth over the last few years. Despite Angola seeing a negative development in revenue for PGS, the rest of the region saw an increase in revenue in 2014. Brazil has historically also been an important market for PGS and after seeing a small decline in 2013 this market increased its revenue contribution in 2014 despite the market in general being relatively flat in terms of demand. The historic revenue contribution by region is illustrated in figure 4.9.

**Figure 4.9 – Revenue by geographical area**



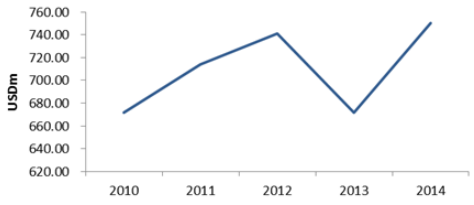

Source: Own creation, PGS Annual Reports

#### 4.4.1.5 Operating cost

PGS' total operating costs increased steadily from 2010-2012 in line with the company growth and the increased revenues in the same period (figure 4.10). In 2013 however PGS experienced a 9% reduction

in their operating costs. This decrease primarily reflected more costs capitalized to the MultiClient library and less activities in high cost regions. Total operating cost did however increase by $78.5m in 2014, surpassing previous record year in 2012.

**Figure 4.10 – Total Operating Cost**




Source: Own creation, PGS Annual Reports

Table 4.11 shows the different drivers of the operating cost for PGS. As we can see the vessel operating costs have increased over the period, which can be attributed to the introduction of the more advanced Ramform vessels and the capacity growth in terms of streamers over the period. Total cash cost of sales has also increased over the period. However it has been mitigated by the improved cost position achieved through the profit improvement program initiated in 2012, with continued focus in 2013 and 2014. The amount capitalized to MC library has a big impact on the net cost of sales and consequently the total operating costs. In 2013, $374.4m of costs were capitalized to MC library which was the main driver of the 9% reduction in total operating cost. In 2014 there was a 12% increase YOY primarily driven by less cost being capitalized to MC library as well as a higher cost base from more vessel capacity. The cash cost did however decrease in the fourth quarter showing the effects if the cost reduction initiative implemented by PGS earlier in the year.

**Figure 4.11 – Cost of sales**

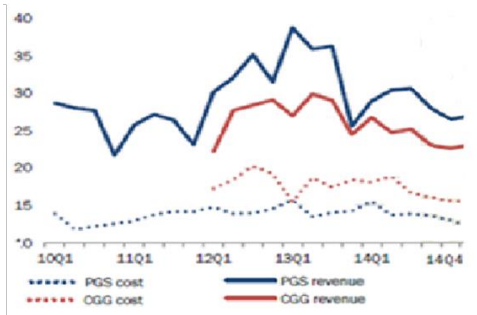
| Source | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|
| Vessel operating costs | na | 557 | 574 | 617 | 649 |
| Sales, project and project management cost | na | 134 | 167 | 154 | 166 |
| Imaging, Geoscience and Engineering cost | na | 135 | 137 | 150 | 155 |
| Other | na | 21 | 55 | 25 | 29 |
| Total cash cost of sales | na | 847 | 934 | 945 | 998 |
| Less Amount capitalized to MultiClient Libary | na | 204 | 291 | 374 | 344 |
| Net Cost of Sales | 594 | 643 | 642 | 571 | 654 |
| R&D cost | 22 | 24 | 38 | 39 | 38 |
| SG&A | 56 | 51 | 61 | 63 | 60 |
| Total operating cost | 672 | 719 | 742 | 673 | 751 |

Source: Own creation, PGS Annual Reports

The main driver of the vessel operating cost is the cost per streamer, which in turn determines the running cost per vessel of the fleet. Figure 4.12 illustrates the development in cost per streamer USDth/day and the revenue which is price per streamer USDth/day comparing both to the main competitor CGG (Canaccord, 2015). As we can see PGS have higher revenue levels and lower cost

levels, which is expected as PGS have the most cost efficient fleet in the seismic industry as highlighted in section 3.3.2. Average cost per streamer USD/day for 2014 was $13.900 down 1.97% from 2013 levels of $14.200 resulting in average running cost per vessel of $157.000 USD/day in 2014.

Figure 4.12 – Cost leadership

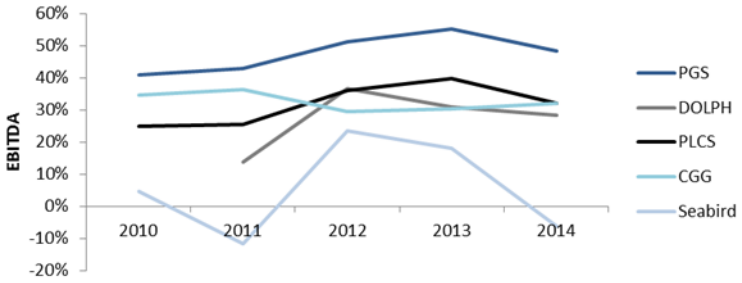



Source: Own creation, Canaccord (2015)

### 4.4.1.6 EBITDA/EBIT margin analysis

The fact that PGS has the most cost efficient fleet in the industry is highlighted further when analyzing the EBITDA margins for PGS and its peers. Figure 4.13 shows that PGS lies above all its peers with a positive development from 2010-2013 with ~55% margin achieved in 2013. PGS' margins declined in 2014 as the market plummeted in the second half of the year, which led to lower price per streamer, and consequently put pressure on margins. PGS reported an EBITDA of 48% for 2014. This decline is in line with the industry, with the exception of CGG who actually grew their margin by 2% as a result of their fleet downsizing. Seabird had the largest fall in margins as their cost base is higher than the other peers and hence the decline in price had a large impact in their EBITDA margin.

Figure 4.13 – PGS EBITDA margin vs peers



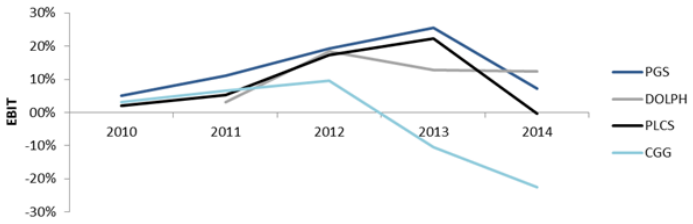

Source: Own creation, Company Annual reports

Looking at EBIT margin, PGS has historically been second best in the industry in the period of 2010-2013 and improved its EBIT margin significantly from 5% in 2010 to 25% in 2013. A strong contributor to this growth was the contract EBIT margin that increased by 26% from 2011-2013 in a generally strong marketplace. PGS' closest peer, CGG, experienced a negative EBIT margin in 2013. This was due to the firm recognizing $582.0 million of marine goodwill impairment as a consequence

of their 25% fleet downsizing plan and change of market outlook. CGG also recognized $58.0 million of land goodwill impairment as a consequence of more overall difficult market conditions (CGG Annual Report, 2013).

PGS' EBIT margin declined by 18.3% from 2013-2014 and ended at 7.2% for 2014, mainly due to the increase in D&A by $150m. This increase was driven by gross depreciation increasing by 14% due to the delivery of Ramform Titan and Atlas vessels in 2Q13 and 1Q14. Furthermore, capitalized depreciation decreased by $15.9m due to lower allocation to MC. The amortization rate of the library was 57% of MC revenues in 2014, which is 12% higher than in 2013. As figure 4.14 illustrates this sharp decline in EBIT margin is consistent with the industry with the exception of Dolphin that managed to keep EBIT margins flat in 2014 compared to 2013 despite the tough market conditions, partly because of less amortization (table 4.15). As a result of their restructuring plan, CGG had higher impairment of assets and restructuring cost resulting in a further decline in EBIT margin in 2014 (CGG Annual Report, 2014).

**Figure 4.14– PGS EBIT Margin vs competitors**




Source: Own creation, Company Annual reports

**Figure 4.15 – MC Amortization as % of MC Revenue**

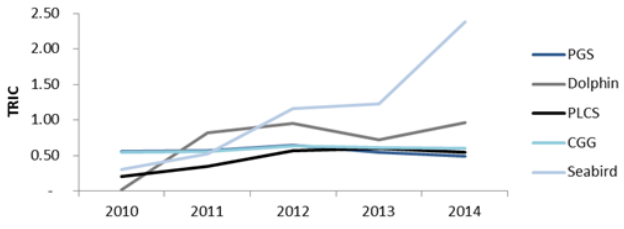
| Company | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|
| PGS | 0.47 | 0.47 | 0.45 | 0.57 |
| CGG | na | 0.72 | 0.63 | 0.64 |
| PLCS | 0.51 | 0.51 | 0.49 | 0.84 |
| DOLP | 0.5 | 0.49 | 0.64 | 0.51 |

Source: Own creation, Company Annual reports

## 4.5 Turnover

The turnover rate expresses a company's ability to utilize invested capital, and all things being equal it is attractive to have a high turnover rate of invested capital (Petersen and Plenborg, 2012). Looking at PGS, they have an average rate of 0.6 over the last 5 years, which means that invested capital is tied up on average 1 year and 240 days (360/0.6) over this period. Or alternatively that for every

**Figure 4.16 – PGS turnover rate vs peers**

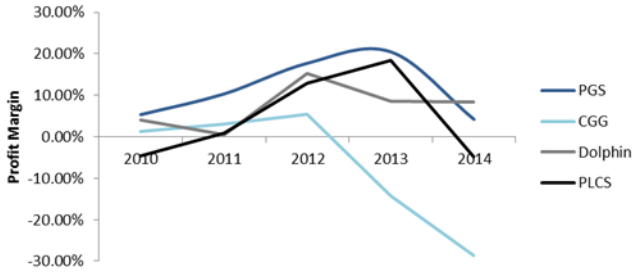



Source: Own creation, Company Annual reports

dollar invested in operations, a sale of $0.6 is generated. This relatively low turnover rate can be explained by the heavy investments done by PGS over the last few years with the expansion of the fleet taking delivery of new Ramform vessels. Looking at the industry average of 0.68, PGS is slightly below during the last 5 years. The low average turnover rate highlights that seismic is an investment heavy industry with relative high fixed costs.

In order for the industry the attract capital, it is therefore necessary to generate higher profit margins to compensate for the low turnover rate. As we can see from the profit margin of PGS and the industry these have historically been very high. Especially in 2012 and 2013, when PGS delivered 15.36% and 18.50% respectively with turnover rates of 0.65 and 0.55 in the same time period. PGS' profit margin plummeted in 2014 to 4.2%, the lowest level over the last 5 years as a result of the tough market conditions. The turnover rate however, remained flat at 0.5. The profit margin for PGS and its peers is illustrated in figure 4.17.

**Figure 4.17 – PGS profit margin vs peers**

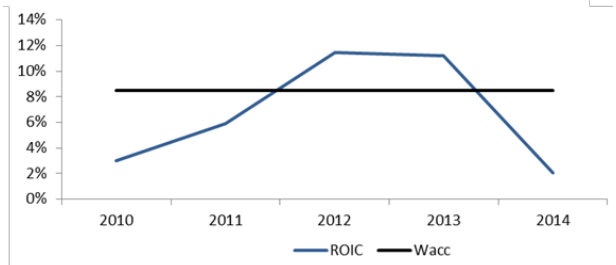



Source: Own creation, Company Annual reports

## 4.6 EVA

WACC is the expected return on invested capital. Thus, if the ROIC exceeds the WACC for the company there is economic value added, and hence value is created for the shareholders (Petersen and Plenborg, 2012). Looking at PGS historically they have had a positive EVA in 2012 and 2013 and thus created value for its shareholders. This is also illustrated in figure 4.18, where the ROIC line lies above the WACC. In the same time period it is only Dolphin that has delivered positive EVA, which they did in 2012. PGS' closest competitor CGG has not delivered a positive EVA result in any of the years over the 5 year period. This means that PGS'

**Figure 4.18 – PGS EVA**




Source: Own creation, PGS Annual reports

level of profitability has generally been above its closest competitors and has had a positive trend from 2010-2013.

The second half of 2014 proved to be tough for PGS as previously highlighted and the company did as a result not manage to report a positive EVA. PGS did therefore not create satisfactory shareholder value in 2014. Compared to the industry, none of the peers delivered a positive EVA highlighting further the tough market conditions seen in 2014 table

**Figure 4.19 – EVA by company**

| Company | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|
| PGS | -112 | -56 | 70 | 75 | -188 |
| CGG | -458 | -426 | -465 | -1,274 | -1,512 |
| Dolphin | -6 | -10 | 13 | -9 | -4 |
| PLCS | -75 | -99 | -42 | -7 | -123 |
| Seabird | -101 | -128 | -29 | -18 | -95 |

Source: Own creation, Company Annual reports

## 4.7 The impact of financial leverage on profitability

Financial leverage ratios analyze how PGS finance its activities. These are used for evaluating whether a company or industry prefers to finance its activities using equity or debt financing. This directly correlates with bottom line earnings per share, since higher debt financing leads to higher interest payments.

We define leverage as: $\frac{\text{Net Interest Bearing Debt (NIBD)}}{\text{Equity}}$

NIBD is the difference between interest bearing debt and interest bearing assets (Petersen and Plenborg, 2012). Table 4.20 shows the development in leverage for PGS and as we can see the level has increased over the five year period. This is due to the vessel investment strategy with four new Ramform vessels being delivered. However PGS have extended their term loan B in 2014 and extended the maturity of their debt from approximately four to five years with no maturities before 2018.

**Figure 4.20 – PGS leverage**

| NIBD/BVE | 2010 | 2011 | 2012 | 2013 | 2014 | CAGR |
|---|---|---|---|---|---|---|
| PGS | 16% | 24% | 23% | 33% | 55% | 30.0% |

Source: Own creation, PGS Annual reports

Compared to its peers PGS had the lowest leverage ratio in 2014, while CGG saw their leverage ratio increase substantial to prior year because of their restructuring process. As a young company expanding their operations, Dolphin has had an increasing leverage ratio over 5 year period. PLCS have decreased their leverage compared to their highest levels in 2011 and 2012 and despite the levels increasing again in 2014 the firm now seems to be in a much healthier position. Seabird on the other

hand, despite also decreasing their leverage from the peak in 2011, has unhealthy leverage levels with 3x the average of its peers in 2013. With negative result in 2014 and negative book value of equity, they have been forced to restructure the company issuing over 6m new shares as well as a new secured bond (Seabird, 2015). With the tough market conditions ahead it remains to be seen whether they will be able to stay in business.

**Figure 4.21 – Peer group leverage**

| NIBD/BVE | 2010 | 2011 | 2012 | 2013 | 2014 | CAGR |
|---|---|---|---|---|---|---|
| CGG | 40% | 36% | 17% | 57% | 88% | 18% |
| Dolphin | -1% | 3% | 22% | 39% | 76% | 172% |
| PLCS | 51% | 101% | 94% | 68% | 76% | 16% |
| Seabird | 129% | 219% | 166% | 151% | na | -16% |

Source: Own creation, Company Annual reports

## 4.8 Financial spread and ROE

Operating profitability, net borrowing interest after tax and financial leverage affect the level and trend of ROE. This is shown by the following equation:

$$ROE = ROIC + (ROIC - NBC) * \frac{NIBD}{BVE}$$

The second part of the equation shows the effect of financial leverage on overall profitability. If the difference between ROIC and NBC is positive then an increase in leverage will improve ROE and conversely if NBC is higher than ROIC there will be a negative impact on ROE. This relationship is referred to as the spread or "the interest margin" (Petersen and Plenborg, 2012).

In the period from 2010-2012 PGS have had a yearly negative spread, which means that in these years the amount of leverage of the firm has had a negative impact on the ROE of PGS and thus shareholder return. In 2013 however the spread was positive by 1%. The spread was once again negative in 2014, which is as expected due to the low ROIC and the slight increase in NBC. It is however important not to conclude how financial gearing should be optimized based solely on the spread, since the borrowing rate is rarely the same as the actual-borrowing rate. This is because NBC will also be affected by the difference between deposit and lending rates and furthermore

**Figure 4.22 – PGS Financial spread**

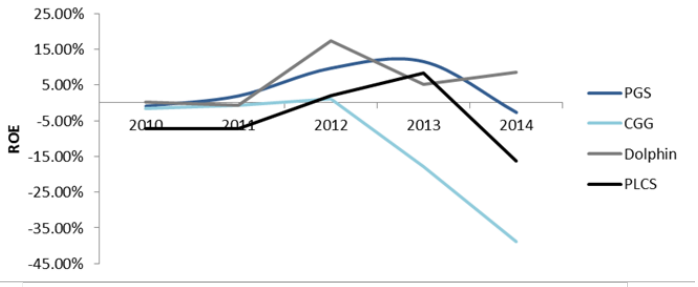
| PGS Financial Spread | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|
| NBC | 27.4% | 22.7% | 19.3% | 10.2% | 10.8% |
| Spread | -24.4% | -16.8% | -7.8% | 1.0% | -8.7% |

Source: Own creation, PGS Annual reports

items such currency gains and losses on securities are included in financial income and expenses (Petersen and Plenborg, 2012).

The ROE of PGS has had a positive trend from 2010-2013 delivering returns above its main competitor CGG. PGS also significantly outperformed all of its peers in 2013, reporting a record ROE of 11.5%. Looking at the share price development of PGS over the same period (section 2.5) a weak ROE in 2010 was followed by a decline in the share price. However positive ROE numbers in 2011-2013 was reflected in the stock market with PGS beating the OSX index and OSX energy index. With the challenging year of 2014 and the consequent drop in NOPAT, PGS delivered a negative ROE of 2.7%. The development in ROE for PGS and its peers is illustrated in figure 4.23.

**Figure 4.23 – PGS ROE vs peers**




Source: Own creation, Company Annual reports

## 4.9 Residual Income

In order to assess the development of ROE one can make a similar comparison as we did with ROIC. However instead of comparing to the WACC the ROE should be compared to r[e] which is the owners required rate of return, i.e. the cost of equity. The reason for this is that the cost of debt has already been taken into account when calculating ROE (Petersen and Plenborg, 2012). The value added for the owners, referred to as the residual income (RI) is thus given by the following equation:

$$RI = (ROE - r[e]) * BVE$$

From the RI numbers over the last 5 years for PGS shown in table 4.24 we can see that it was only in 2013 that PGS actually delivered returns above the investors required rate. Comparing this to the previous discussion regarding EVA, where there was positive value added in both 2012 and 2013, this can be attributed to the negative spread in 2012. The leverage of PGS thus had a negative impact on the returns of the equity holders in 2012, which supports the conclusion from the spread analysis above. The negative ROE reported in 2014 resulted in a negative RI and hence PGS did not deliver satisfactory returns for its shareholders.

**Figure 4.24 – Residual Income**

| Company | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|
| PGS | -201 | -152 | -16 | 21 | -251 |
| CGG | -463 | -461 | -615 | -1,261 | -1,466 |
| Dolphin | -7 | -13 | 14 | -12 | -4 |
| PLCS | -101 | -111 | -79 | -54 | -168 |
| Seabird | -99 | -132 | -31 | -20 | -90 |

Source: Own creation, Company Annual reports

Comparing RI to PGS' peers it is only Dolphin that has managed to deliver positive RI and created returns above their shareholders required rate of return over the 5 year period. As table 4.24 shows, none of the firms managed to deliver returns above r[e] in 2014.

## 4.10 Liquidity risk analysis

In order to evaluate PGS' performance, the financial health of PGS is analyzed by looking at a number of key liquidity ratios and comparing these to the industry. Liquidity is crucial for any business as without liquidity, the business cannot meet its obligations as they fall due. A firm's liquidity risk is influenced by its ability to generate positive net cash flows in both short and long term (Petersen and Plenborg, 2012). Dolphin is not considered in the analysis for 2010 as their restructuring this year contributes with biased numbers that do not mirror or represent the industry average as we see in the other companies.

### 4.10.1 Short-term liquidity risk

The first ratio we analyze is the current ratio. The ratio gives us an idea of how well the company is able to meet it short-term obligations and liabilities with its short-term assets. As seen in figure 4.25 PGS has a varying current ratio, but lies above the industry average for the majority of years. Moreover, they have an average of 1.96x over the last 5 years, indicating that they can meet their short-term liabilities approximately two times over, which is solid for any industry.

**Figure 4.25 – Current ratio**

| Company | 2010 | 2011 | 2012 | 2013 | 2014 | 5 YearAverage |
|---|---|---|---|---|---|---|
| PGS | 2.36 | 1.64 | 2.27 | 1.95 | 1.60 | 1.96 |
| CGG | 1.95 | 1.82 | 2.84 | 1.53 | 1.68 | 1.96 |
| Dolphin | na | 2.46 | 2.40 | 2.10 | 1.31 | 2.07 |
| PLCS | 1.67 | 2.03 | 1.37 | 1.40 | 1.68 | 1.63 |
| Seabird | 0.60 | 0.93 | 1.25 | 0.99 | 0.26 | 0.81 |
| Industry average | 1.64 | 1.77 | 2.03 | 1.60 | 1.31 | 1.69 |

Source: Own creation, Company Annual reports

The second ratio is the 'quick ratio' or 'acid-test ratio', which further indicates the liquidity strength of a company. It encompasses purely the most liquid assets such as cash and securities to assess how well

the company could pay of its short-term liabilities under duress. A higher ratio indicates a better standing and as shown in figure 4.26. PGS' ratio varies, yet on average it seems to be able to quickly pay off their short-term debts and so does the industry. The decline in 2014 is expected due to the market environment; however PGS still lies above the industry average in 2014.

**Figure 4.26 – Quick ratio**

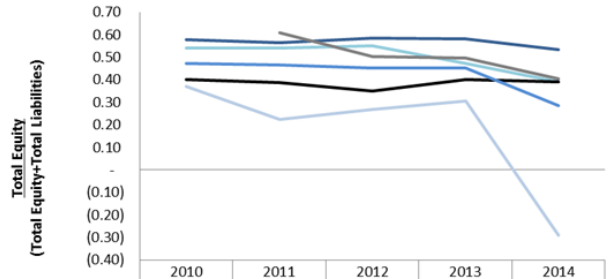
| Company | 2010 | 2011 | 2012 | 2013 | 2014 | 5 YearAverage |
|---|---|---|---|---|---|---|
| PGS | 1.71 | 1.21 | 1.54 | 1.13 | 0.78 | 1.27 |
| CGG | 1.27 | 1.21 | 1.97 | 0.98 | 1.08 | 1.30 |
| Dolphin | na | 2.07 | 1.97 | 1.31 | 0.62 | 1.49 |
| PLCS | 0.72 | 1.19 | 0.51 | 0.67 | 1.10 | 0.84 |
| Seabird | 0.51 | 0.64 | 0.97 | 0.63 | 0.12 | 0.57 |
| Industry average | 1.05 | 1.27 | 1.39 | 0.95 | 0.74 | 1.10 |

Source: Own creation, Company Annual reports

### 4.10.2 Long term liquidity risk

An indicator of the long-term liquidity risk is financial leverage, which can be measured in a solvency ratio. A low solvency ratio indicates high long-term liquidity risk and if examined over time it can give indications if the financial risk profile of the company is improving or deteriorating (Petersen and Plenborg, 2012). Figure 4.27 shows that PGS seems to have a pretty stable financial position with a slight decline in 2014. They have also outperformed the industry over the last few years, which signify a strong financial health compared to the industry.

**Figure 4.27 – PGS Solvency ratio vs peers**

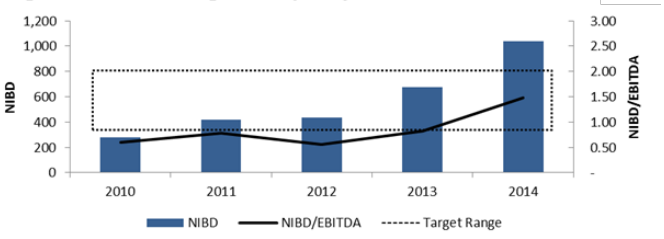



| | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|
| PGS | 0.58 | 0.56 | 0.58 | 0.58 | 0.53 |
| CGG | 0.54 | 0.54 | 0.55 | 0.47 | 0.39 |
| Dolphin | | 0.61 | 0.50 | 0.50 | 0.40 |
| PLCS | 0.40 | 0.39 | 0.35 | 0.40 | 0.39 |
| Seabird | 0.37 | 0.22 | 0.27 | 0.31 | -0.29 |
| Industry average | 0.47 | 0.47 | 0.45 | 0.45 | 0.29 |

Source: Own creation, Company Annual reports

Another measurement of leverage and long-term liquidity risk is NIBD/EBITDA. This ratio shows how many years it will take for a company to pay back its debt if NIBD and EBITDA are held constant. Hence, it gives an indication of a company's ability to meet

**Figure 4.28 – PGS long term liquidity risk**

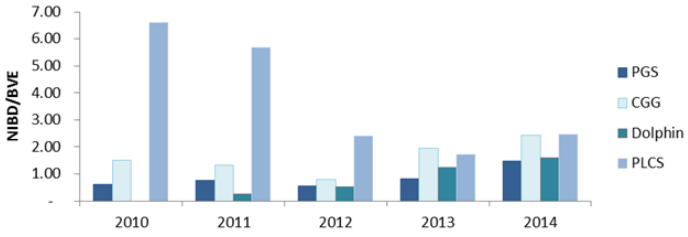



Source: Own creation, PGS Annual reports

its debt obligations. Figure 4.28 illustrates the development in NIBD and NIBD/EBITDA as well as the target ratio range indicated by PGS going forward. As we can see PGS has been well below its target range over the period and have been in a solid position to meet its debt obligations. The NIBD increased substantially in 2014 mainly due to the decrease in the cash position and also drawing $100m of their revolving credit facility, however they still remain well within the target range.

Compared to its peers, PGS have had lower ratios, with the exception of DOLP in 2012, over the five year period. Furthermore, all the companies saw their NIBD/EBITDA ratio's increase in 2014 which is expected due to the seismic market condition. Only Dolphin had a ratio within the target range of PGS. The development in NIBD/EBITDA is illustrated in figure 4.29

**Figure 4.29 – PGS Long-term liquidity risk vs peers**




Source: Own creation, Company Annual reports

Long term liquidity risk can also be measured by looking at the interest coverage ratio. It measures a company's ability to meet its net financial expenses. In other words it shows how many times operating profit (EBIT) covers net financial expenses. The higher the coverage ratio the lower the long-term liquidity risk (Petersen and Plenborg, 2012). As we can see from table 4.30 PGS has improved its coverage ratio from 2010-2013, significantly outperforming the industry average in 2013. In 2014 however, as a result of the sharp decline in EBIT as previously discussed the coverage ratio dropped significantly. PLCS stands out in 2014 with a very low coverage ratio raising questions as to whether they will be able meet their long term debt obligations.

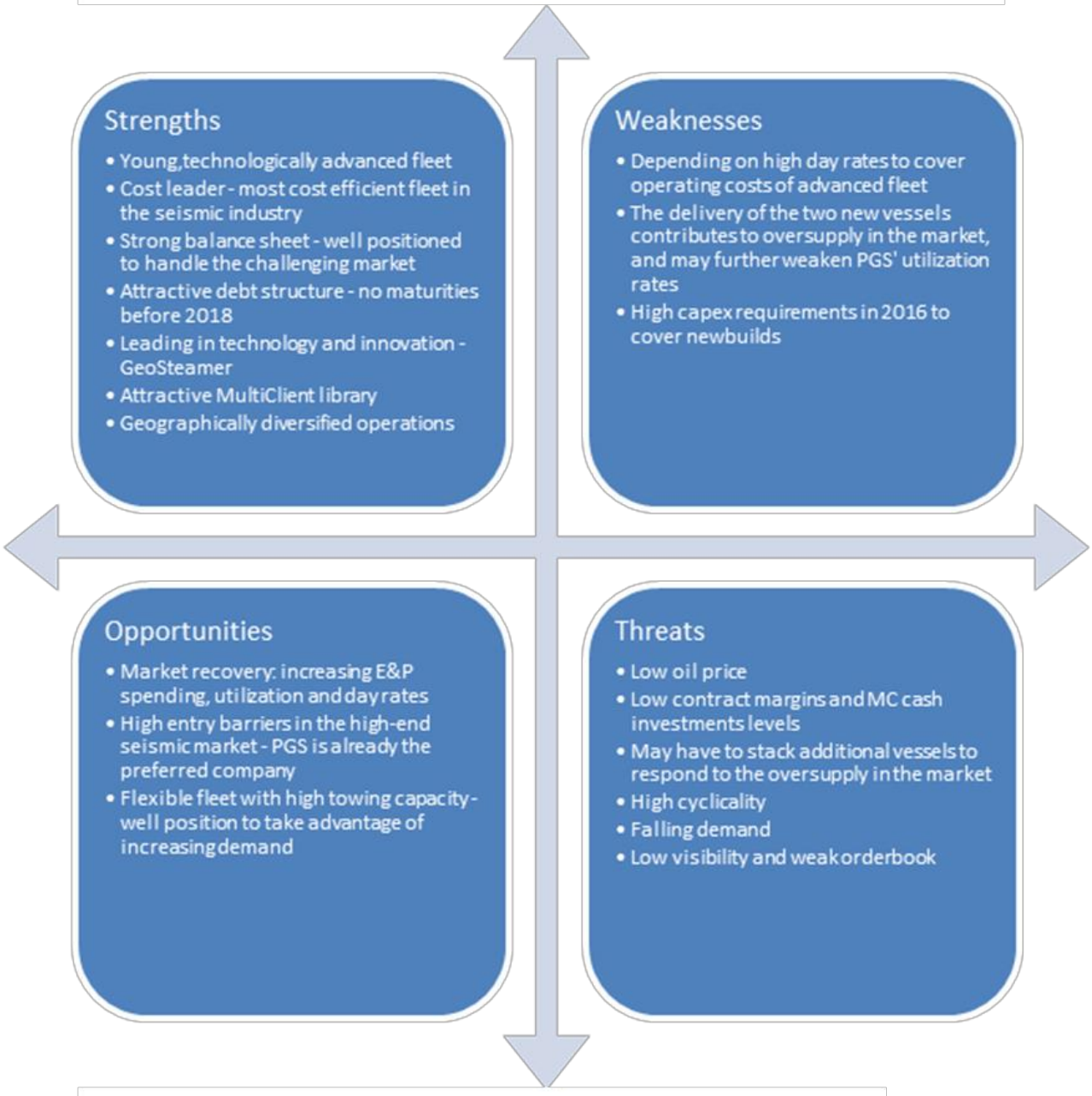
**Figure 4.30 – PGS Interest coverage ratio vs peers**

| Company | 2010 | 2011 | 2012 | 2013 | 2014 | 5 YearAverage |
|---|---|---|---|---|---|---|
| PGS | 1.23 | 3.29 | 7.78 | 11.83 | 3.46 | 5.52 |
| CGG | 0.66 | 1.39 | 2.18 | 2.20 | 3.86 | 2.06 |
| Dolphin | na | 7.93 | 34.72 | 4.16 | 3.44 | 12.56 |
| PLCS | 0.45 | 0.52 | 1.77 | 2.38 | 0.03 | 1.03 |
| Industry average | 0.78 | 3.28 | 11.61 | 5.14 | 2.70 | 5.29 |

Source: Own creation, Company Annual reports

## 5.0 SWOT analysis

**Figure 5.1 – SWOT analysis**




Source: Own creation

# 6.0 Forecasting

## 6.1 Determination of forecasting period:

Before forecasting the financial statements and valuing the firm it is important to determine the forecast horizon. According to Koller et al (2010) the recommended horizon is a period of ten-fifteen years, as shorter time horizons lead to possible undervaluation of the firm. While longer time horizons are more uncertain and hence more difficult to forecast accurately.

The chosen forecasting period for PGS was set to five years due to the business cycle of the seismic industry as discussed in section 2.7. In order to capture the seasonality in PGS revenue, the forecast period is split into three main periods. As it is easier to determine the values in the short-term, we have forecasted the first two years (2015-2016) on a quarterly basis. The longer term (2017-2019) is more uncertain and consequently the forecast is done year-by-year. Finally the terminal period, from 2020 and onwards, has steady state with a constant growth rate. As it is difficult to determine an accurate growth rate this far into the future, the Norwegian Central Bank long term inflation rate forecast of ~2.1% is used as guidance (Norges Bank, 2015).

As presented in the company overview, the PGS results are based on three segments, Marine Contracting, MultiClient and Imaging, Engineering & other, which make up the total revenue for the company. Each of the segments and individual drivers used for the forecasting is analyzed in the following sections.

## 6.2 Marine Contracting

As discussed in the Shipping Market Model (section 3.0), the main drivers of the seismic industry are oil & gas prices, which drives the E&P spending, which again influences supply and demand. Looking at the Marine Contracting segment, identified in section 4.4.1.2, day rates, running cost and utilization rates are the main performance drivers.

### 6.2.1 Day rates

Day rates are the common measure for determining the price level of seismic vessels. However, due to the variety of contract sizes, length of streamers, number of streamers per vessel, and the different level

of costs in different regions, day rates are not an appropriate tool for forecasting future revenues for PGS. Thus, price per streamer USDth/month is used as it provides a more accurate picture. This is also recommended by PGS representatives (PGS IR, 2015).

The estimated average number of streamer months available in 2014 is 1,590, which based on a 51% utilization rate leaves PGS with 819 streamer months used for marine contracting. The historical price per streamer month is calculated using the following formula.

$$Historical\,price\,per\,streamer\,month = \frac{Contract\,revenues}{streamer\,months\,used\,for\,contracting}$$

Future price per streamer month is forecasted based on a percentage change of last year's price. This change is determined based on key drivers identified in the strategic and financial analysis. The contract revenue is then calculated by multiplying the price per streamer month with the streamer months used for contracting. All key formulas used can be found in appendix 6.7.

As a consequence of the plummeting oil price in the second half of 2014, the price per streamer month declined by ~20% YOY. Given the challenging market expected in 2015 with oil companies cutting their E&P spending and oil prices remaining low, as highlighted in section 3.0, we expect the price to decline further by ~15% over the next 12 months. Consequently, the revenue is negatively impacted. Based on the strategic analysis we expect the price level to increase by 5% in 2016. This is because seismic E&P spending is expected to increase by ~8% in 2016 and the supply of vessels in the market will also start to recover as idle is decreased. Furthermore, PGS takes delivery of two new vessels during the course of the year which increases capacity, leading to higher revenues for the contracting segment.

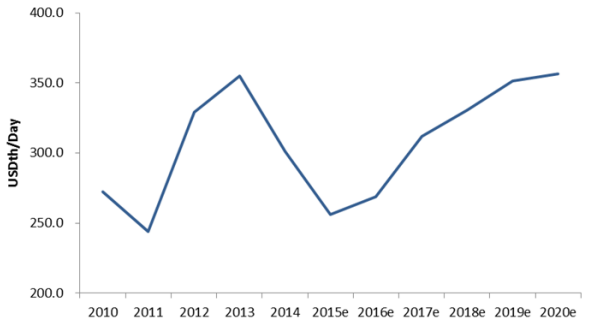
Looking further ahead, the oil price is expected to continue its recovery reaching 62 USD/bbl in 2015 and 75 USD/bbl in 2016. This will have a positive impact on seismic demand and prices. Based on the strategic analysis we therefore expect the price per streamer month to increase by ~16% in 2017. Furthermore, the new highly advanced vessels will enable PGS to charge higher prices as their

bargaining power will increase due to less excess supply of vessels in the market. The revenue for the marine contracting segment is forecasted to increase substantially in 2017, since this is the first year the new vessels will be in full operation.

We expect the price to continue to increase in 2018 and 2019, however at a more modest rate. In this period the oil price will continue to climb and then stabilize, and seismic spending will catch up with the excess capacity. Furthermore, as the supply of new seismic vessels takes time, as discussed in section 3.1.2.2, and given the high entry barriers, it is highly unlikely that new competitors enter the market in the near future. As seismic spending is only a small fraction of the E&P spending, demand is relatively inelastic to price changes in a bull market (section 3.2.3), causing further upward pressure on price. Thus, we expect the price to recover to approximately 2012-levels in 2019. However, we do not expect the price per streamer month to reach the record heights that we saw in 2013 when the oil prices were at an all-time high.

As the industry norm for price level is day rates, we have converted our forecasted price per streamer month levels in order for easy comparisons. The conversion is based on 12 streamer/vessel equivalent in the fleet, using a thirty-day average month. As illustrated in figure 6.1, the average day rate for PGS will reach levels above 2013 levels. However this is not because the price per streamer has reached record heights, but as a consequence of the average streamer/vessel of the fleet has increased from ~11 to ~12.

Figure 6.1– Historic and forecasted day rates




Source: Own creation, PGS

### 6.2.2 Running cost

Similarly to day rates, running cost is the common measure for determining cost per vessel per day. However, cost per streamer month provides a more accurate input for determining the operating cost of the PGS' vessels (IR PGS, 2015). The historical cost level is calculated by dividing total cost from operations by the number of streamers available in that time period. In the forecasted period, we project

the cost per streamer month on the basis of the prior year, combined with the market outlook identified in the strategic analysis. The cost levels are assumed to remain constant going forward as the same GeoStreamer is used.

### 6.2.3 Utilization

The allocation of the vessels, not including yard and steaming (moving from one job to the other), determines the revenues and costs from the different segments. In 2014, PGS had a utilization of 82%, with 51% used for contracting. Forecasted utilization for 2015 in Marine Contracting remains at 51% due to the competitive advantage of having the most cost efficient fleet in the industry, as highlighted in the VRIO analysis. Furthermore, even though overall industry demand declines and tendering activity is declining, PGS will be able to mitigate a sharp decline in utilization rates, as the cost cutting focus of the oil companies will benefit the PGS fleet. However, this comes at the cost of having to accept lower day rates. In the long-term, we expect PGS to reach a utilization of 86% as the market continues to recover, with 52% used for contracting. The demand for large survey sizes also favors PGS's fleet, which bodes well for winning future contract bidding in difficult high-cost geographical areas, such as the African west coast.

### 6.2.4 Conclusion

Based on the drivers discussed above, we therefore believe that the PGS Marine Contracting segment has the following outlook (figure 6.2). The short-term will be heavily influenced by the tough market conditions and lower demand. However, in the long-term we see growth opportunities as the market recovers.

**Figure 6.2 – Marine Contracting summary**

| Marine Contracting | | 2014 | 2015e | 2016e | 2017e | 2018e | 2019e | 2020e |
|---|---|---|---|---|---|---|---|---|
| Revenue | USDm | 698 | 566 | 674 | 865 | 917 | 974 | 989 |
| EBITDA | " | 315 | 214 | 230 | 402 | 454 | 511 | 526 |
| Number of streamers, average | # | 1,605 | 1,590 | 1,683 | 1,863 | 1,920 | 1,920 | 1,920 |
| Price per streamer | USDth/month | 0.84 | 0.71 | 0.75 | 0.87 | 0.92 | 0.98 | 0.99 |
| Price per streamer | USDth/day | 25 | 21 | 22 | 26 | 28 | 29 | 30 |
| Day rate | " | 301 | 256 | 269 | 312 | 331 | 351 | 357 |
| Cost per streamer | USDth/day | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| Running cost | " | 167 | 167 | 167 | 167 | 167 | 167 | 167 |
| Utilization (Incl Yard & Steaming) | % | 51% | 51% | 50% | 52% | 52% | 52% | 52% |
| Streamers months used for contracting | # | 819 | 811 | 842 | 969 | 998 | 998 | 998 |

Source: Own creation

## 6.3 MultiClient

### 6.3.1 Pre-funding

The forecasted revenue from the MultiClient segment is split into pre-funding and late sales. Pre-funding is driven by the level of MultiClient cash investment, which is estimated to be between $275-300 million in 2015 by PGS (2015). The cash investment is driven by a pre-funding rate, which is calculated as MC pre-funding revenues/MC cash investments. If this rate is below 100%, PGS has to invest the remaining amount to cover their MC cash investment. However, it has been at an average of 122% over the last five years. As a result of the declining oil price and cuts in E&P spending during the second half of 2014, the MC cash investment was $344m in 2014, with a pre-funding rate of 92%. The MC cash investment is expected to be reduced to $280m in 2015 in order to obtain a pre-funding rate of 100%. Thus, we assume that pre-funding revenues will be $280m in 2015. Going forward, we expect the MC cash investment to be approximately $280-320 in the short-term, as the market improves and the seismic spending increases. In the long-term, we expect an investment of $350-400m. We project that the pre-funding rate will be at 100% over the entire forecasted period.

### 6.3.2 Late sales

We expect late sales to decrease from $309m in 2014 to $280m in the upcoming year due to the weak market conditions and late sales is the first to get cut in the spending budgets. This decline of ~9% is however less than the projected 20% decline in seismic spending. This can be explained by the attractiveness and quality of the MC library achieved by the competitive advantage provided by the GeoStreamer technology identified in the VRIO analysis.

Traditionally, Q1 is the weakest quarter for MC, while Q2 and Q3 benefits from PGS projects in the North Sea. Q4 is the best quarter for late sales due to "budget flush" from the oil companies, hence late sales revenue is forecasted to be higher in Q4 compared to the other quarters.

### 6.3.3 Operating expense

Forecasted operating expense for MC is only based on pre-funding activity. Historically 40-50% of the costs incurred in Imaging & Engineering should be attributed to the MC segment, as this cost is related to late sales activity (PGS IR, 2015). However, as it is difficult to allocate costs between the two

segments all costs related to late sales are assigned to Imaging & Engineering. The cost level is therefore estimated based on historical EBITDA margins and market outlook. As prices are expected to decline in 2015, while costs remain relatively stable, the EBITDA margin has been reduced by ~7% in our forecast. As we expect the price levels to recover in the long-term, the EBITDA margin is estimated on the 5-year historical average.

### 6.3.4 Utilization

As indicated by the lower MC cash investment level expected in 2015, we forecast a 3% decline in vessel utilization rates for the MC segment YOY, down to 28%. Hence the decline in overall vessel utilization rates for PGS is caused by less MC activity. In the long term the MC segment is expected to recover with higher seismic spending and thus the level of MC cash investment is assumed to increase. The long term utilization rate for MC is forecasted at 34%.

### 6.3.5 Conclusion

Based on the drivers discussed above, we therefore believe that the PGS MC segment has the following outlook 6.3

**Figure 6.3 – MultiClient summary**

| MultiClient | | 2014 | 2015e | 2016e | 2017e | 2018e | 2019e | 2020e |
|---|---|---|---|---|---|---|---|---|
| Revenue | USDm | 600 | 560 | 600 | 650 | 695 | 720 | 740 |
| Pre Funding | " | 290.8 | 280 | 320 | 350 | 370 | 380 | 400 |
| Late Sales | " | 309 | 280 | 280 | 300 | 325 | 340 | 340 |
| EBITDA | " | 313 | 344 | 364 | 357 | 385 | 398 | 411 |
| Number of streamers, average | # | 1620 | 1620 | 1797 | 1878 | 1920 | 1920 | 1920 |
| MC cash investment | USDm | (344) | (280) | (320) | (350) | (370) | (380) | (400) |
| MC pre-funding % | % | 92% | 100% | 100% | 100% | 100% | 100% | 100% |
| Number of streamers, average | # | 1,620 | 1,620 | 1,797 | 1,878 | 1,920 | 1,920 | 1,920 |
| Utilization | % | 31% | 28% | 32% | 34% | 34% | 34% | 34% |
| Streamers used for MC | # | 502 | 454 | 575 | 639 | 653 | 653 | 653 |

Source: Own creation

## 6.4 Imaging & Engineering and other

The performance of the Imaging & Engineering segment is closely linked to the MultiClient segment, as it operates as its own R&D center. The revenue forecast is based on the fraction of total revenues that imaging & engineering has historically accounted for. This has been around 10% and is assumed to continue in the future. The competitive advantage provided by the GeoStreamer, producing high quality images and characterization, enhances PGS' leadership position in operational efficiency. It also differentiates the company's strong survey capabilities for identification and characterization of

complex reservoirs. Given these factors the performance of the Imaging & Engineering segment is thought to continue to contribute to the total performance of PGS at a similar level as today. The Imaging, Geoscience and Engineering cost is historically 10% of revenues, however 40-50% of this cost is attributed to the MC segment, as previously highlighted (PGS IR 2015). We have therefore chosen to forecast the cost on a standalone basis, as a part of the total COGS for PGS.

**Figure 6.4 – Imaging & Engineering and other summary**

| Imaging/Engineering and other | | 2014 | 2015e | 2016e | 2017e | 2018e | 2019e | 2020e |
|---|---|---|---|---|---|---|---|---|
| Revenue | USDm | 156 | 117 | 129 | 151 | 160 | 166 | 169 |

Source: Own creation

## 6.5 Pro forma income statement

Adding up all the segments gives us the total forecast for future performance of PGS (figure 6.5). With the exception of revenues and vessel operating cost (part of COGS), the forecast is based on a sales driven approach. This ensures a stronger link between the level of activity and related expenses and thus enhances the quality of the forecast (Petersen & Plenborg, 2012). The previous five year historical development is used in order to capture the trends of the value drivers. A complete income statement with historical and forecasted values can be found in appendix 6.1. We will analyze the items we consider to be the most important for the development in the income in the next sections. The revenue forecast is based on day rates and utilization discussed in the previous sections. Vessel operating cost is based on running cost.

**Figure 6.5 – Pro forma income statement**

| Pro forma income statement | | 2014 | 2015e | 2016e | 2017e | 2018e | 2019e | 2020e |
|---|---|---|---|---|---|---|---|---|
| Revenues | USDm | 1,454 | 1,238 | 1,402 | 1,666 | 1,773 | 1,864 | 1,902 |
| COGS | " | (750) | (692) | (785) | (852) | (859) | (879) | (888) |
| **EBITDA** | | **703** | **546** | **617** | **815** | **914** | **984** | **1,014** |
| D&A incl impairments | | (599) | (477) | (487) | (530) | (566) | (590) | (604) |
| **EBIT** | " | **104** | **69** | **131** | **284** | **348** | **395** | **410** |
| Tax on core operations | " | (43) | (19) | (35) | (77) | (94) | (107) | (111) |
| **NOPAT** | | **61** | **50** | **95** | **208** | **254** | **288** | **299** |
| Net financial profit/loss | | (88) | (79) | (83) | (99) | (101) | (99) | (99) |
| **Net Income (loss)** | " | **(51)** | **(7)** | **35** | **135** | **181** | **216** | **227** |

Source: Own creation

### 6.5.1 Revenue forecast

The total revenue for PGS is estimated based on the drivers identified in the strategic and financial analysis. Marine Contracting is estimated based on price per streamer month and vessel utilization,

while MC is determined by MC cash investment, pre funding rate and late sales development. Imaging, Engineering & other is forecasted as a percentage of total revenues.

In the short term, revenues will be highly influenced by few tenders to bid for with low visibility in all regions, which will negatively affect utilization and prices (Arctic 2015). Furthermore, reduction in market capacity is needed in order to reduce the oversupply of streamers currently in the marketplace. The needed reduction is estimated to be in region of 10-15% (Norne, 2015). As a result of the weak market outlook in the short term, we forecast total revenue in 2015 to decline by ~15%. We do however believe that PGS will be riding out the storm even though they are not immune to the macro-economic trends. Consequently we see significant improvement YOY in 2016 as the market is expected to recover with more activity moving towards the term market. PGS' leading position in the industry identified in the strategic analysis will enable them to take advantage of the improved conditions. Hence, revenue is forecasted to grow by ~13% in 2016, albeit still below 2014 levels.

In the long-term, we expect the oil price to increase to 81-82 USD/bbl and thus E&P activity to increase further. This combined with increased PGS capacity following the delivery of the two new vessels sees the revenue grow by ~19% YOY to record high levels in 2017. In the following years we expect growth levels to continue at a more modest rate. The terminal growth rate is expected to move with the general economy as explained in section 6.1.

### 6.5.2 COGS

Industry cost leadership has been the focus of PGS since 2012 when introducing the profit improvement program (section 4.4.1.5), and will continue to be so going forward. The most important driver of COGS is the vessel operating cost which has historically been 42% of revenues.

#### 6.5.2.1 Vessel operating cost

Vessel operating cost is driven by the cost per streamer and the utilization rate and the time allocated to MC pre-funding activity. As a cost leader with the technology advanced GeoStreamer, PGS find themselves at the attractive side of the cost curve, which is critical especially in a down cycle. As discussed in section 6.2.2 we expect the cost per streamer to remain flat in 2015, however less activity in MC pre funding will lead to a ~14% vessel operating cost reduction. In the long-term we also expect

the cost per streamer month is expected to remain flat; however as the MC pre-funding levels and allocation to MC increases the vessel operating cost will increase accordingly. The increased capacity, after the delivery of the two new vessels and consequently more streamers in the fleet, will see the vessel operating cost increase substantially in 2017. After this we expect the level to remain stable as we do not expect any newbuilds.

#### 6.5.2.2 Net cost of sales

In addition to vessel operating cost, sales, project and project management, Imaging, Geoscience and engineering, and other make up total cash cost of sales. All of these are forecasted as a percentage of revenues as can be seen in appendix 6.4. As revenue is expected to decline by ~15% in 2015, so does cash cost of sales. However, net cost of sales only decreased by ~6%, as less costs were capitalized to MC library. The amount capitalized to MC library s forecasted as percentage of revenue on a year by year basis, depending on the level of cash investment in MC.

#### 6.5.2.3 Other COGS

Cost relating to R&D, SG&A and other operating expenses are also forecasted as a percentage of revenues, as we expect the investment in these areas to be determined by the revenue development. As PGS has not indicated that there will be any significant changes with regards to these accounts, we have determined the rate based on the historical 5 year average.

### 6.6 Depreciation, Amortization & Impairment

As the historical depreciation rates have been ~11% historically, which has included periods of renewal and scrapping of vessels, we assume the rate to remain at this level in the short-term. However, after the newbuild program is completed in 2016 we assume a ~10% depreciation rate from 2017 an onwards.

The amortization rate is expected to remain high in 2015 as a result of more cautious view on MC cash investment due to lower E&P spending by the oil companies. As MC cash investment is forecasted to pick up in 2016, we expect lower amortization from this point and onwards. Hence, the rate from 2016-2019 is expected to go back to historic values of 49% of revenues seen before the oil price decline.

As impairment varies significantly from year to year, depending on market conditions and unforeseen events, it is difficult to forecast any changes on a year to year basis. Hence, our best estimate is to use the historical average in the forecasted period.

## 6.7 Tax rate

We have applied the Norwegian corporate tax rate of 27%, as described in the WACC section.

## 6.8 Net Financial Items

Net financial items consist of loss from associated companies, other financial expenses such as currency gain/losses and interest expense. Looking at historical 5-year data, these expenses are approximately 1% of revenues YOY, and we use this average in our forecasting period.

Interest expense is determined based on a fixed interest rate, calculating by dividing interest expense by NIBD. The 5-year average is 9%, however this includes high interest rates from 2010-2011, which are not representative for the market and the PGS debt profile. Looking at the average interest rate from different sources of debt financing of PGS, the rate is closer to 5%, which is the rate we have used in our forecasted period.

## 6.9 Pro forma balance sheet

The balance sheet is forecasted based on the revenue development in the income statement, with the exception of PP&E (section 6.9.2). The link between the balance sheet and the income statement makes forecasting on a revenue basis the preferred method compared to using percentage changes within each financial statement (Koller et al, 2010). The most important items are summarized in table 6.6, while the complete balance sheet can be view in appendix 6.2.

**Figure 6.6 – Pro forma balance sheet**

| Balance sheet | | 2014 | 2015e | 2016e | 2017e | 2018e | 2019e | 2020e |
|---|---|---|---|---|---|---|---|---|
| Net working capital | USDm | 106 | 20 | 22 | 26 | 28 | 30 | 30 |
| PP&E | " | 1,664 | 1,777 | 1,973 | 2,006 | 2,029 | 2,042 | 2,084 |
| MC Library | " | 695 | 668 | 692 | 722 | 750 | 774 | 790 |
| Other non-current assets | " | 475 | 458 | 475 | 504 | 515 | 525 | 536 |
| Total current assets | " | 583 | 441 | 499 | 593 | 631 | 663 | 677 |
| **Total assets** | " | 3,416 | 3,343 | 3,639 | 3,825 | 3,925 | 4,005 | 4,088 |
| Equity | " | 1,902 | 1,884 | 1,905 | 2,016 | 2,164 | 2,213 | 2,283 |
| **NIBD** | " | 1,038 | 1,038 | 1,258 | 1,243 | 1,158 | 1,158 | 1,158 |

Source: Own creation

### 6.9.1 Net working capital

The main drivers for net working capital historically for PGS have been accounts receivables and accrued expenses. As these are closely linked to the operations of the company, using a percentage of revenue is seen as an appropriate method for forecasting future development in NWC. Looking at PGS' balance sheet historically, these numbers have moved with the change in revenue, and as we have no reason to believe there will be any changes in the years to come, we have used the 5-year average of 2% as the rate going forward.

### 6.9.2 Property, Plant & Equipment

As a consequence of the sharp drop in the revenues, we do not believe using a percentage of revenues for forecasting future values of PP&E is an appropriate method. This is because the value of PP&E would decline significantly, even though the investment is larger than the depreciation. Hence, we have forecasted the development of the PP&E on the following equation:

$$PP\&E_{old} - Depreciation + Purchase\ of\ tangible\ fixed\ assets$$

We have chosen this way of forecasting in order to capture the level of capital expenditure, both newbuilds and maintenance, as this will provide a more accurate value of PP&E on the balance sheet going forward. Total forecasted capital expenditure for PGS is illustrated in table 6.7

**Figure 6.7 – Capital expenditure**

| Capital Expenditure | | 2014 | 2015e | 2016e | 2017e | 2018e | 2019e | 2020e |
|---|---|---|---|---|---|---|---|---|
| Total Non-current assets primo | USDm | 2,706 | 2,834 | 2,902 | 3,140 | 3,232 | 3,294 | 3,342 |
| Depreciation | " | 181 | 136 | 154 | 167 | 177 | 186 | 190 |
| Amortization | " | 344 | 308 | 295 | 320 | 342 | 354 | 364 |
| Impairment (reversal) of long term assets | " | 74 | 33 | 37 | 44 | 47 | 49 | 50 |
| Total Non-current assets ultimo | " | 2,834 | 2,902 | 3,140 | 3,232 | 3,294 | 3,342 | 3,411 |
| **Capex** | " | **727** | **546** | **725** | **622** | **628** | **637** | **673** |

Source: Own creation

### 6.9.3 MC Library

The MC library has been forecasted as a percentage of revenue. However, the percentage has been forecasted on a year by year basis, in order to grow MC balance sheet value in accordance with the level of cash investment and amortization rate.

### 6.9.4 Other non-current assets

The remaining items in other current assets have been forecasted as various percentages of revenues, based on historical averages. Deferred tax assets and other long-term assets have been kept at seven and four percent respectively. However, as we do not expect PGS to make any acquisitions or mergers, we keep the nominal value of goodwill or intangible assets constant over the forecasted period. Hence, these values have been kept constant at $139.9m and $183.8m.

### 6.9.5 Equity

In order to estimate the equity ultimo, we have used the following formula:

$$Equity_{primo} + NI - Dividends$$

### 6.9.6 Net interest bearing debt

Net interest bearing debt is calculated based on PGS' need for additional long-term debt to service the new vessel expenses and stick to their dividends payout policy. The following formula is used to determine future NIBD levels:

$$NIBD_{old} + change\ in\ interest\ bearing\ debt$$

## 6.10 Pro forma cash flow

The pro forma cash flow statement is summarized in table 6.8. FOCF was negative in 2014 due to the investment in newbuilds, taking delivery of Ramform Atlas. As a result of the declining market in the second half of 2014, PGS decided to postpone the delivery of the two new Ramform vessels to 2016, and thereby cutting 2015 capex by at least $160m (PGS UBS, 2015). Hence, the FOCF in 2015 is expected to be $68m. As the delivery is set for Q1 and Q3 2016, the FOCF is expected to be negative in 2016, as capex increases to $725m. PGS has already secured the required financing through Japanese ECF, as they have $267m available. We have thus drawn $220m in order to cover these expenses, and continue the dividends policy.

In the long term, capex will be reduced as the newbuild program has come to an end and there are no indications that any new vessels will be ordered in the forecasted time horizon. Since FOCF increases in 2017 and is expected to remain high in the following years, PGS is able to meet its debt obligation and paying back the revolving credit facility of $100m by 2018.

Finally, we have assumed that all FCFE is distributed to shareholders as dividends, and thus that there is no cash surplus. Although we don't expect PGS to pay dividends at the levels seen in 2019 and onwards, as it does not affect the valuation as we assume that Modigliani Miller proposition holds (Brealey et.al, 2014).

**Figure 6.8 – Cash Flow**

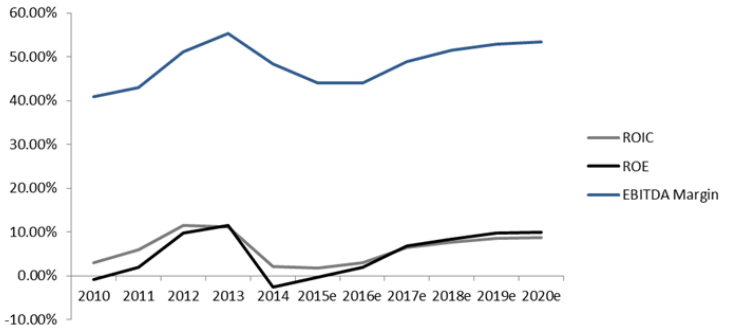
| Cash flow | | 2014 | 2015e | 2016e | 2017e | 2018e | 2019e | 2020e |
|---|---|---|---|---|---|---|---|---|
| NOPAT | USDm | 61 | 50 | 95 | 208 | 254 | 288 | 299 |
| Change in operating working capital | " | (69) | 86 | (3) | (4) | (2) | (1) | (1) |
| Capex | " | (727) | (546) | (725) | (622) | (628) | (637) | (673) |
| **Free operating cash flow (FOCF)** | " | **(136)** | **68** | **(145)** | **112** | **191** | **239** | **230** |
| Net change in interest bearing debt | " | 361 | - | 220 | (15) | (85) | - | - |
| Net financial items | | (88) | (79) | (83) | (99) | (101) | (99) | (99) |
| Tax on non core operating items (tax shield) | | 25 | 21 | 22 | 27 | 27 | 27 | 27 |
| **Free cash flow to equity** | " | **162** | **10** | **14** | **24** | **32** | **167** | **157** |
| Dividends | " | (84) | (10) | (14) | (24) | (32) | (167) | (157) |
| Cash surplus | " | 78 | - | - | - | - | - | - |

Source: Own creation

## 6.11 Forecasted profitability analysis

In order to ensure the quality of our forecast, we will in this section look at the future operating profitability figures and compare them to historical levels. As seen in figure 6.9 the development in the forecasted key profitability measures move in line. The graph clearly illustrates the downturn seen in the market starting in 2014 affecting both EBITDA margins, ROE and ROIC. As our forecast shows, we believe that the tough market conditions will continue in 2015 before starting its recovery. This is reflected in the forecasted development in the operating profitability, almost reaching historical levels seen before the downturn. Hence, we believe that our forecast is of high quality.

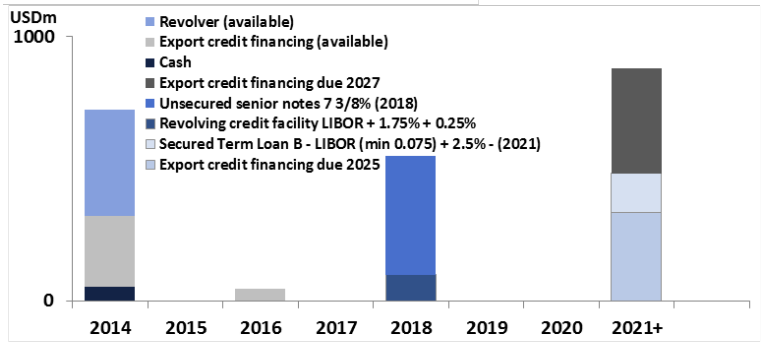
**Figure 6.9 – Profitability analysis**




Source: Own creation, PGS Annual report

## 6.12 Debt profile

Figure 6.10 – Debt profile




Source: Own creation, PGS Annual report

Figure 6.10 illustrates the total outstanding debt of PGS YTD. The total debt level has increased during the last few years due to the large investments to renew the fleet. As we can see in 2014, PGS has $55m cash available plus an export credit financing of $267m and an undrawn revolver of $400m. The postponed delivery of the two newbuilds from 2015 to 2016, causes the debt profile to remain unchanged in 2015, but the export credit financing is drawn by $220m for newbuild capex in 2016. The unsecured senior notes matures in 2018, however as the cash flow generated by PGS in this year is not sufficient to make the principal payment, we assume that they will issue a new bond with same notional value at the same terms. Furthermore, the revolving credit facility is due in 2018 and we assume 15% down payment in 2017 and 85% in 2018, hence the debt level is reduced by $100m. As there are no newbuilds scheduled beyond this, we expect the debt level to remain at this level in the foreseeable future.

### 6.12.1 Bond rating

Figure 6.11 – Bond overview

| Ticker | Coupon | Maturity | Price | Yield | Spread | Priority | Amount | Moody's | S&P |
|---|---|---|---|---|---|---|---|---|---|
| PGS | 7.375% | 01.09.2018 | 107.375 | 10.29 | 8.87 | Senior Unsecured | USD 450m | Ba2 | B+ |

Source: Own creation, PGS Annual report, Factset

PGS has a senior unsecured outstanding bond maturing September 1st 2018, rated Ba2 by Moody's and B+ by S&P (figure 6.11). We have chosen Moody's credit rating system when making our own bond rating, as they offer a specific rating methodology for the Oil & Gas Service industry

Figure 6.12 – Bond rating

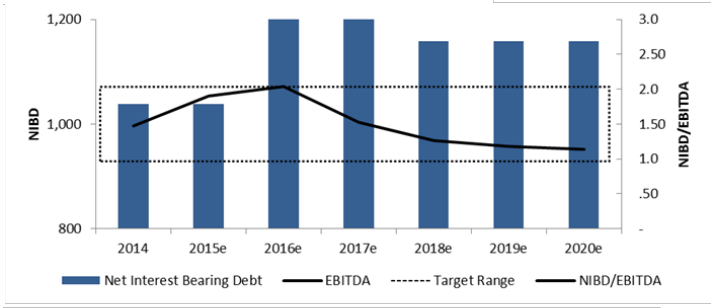
| Rating factor | weight | Sub-factor | weight | Input | Moody's indicative rating |
|---|---|---|---|---|---|
| Scale and business profile | 45% | Assets | 25% | USD 3.4bn | Ba |
| | | Business profile | 20% | 14.0 | B1 |
| Profitability and returns | 15% | EBIT/Assets | 10% | 2.7% | B |
| Financial strength | 40% | EBIT/Interest | 20% | 2.49 | B |
| | | Debt/EBITDA | 10% | 1.7 | A |
| | | Debt/Book cap. | 10% | 0.35 | Ba |
| **Given rating** | | | | | **Ba2** |

Source: Own creation, Moody's

(Moodys, 2009). The rating is split into three main factors (figure 6.12) where every sub-factor, except business profile, is based on PGS historical values from 2014 and forecasted 2015 numbers. The business profile is split into three parts made up of fleet composition, market diversity and market position. Based on the company profile, our strategic analysis and forecast, we believe the high quality fleet, the market position in several international markets and PGS being among the top five players within the seismic industry, give a business profile rating of Ba2.

The main reasons why we rate the bond the same as Moody's and two notches higher than S&P is because the NIBD/EBITDA ratio is expected to remain within the target range of 1.0-2.0x in our forecasted period (figure 6.13). This means that PGS will not have any problems meeting their debt obligations. The probability of default is thus very low. Furthermore EBITDA/Net Interest is forecasted to be in the range of 10-18x, thus they can easily pay their interest expense. In sum this gives us an estimated overall bond rating of Ba2. See appendix 6.12 for complete bond rating system.

**Figure 6.13 – NIBD/EBITDA development**




Source: Own creation, PGS

## 7.0 Cost of Capital

PGS' cost of capital should mirror the required rate of return owners and other investors can expect from an alternative investment with equal risk exposure. It is assumed that the company's stockholders are risk averse and want to be compensated for bearing risk (Brealey et.al, 2014). As a result, PGS' cost of capital is calculated as the weighted average cost of capital (WACC), which is a weighted average of the required rate of return from different types of investors.

$$WACC = \frac{NIBD}{EV} * r_d * (1 - \tau_c) + \frac{E}{EV} * r_e$$

Given that valuations and estimations in share price are sensitive to changes in WACC, the parameters will be described and analyzed in the following sections.

### 7.1 Equity Cost of Capital, re

For the approximation of the required rate of return of equity, the Capital Asset Pricing Model (CAPM) is applied. The model has numerous underlying assumptions that are highly critiqued, but they are outside the scope of this thesis and will thus not be covered since despite the criticism it is commonly preferred for estimating equity cost of capital (Brealey et.al, 2014). We also have to review what, if any liquidity premium is present for the company's stock. The security market line can therefore be defined as:

$$r_e = r_f + \beta_e * (r_m - r_f) + Liquidity\ premium$$

Where ($r_f$) is the risk-free interest rate and the liquidity premium are added to the systematic risk of equity ($\beta_e$), which is multiplied the market risk premium$(r_m - r_f)$. Each of these components will be further analyzed in the following sections.

#### 7.1.1 Risk-free interest rate

The risk-free interest rate indicates the rate of return an investor can get without incurring any risk. The best indicator of a risk-free rate is a long-term treasury bonds issued by governments (Petersen & Plenborg, 2012). Ideally, a bond with a similar duration to the forecasted cash flow horizon should be

used for discounting, however as our forecasting horizon is infinite this is difficult to do in practice. We therefore use a 6 year average rate, as this is post financial crisis of 10-year treasury bonds issued by the Norwegian Central Bank, to assess the future risk free rate for PGS. The Norwegian Central Bank's treasury bonds are used to get an accurate assessment, since PGS is listed on the Norwegian Stock Exchange. The reason we believe this forecast is a good indicator for the future risk-free rate is that it is historically quite stable, as can be seen in figure 7.1, coupled with the fact that it represents a 10-year rate. Hence, a rate of 2.97% will be used as the estimate for the future risk free rate.

**Figure 7.1 – 10-Year government bonds**

| Year | 10-Year government bonds |
|---|---|
| 2014 | 2.52% |
| 2013 | 2.58% |
| 2012 | 2.10% |
| 2011 | 3.12% |
| 2010 | 3.52% |
| 2009 | 4.00% |
| Average | 2.97% |

Source: Own creation, Norges Bank

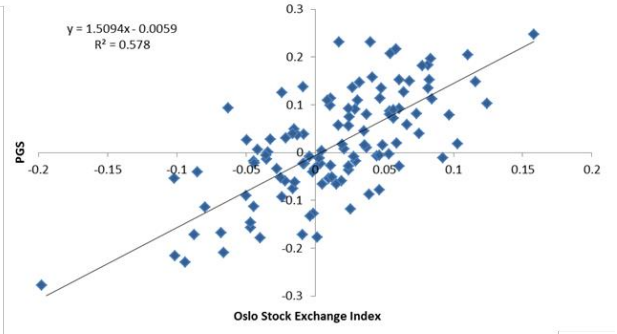
### 7.1.2 Beta

Beta quantifies the risk/return relationship for a stock. This means that the higher systematic risk (beta) in a company, the more investors demand in compensation for an investment. Consequently no risk (0 beta) corresponds to a risk-free return on investment, while a beta of 1 would signify an investment that mirrors the market portfolio. Furthermore, the beta of a company is not constant and will vary over time, giving a more accurate assessment of underlying risk in the company (Hull, 2012).

#### 7.1.2.1 Regression Beta

Beta can be calculated based on historic data to provide an estimate as to what should represent the average beta of PGS in the future. To estimate the raw beta of PGS, OSEBX has been used as the proxy for the market portfolio. Oslo Stock Exchange is dominated by petroleum- and petroleum related companies, which have high exposure to the oil price. As PGS is an oil service company we believe that this provides an accurate estimate for comparison as PGS and OSEBX tend to move together with changes in the oil price.

**Figure 7.2 – PGS Raw Beta regression**




Source: Own creation, Yahoo Finance

The PGS returns are regressed against the OSEBX returns and produce the raw beta of PGS as seen in figure 7.2. The estimation is based on monthly historical data (02/01/05-01/01/15). The regression

produces a raw beta value of 1.51. Calculating the standard deviations and correlations of PGS and OSEBX and applying the beta formula can also produce this estimate.

$$Raw\ \beta_e = \frac{\rho(PGS, OSEBX)\ *\ \sigma_{PGS}\ *\ \sigma_{OSEBX}}{\sigma^2_{OSEBX}} = \frac{0.7603\ *0.1250\ *0.06297}{0.003965} \approx 1.51$$

Adjusting the raw beta by using the Bloomberg formula below gives and adjusted beta of 1.32

$$Adjusted\ Beta = Raw\ Beta * \frac{2}{3} + 1 * \frac{1}{3} = 1.51 * \frac{2}{3} + 1 * \frac{1}{3} \approx 1.32$$

The reasoning for this adjustment is empirical evidence that indicates that betas over time are inclined to move towards the average beta, which is one (Damodaran 2012). The results give a beta higher than one indicating that the PGS stock moves in the same direction as the market, although to a greater extent, and is thus very sensitive to systematic or market risk. This result was expected as PGS is very dependent on external factors as highlighted in the shipping market model (section 3.0)

#### 7.1.2.2 Beta from comparable companies; the "bottom up approach"

A second way of estimating a beta for a firm is using the bottom-up approach finding comparable publicly traded firms and obtaining their regression betas (Damodaran 2012). We have taken each of the companies from the peer group and regressed their returns against their own index, and taken an average of the regression betas. The values where then unlevered using the average debt to equity ratio across the publicly traded firms in the sample over the same time period and then applied to the PGS capital structure to find the levered beta of PGS of 1.18, which is considerably lower than the regression beta. Given the small market capitalization of DOLP, PLCS and SBX, liquidity is a concern. Furthermore, the average D/E ratio of the comparable firms over the historic period is much higher than PGS, driven by the Seabird and PLCS (appendix 7.2). This combined with much higher average regression betas make the unlevered beta very low which in turn results in a low levered beta.

#### 7.1.2.3 Beta from fundamental factors

Finally we have estimated the beta of PGS by looking at the fundamental characteristics of PGS' risk profile (Petersen & Plenborg, 2012). From the fundamental analysis of PGS in section 3.0 and 4.0, we

hold detailed knowledge of the company's financial and operating position and we have thus carried out a risk assessment of both (appendix 7.4). As a result of our findings we have classified PGS' operating risk as high and financial risk as medium. The overall assessment and risk profile is viewed as neutral, indicating a levered beta between 1.15-1.40 (Petersen and Plenborg 2012). Consequently we have chosen a fundamental beta of 1.30.

In figure 7.3 we have summarized the different beta calculated using the different approaches.

**Figure 7.3 – Beta summary**

| Source | Beta |
|---|---|
| Thomson One Banker (Reuters) | 1.52 |
| NORNE Securities | 1.50 |
| Bloomberg (2 year) | 1.19 |
| Regression Beta | 1.51 |
| Bloomberg Adj regression beta | 1.34 |
| Buttom up approach Beta | 1.18 |
| Fundemental Beta | 1.30 |

Source: Own creation

### 7.1.3 Market Risk Premium

The market risk premium is the return of a portfolio over the risk free rate required by an investor. As with stocks' expected returns, the market risk premium is unobservable and difficult to determine an exact value. According to Koller et.al (2010) there is no single model estimating the market risk premium that has widespread recognition. Historical returns and surveys are however two of the most common methods and we will base our estimation of the market risk premium on these methods.

Since PGS is listed on the OSEBX, it is natural to try to estimate the market risk premium in the Norwegian market. PwC researches the Norwegian market on an annual basis, and finds that the average market risk premium historically is 5%, while the median is 5.6% (PWC, 2013-2014). Koller et.al (2010) argues that the market risk premium lies between 4.5-5.5 percent. Furthermore, Damodaran (2015) states that the equity risk premium for the Norwegian market is 5.75%. Moreover, analysts such as Norne (2015), use a risk premium of 6% in their valuation of PGS. Since the market risk premium seems to lay around 5% and PwC specific research on the Oslo Stock Exchange states that the rate is 5%, this is the estimate we will use as our market risk premium. The research is also forward looking

as the survey asks the participants to assess the market and give their estimates of the future market risk premium.

### 7.1.4 Liquidity Risk Premium

As stated previously, PGS is a highly traded stock on the Oslo Stock Exchange. On average, approximately 2.4 million PGS shares were traded daily in 2014, signifying that the stock is highly liquid. This coupled with the finding set forth by Plenborg, Grueland (2002) (figure 7.4), that companies with market capitalization over 7,500 MNOK has no liquidity premium (PGS Market Cap of NOK 9,496m), the liquidity premium of PGS is estimated to be zero in our model.

**Figure 7.4 – Liquidity premium**

| Market Capitalization | Liquidity premium |
|---|---|
| MNOK 0-50 | 4-6% |
| MNOK 50-250 | 2-4% |
| MNOK 250-500 | 2-3% |
| MNOK 500-3500 | 1-2% |
| MNOK 3500-7500 | 0-1% |
| MNOK > 7500 | 0% |

Source: Own creation, Plenborg and Petersen 2002

## 7.2 Debt Cost of Capital

A company's debt cost of capital is the required rate of return of their creditors and consists of three variables; the risk free rate, the credit spread and the corporate tax rate (Petersen and Plenborg 2012) The debt cost of capital can be calculated by either using the yield on a firm's outstanding bonds, bond ratings and associated default spread, or book values of debt (Damodaran, 2012). We will estimate PGS' cost of debt by using all of the three approaches in order to get the least biased estimate possible. Our own bond rating presented in section 6.12.1, as well as the given ratings from Moody's and S&P will be used in the second approach.

If a firm has a long term bond outstanding that is widely traded then this is the easiest way of estimating cost of debt for a firm (Damodaran 2012). PGS have $450m in senior unsecured notes with fixed coupon of 7,375%. The yield as of this thesis' cutoff date is 10.86% and in conjunction with our estimated risk free rate of 2.97% gives us a credit spread of 7.89%. PGS's bond is however illiquid thus the yield may not be the best way of estimated cost of debt.

PGS have Ba2 rating from Moody's and a B+ rating from Standard & Poor's. Given these ratings, the bond should have an interest coverage ratio between 2.5-3 and a credit spread of 3.25% and 4% according to Damodaran (2015). PGS' coverage ratio in 2014 is 3.46 indicating a BB/Ba2 rating.

Applying the spreads of 3.25% and 4%, result in pre-tax cost of debt of 6.22% and 6.97%. We rate PGS' bond Ba2 in, and thus get the same pre-tax cost of debt of 6.22%

Finally, we have estimated the cost of capital by looking at the interest expenses and divided this by the net interest bearing debt in the company, and averaged this over the last 5 years. As we can see in figure 7.5 the cost of debt has fluctuated over the last few years using this method. The high cost of debt can be attributed to the restructuring of the company in 2010. Using this historical average, we see that cost of debt is 8.65% and a spread of 5.68%. This approach however is not recommended according to Damodaran (2012) as the cost of debt is not the rate at which you borrowed money historically.

**Figure 7.5 – PGS Debt Cost of Capital historical approach**

| Inputs | 2010 | 2011 | 2012 | 2013 | 2014 | Average |
|---|---|---|---|---|---|---|
| NIBD | 279.95 | 418.19 | 434.20 | 677.20 | 1,038.00 | |
| Interest expense | -47.00 | -42.17 | -37.79 | -32.30 | -30.10 | |
| Debt cost of captial | 16.79% | 10.08% | 8.70% | 4.77% | 2.90% | 8.65% |

Source: Own creation, PGS Annual Reports

In conclusion, we believe that the current yield of PGS reflect too much of the market risk and does not give the appropriate credit spread as a result. The fact that the bond is illiquid further supports not using the yield as PGS' cost of debt. Furthermore, since the cost of debt is not the rate at which you borrowed money historically, we will not be applying this rate as our cost of debt. Using the PGS rating and associated default spread will thus be used as we see this as the most robust and accurate estimation of the cost of debt. We believe that the solid debt profile identified in our bond rating giving the same rating as Moody's is the appropriate pre-tax cost of debt equal to 6.22%.

## 7.3 Corporate Tax Rate

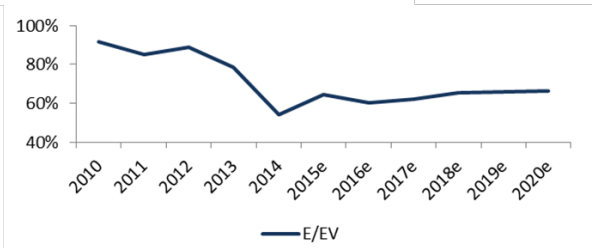
PGS has operations across the globe and is thus subject to different tax rates. Ideally one should examine the local corporate tax rates; however this can be difficult to do in practice. A solution is to apply an effective corporate tax rate on the basis that the effective rate is an average of the group's different rates from the financial statements. A shortcoming of this approach however is that it assumes that the company's borrowing costs is distributed the same way as the firm's operating earnings (Petersen and Plenborg, 2012). For PGS, in the period from 2010-2014 for the years with positive earnings, the effective tax rate has been 31.2%.

According to KPMG corporate tax rate table, the corporate tax in Norway where PGS is listed has an average of 28% of the last decade (KPMG, 2015). However new legislation saw the tax rate be reduced to 27% with effect from 2014 (PWC, 2013). The difference between the effective tax rate and corporate tax rate can be explained by a number of factors such as difference in accounting income and taxable income and write offs of deferred tax assets (Plenborg and Petersen, 2012). These items are difficult to forecast and combined with the shortcomings of the effective tax rate and we will apply the corporate tax rate of 27% in our analysis.

## 7.4 Capital Structure

PGS's objectives when managing capital are to safeguard the company's ability to continue as a firm in order to provide returns for shareholders. This includes level of dividends and benefits for other stakeholders, and to maintain an optimal capital structure to reduce the cost of capital (PGS Annual Report, 2014). Consequently, PGS tries to find the optimal capital structure to reduce the cost of capital. Figure xx illustrates the development in equity to enterprise value historically as well as our forecasted level. The investments made in new vessels and the add on of 150m of aggregated value to the PGS bond, combined with the drop in market value saw E/EV decline in 2013. The sharp decline in the share price seen in 2014 and also the decrease in cash reserves saw the E/V reaching the lowest level seen over the time period at 54% for 2014. The debt level is expected to remain stable in 2015 due to the postponing of the delivery of two new vessels to 2016. This cut in new build capital expenditure results in the equity value increasing as the FCFF of PGS is forecasted to be positive, hence a higher E/EV ratio. In 2016, the debt level is expected to increase due to the delivery of vessels. After this the debt level is expected to remain relatively stable but with the repayment of $100m revolver in 2018 will see the E/EV ratio increase further.

Figure 7.6 – PGS Capital structure




Source: Own creation, PGS Annual Reports

## 7.5 Weighted Average Cost of Capital (WACC)

Having determined the input factors, we can estimate the WACC of PGS. The WACC is firm specific; this implicitly assumes that the future operational risk and capital structure matches the values used to estimate WACC. Due to the need to adjust the debt level according to capital expenditure needs, for example with the new vessels in 2016 and repayment of debt in 2018, we have unlevered and then re-levered the Bloomberg adjusted regression beta based on changes in capital structure (Table 7.7). As a result we see that required return on equity changes accordingly. The cost of debt, tax level and risk premium are assumed to remain constant. This approach results in a WACC of 8.49%, which we will apply in our valuation models in the following sections. This WACC is in line with Norne (2015) analyst prediction of 8.4% and Bloomberg's estimate of 8%.

**Figure 7.7 – PGS Weighted Average Cost of Capital**

| | 2015e | 2016e | 2017e | 2018e | 2019e | 2020e |
|---|---|---|---|---|---|---|
| Unlevered | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 |
| Levered Beta | 1.54 | 1.63 | 1.59 | 1.52 | 1.52 | 1.50 |
| Rf | 2.97% | 2.97% | 2.97% | 2.97% | 2.97% | 2.97% |
| Rm | 5.00% | 5.00% | 5.00% | 5.00% | 5.00% | 5.00% |
| Re | 10.66% | 11.10% | 10.92% | 10.60% | 10.55% | 10.48% |
| rd | 6.22% | 6.22% | 6.22% | 6.22% | 6.22% | 6.22% |
| Tc | 27.0% | 27.0% | 27.0% | 27.0% | 27.0% | 27.0% |
| D/EV | 0.36 | 0.40 | 0.38 | 0.35 | 0.34 | 0.34 |
| E/EV | 0.64 | 0.60 | 0.62 | 0.65 | 0.66 | 0.66 |
| D/E | 0.55 | 0.66 | 0.62 | 0.54 | 0.52 | 0.51 |
| **WACC** | **8.49%** | **8.49%** | **8.49%** | **8.49%** | **8.49%** | **8.49%** |

Source: Own creation

# 8.0 Valuation

The purpose of the previous sections have been to undertake an in depth analysis of PGS in order to obtain high quality data to estimate the fair share price as of 16/04/2015. The next section will value PGS through the Discounted Free Cash Flow, Economic Value Added and relative valuation using multiples, as these approaches are the most commonly used (Koller et al, 2010).

## 8.1. Discounted Free Cash Flow

The DCF model calculates the value of the firm on the basis of the future cash flows the company expects to generate. The cash flows in this model are split in to two periods, the forecast period and the terminal period which can be expressed by the following equation (Petersen and Plenborg, 2012).

$$Enterprise\ Value_0 = \sum_{t=1}^{n} \frac{FCFF_t}{(1+WACC)^t} + \frac{FCFF_{n+1}}{(WACC - growth)} * \frac{1}{(1+WACC)^n}$$

Figure 8.1 shows how the forecasting period is calculated in the first part of the equation and is simply the sum of the estimated cash flows discounted by the WACC. The terminal period is calculated in the second part of the equation through Gordon's Growth Formula. Gordon's Growth Formula assumes that the terminal value represents all future cash flows and can therefore be seen as an infinite annuity as the cash flows have reached a steady state (Brealey et.al, 2014). A relevant assumption to be discussed in this model is that the equation assumes that all cash flows occurs at the end of the year and discounted by the WACC established in section 7.5. Therefore, we apply $(1+WACC)^{106/365}$ to the enterprise value since we can then capture the value up until the cutoff date.

**Figure 8.1 – DCFF**

| Discounted Free Cash Flow to Firm Method (DCF) | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | Short term | | Long term | | | Terminal period |
| Year | | 2015e | 2016e | 2017e | 2018e | 2019e | 2020e |
| FCFF | | 68 | (145) | 112 | 191 | 239 | 230 |
| WACC | | 8.49% | 8.49% | 8.49% | 8.49% | 8.49% | 8.49% |
| **Discount factor** | | **0.92** | **0.85** | **0.78** | **0.72** | **0.67** | |
| **Present value of FCFF** | | **63** | **-123** | **87** | **138** | **159** | |
| Growth terminal period | 2.1% | | | | | | |
| Value of FCFF in forecasted period | 323 | | | | | | |
| Value of FCFF in terminal period | 2,381 | | | 88.0% | | | |
| **Enterprise value** | **2,704** | | | | | | |
| Enterprise value (adjusted for revenue occure medio) | 2,641 | | | | | | |
| **Net interest bearing debt (primo)** | **1,038** | | | | | | |
| **Market value of Equity** | **1,603** | | | | | | |
| Shares outstanding (m) | 218 | Days from 31. December 2014 | 106 | | | | |
| Share price 31/12/2014 | 7.36 | USD/NOK Exchange rate 16. April 2015 | 7.8 | | | | |
| **Share price 15/04/2015** | **7.54** | | | | | | |
| **Share price NOK** | **58.78** | | | | | | |

Source: Own creation

The net interest bearing debt is then deducted from the estimated enterprise value, and is brought forward by applying the following equation $(1+WACC)^{106/365}$ since the share price we have estimated is for December 31st 2014, and our cutoff date is April 16th 2015, which is 106 days after this date. This gives the theoretical share price of 58.78 NOK, yielding a potential upside of ~33% as the market price at the cutoff date is 44.23 NOK (Yahoo finance). Since all the income statements, cash flow statements and balance sheets are presented in US dollars, while the stock is listed on the OSEBX, the final US share price is converted to NOK by using the exchange rate of USD/NOK 7.80 (Yahoo finance). This forecasted share price results in a market capitalization of NOK 12,802m. The findings in the DCF therefore suggest that the PGS share is undervalued.

Approximately 88% of the estimated value of the firm is derived from the terminal period; this can be attributed to the negative/low cash flows in the initial years and the length of the forecast period. However, due to the fact that the terminal period signifies such a considerable amount, we will perform a sensitivity analysis in section 9.0

## 8.2 Economic Value Added

This model measures whether or not a company is able to create value for its shareholder and is therefore used to complement the DCF model. A company's EVA is the after tax operating income, subtracting the charge for the cost of capital employed (Brealey et.al, 2014). As we can see in figure

8.2, the model suggests the same price as the DCF and therefore supports the initial finding in the DCF model that the PGS share is undervalued. Both models are based on Petersen and Plenborg (2012) model structures and require the same growth rate for calculations. The forecasted revenue growth in 2019 is estimated to be 2.1%. It is natural to believe that the growth rate slows down in the terminal period compared to what it has been in the forecasted period. Thus we have set the terminal growth rate at 2.1%, which is according to the forecasted range in inflation from the Norwegian Central Bank (2015). Most of the value from the EVA model comes from the invested capital as defined by Petersen and Plenborg (2012), and much less from the terminal period as the DCF. This makes the EVA model less sensitive to growth estimate changes, and thus a complement to the findings in the DCF. Still, the findings are to be supported by both a multiple valuation and a sensitivity analysis before a recommendation is made

**Figure 8.2 – EVA**

| Economic Value Added Method (EVA) | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | Short term | | Long term | | | Terminal period |
| Year | | 2015e | 2016e | 2017e | 2018e | 2019e | 2020e |
| NOPAT | | 50 | 95 | 208 | 254 | 288 | 299 |
| Invested capital primo | | 2,940 | 2,922 | 3,163 | 3,259 | 3,322 | 3,371 |
| WACC | | 8.49% | 8.49% | 8.49% | 8.49% | 8.49% | 8.49% |
| Cost of capital | | 249 | 248 | 268 | 277 | 282 | 286 |
| EVA | | -199 | -153 | -61 | -22 | 6 | 13 |
| Discount factor | | 0.92 | 0.85 | 0.78 | 0.72 | 0.67 | |
| **Present value EVA** | | **(184)** | **(130)** | **(48)** | **(16)** | **4** | |
| | | | | | | | |
| Growth terminal period | 2.1% | | | | | | |
| Invested capital primo | 2,940 | | | | | | |
| Value of EVA in forecasted period | (373) | | | | | | |
| Value of EVA in terminal period | 137 | | | | | | |
| **Enterprise value** | **2,704** | | | | | | |
| Enterprise value (adjusted for revenue occure medio) | 2,641 | | | | | | |
| Net interest bearing debt (primo) | 1038 | | | | | | |
| **Market value of Equity** | **1,602.8** | | | | | | |
| Shares outstanding (m) | 218 | | | | | | |
| Share price 31/12/2014 | 7.36 | | | | | | |
| Share price 15/04/2015 | 7.54 | | | | | | |
| **Share price NOK** | **58.78** | | | | | | |

| | |
|---|---|
| Days from 31. December 2014 | 106 |
| USD/NOK Exchange rate 16. April 2015 | 7.8 |

Source: Own creation

## 8.3 Multiple valuation

Before being able to provide an accurate recommendation for an investor regarding the PGS share, we must look at a relative valuation using multiples. It is important to choose the right multiples as some are more relevant than others when valuing a company. Figure 8.3 shows what multiples that are most commonly used.

**Figure 8.3 – Multiple description**

| Multiples | Strengths | Weaknesses |
|---|---|---|
| EV/Sales | • Useful when earnings are volatile and not representative for long-term potential | May be deceiving:<br>• A high s ratio may signal that the investors believe future sales will increase greatly<br>• A low ratio may signal that future prospects are unattractive. |
| EV/EBITDA | • Unaffected by capital structure.<br>• Cash-flow based formula.<br>• Eliminates effects of depreciation and amortization<br>• Eliminates potential distortion effects of differences in tax rates | • Can prove difficult for companies with several subsidiaries. |
| EV/EBIT | • Unaffected by capital structure<br>• Eliminates potential distortion effects of differences in tax rates | • Does not normalize for depreciation and amortization costs |

Source: Own creation, Petersen and Plenborg 2012

Figure 8.4 shows the findings of PGS compared to their peers. In this multiple analysis we have used forward looking multiples for 2015 and 2016, since they are often more accurate predictors of value than historical multiples (Koller et.al, 2010).

In our multiple analysis we have listed the competitors as well as the peers, however because of the difference in size and structure, the competitors are not included in the mean/median analysis as they would skew the results. As the multiples in the peer group have a high degree of variation, the mean/median will be impacted accordingly. As CGG is the closest peer to PGS, it is highlighted in bold for easier comparison.

**Figure 8.4 – Multiple analysis**

| Company | | Enterprise Value / Sales 2015e | Sales 2016e | EBIT 2015e | EBIT 2016e | EBITDA 2015e | EBITDA 2016e |
|---|---|---|---|---|---|---|---|
| **PGS** | | **1.8x** | **1.8x** | **33.0x** | **19.1x** | **4.2x** | **4.0x** |
| Dolphin Geophysical | | 0.7x | 0.6x | 4.9x | 4.1x | 2.4x | 1.9x |
| Polarcus | | 1.4x | 1.5x | 16.2x | 18.1x | 4.3x | 4.2x |
| **CGG** | | **1.2x** | **1.3x** | **21.5x** | **20.3x** | **4.2x** | **4.2x** |
| Seabird | | 0.7x | 0.6x | 0.0x | 9.4x | 3.7x | 2.6x |
| TGS | | 2.3x | 2.5x | 5.7x | 7.0x | 2.7x | 3.0x |
| China Oil Field Services | | 3.0x | 2.9x | 10.4x | 10.7x | 7.5x | 7.5x |
| Schlumberg | | 2.4x | 2.4x | 12.2x | 12.4x | 8.6x | 8.6x |
| | Low | 0.7x | 0.6x | 0.0x | 4.1x | 2.4x | 1.9x |
| | **Median** | **1.0x** | **0.9x** | **10.5x** | **13.7x** | **4.0x** | **3.4x** |
| | **Mean** | **1.0x** | **1.0x** | **10.6x** | **13.0x** | **3.7x** | **3.2x** |
| | High | 1.4x | 1.5x | 21.5x | 20.3x | 4.3x | 4.2x |

Source: Own creation

### 8.3.1 EV/Sales

EV/Sales shows that PGS trades at a premium compared to the industry in the short-term as they trade at a multiple of 1.8x compared to an industry average of 1.0x. As highlighted in figure 8.3, the ratio is a useful measure in the short term if revenues are volatile, which is the case for PGS. However, it is not representative for long-term operational potential. Since we expect much of PGS's upside potential to lie in the long-term, this ratio is not a good indication of what we consider to be the correct value of PGS.

### 8.3.2 EV/EBITDA

Our forecasted EV/EBITDA multiple shows that PGS trades above the industry based 2015-2016 predictions based on Factset (2015) numbers. However, with the delivery of the two new vessels, EBITDA is expected to grow further resulting in an even lower EV/EBITDA ratio. This delivery will continue grow the highly advanced fleet and strengthen their position as cost leader in the peer group. Considering that the market conditions are expected to remain low in 2015, PGS is well equipped with a strong balance sheet and high EBITDA levels compared to its peers. As we can see in figure 8.4, CGG has a slightly higher ratio, and is not expected to improve in the time to come as they have to scrap several of their vessels. As CGG is the most similar company, they will be the most important company to compare to going forward. Hence, the lower EV/EBITDA of PGS compared to CGG, supports our argument that PGS is undervalued and trading at a discount.

### 8.3.3 EV/EBIT

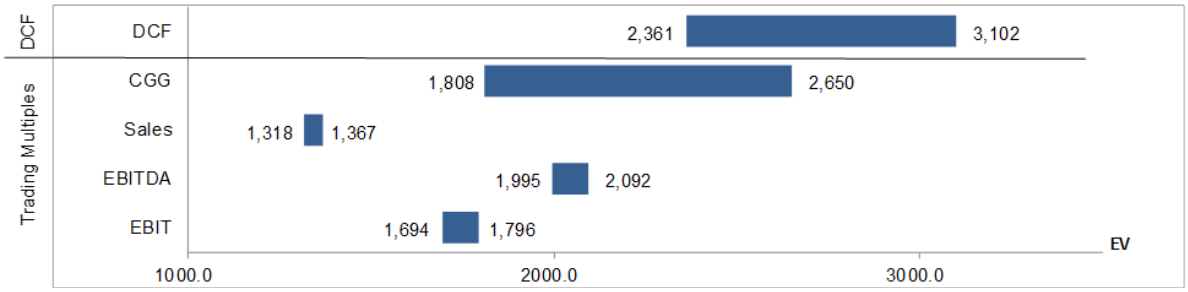
Our forecasted EV/EBIT is forecasted to trade at a premium in 2015, due the weak outlook for PGS. EBIT is expected to fall significantly before recovering strongly in 2016 after the delivery of new vessels. Hence the difference between the development in EV/EBITDA and EV/EBIT is because the percentage growth in EBIT is much higher than the growth in EBITDA, while depreciation and amortization are kept relatively constant.

### 8.3.4 Estimation of enterprise value

Applying each of the two-year forward multiples to our forecasted PGS' values results in a range of enterprise values depending on the multiple used. Since CGG is the closest comparable to PGS, CGG multiples are used for a separate valuation. The range is summarized and compared to our DCF

forecast in figure 8.5. The range of the DCF is defined by changes in growth rates and WACC. Similarly, the trading multiple valuation range is based on applying the mean and median values to the given multiple (figure 8.4).

**Figure 8.5– Multiple valuation**




Source: Own creation

As highlighted in the section above, EV/Sales is the least accurate multiple as it deviates significantly from the DCF as well as the other multiples (figure 8.5). This is because the mean/median EV/Sales of the peers is significantly lower than our forecasted ratio for PGS. The same applies for the EV/EBIT as the ratio for PGS is significantly higher than the peer group mean/median, especially in 2015. Using EV/EBITDA mean/median also results in a value below EV calculated through the DCF. The reason why the range of enterprise values given by using CGG multiples deviates significantly is because the low EV/Sales multiple differs substantially from the high EV/EBIT multiple. Using CGG's 2016 EV/EBIT multiple gives a firm value that is in line with our DCF forecast. Using CGG's EV/EBITDA multiple to forecast the PGS EV also gives a valuation similar to the DCF.

In conclusion, the forward looking trading multiples from PGS' peers only covers the short term. In comparison, our DCF suggests that most of the growth will come from 2017 and onwards. Thus, most of the enterprise values given by the relative valuation are below the DCF forecast. This support our finding that the investor should not expect high returns in the short term. However using our closest competitor's multiple results in a valuation closer to our DCF valuation.

## 9.0 Sensitivity analysis

In order to test the reliability of the estimated share price, we have conducted a sensitivity and scenario analysis on changes in the forecasting assumptions through the DCF model. This allows us to see how the different risks influence the PGS stock price. This is important from an investor's perspective in order to understand how changes in key drivers affect the share price.

Throughout the paper it has been found that day rates, running cost, vessel utilization, MC pre-funding rate and cash investment have a significant impact on EBITDA, and consequently the share price. Furthermore, as there are several underlying assumption to the WACC applied as the discount rate for future cash flows, changes in these factors will also influence the share price. Since, ~88% of forecasted EV in the DCF comes from the terminal period, changes in WACC and terminal growth rate will significantly change the forecasted share price substantially. The changes of abovementioned factors are analyzed to get a holistic picture of how sensitive PGS is to changes in forecasting assumptions

### 9.1 WACC vs Terminal growth

The first scenario analysis is illustrating how changes in our calculated WACC and assumed terminal growth rate affect the forecasted share price. Within the region we find to be realistic, the share price varies from 46.49-73.03 NOK indicating a spread of ~57%. This finding shows that the PGS share price is very vulnerable to fluctuations or variations of the terminal growth rate and WACC estimations.

**Figure 9.1– WACC vs Terminal growth**

| | WACC | Pessimistic | | | Realistic | | Optimistic | |
|---|---|---|---|---|---|---|---|---|
| Growth | 58.78 | 1.0% | 1.25% | 1.50% | 2.1% | 2.5% | 2.75% | 3.00% |
| Optimistic | 7.0% | 64.73 | 68.70 | 73.03 | 84.44 | 95.14 | 102.30 | 110.35 |
| | 7.5% | 57.72 | 61.09 | 64.73 | 74.24 | 82.98 | 88.74 | 95.14 |
| | 8.0% | 51.70 | 54.60 | 57.72 | 65.75 | 73.03 | 77.77 | 82.98 |
| Realistic | 8.5% | 46.63 | 49.16 | 51.87 | **58.78** | 64.96 | 68.95 | 73.30 |
| | 9.0% | 41.93 | 44.14 | 46.49 | 52.45 | 57.72 | 61.09 | 64.73 |
| | 9.5% | 37.91 | 39.86 | 41.93 | 47.14 | 51.70 | 54.60 | 57.72 |
| Pessimistic | 10% | 34.33 | 36.07 | 37.91 | 42.50 | 46.49 | 49.01 | 51.70 |

Source: Own creation

### 9.2 Changes in underlying WACC assumption

As discussed in section 7.0 the main inputs to the WACC are beta, risk premium [rm], risk free rate [rf] and return on debt [rd]. We assume that rd remains constant over the forecasted period as the capital structure remains relatively stable. Each of the sensitivity analysis tables can be found in appendix 9.0.

#### 9.2.1 Beta

We have adjusted the raw beta calculated using our different approaches and unlevered and then re-levered this beta based on changes in capital structure, while keeping the other inputs constant over the forecasted period.

In the beta regression approach we Bloomberg adjusted the raw beta. If we do not adjust, the WACC will increase to 9.12%. Keeping the terminal growth rate the same, this will decrease the share price to NOK 48.57. Within the region we find to be realistic, the share price now varies from 39.62-61.77 NOK indicating a spread of ~56%. Using the bottom-up approach to calculate beta, gives a WACC of 7.91%. This will give a share price of NOK 70.03, again keeping the terminal growth rate the same. The realistic region range is now 54.14-86.26, which is a spread of ~59%. The beta from fundamental factors results in a WACC of 8.34%. The share price then becomes NOK 61.46 and ranges from 47.07-73.79 NOK, using the same terminal growth rate, which is a spread of ~57%.

In sum, using the different betas give a WACC range of 7.91-9.12%, which results in a share price from NOK 48.57-70.03. Hence it is important from an investor's perspective to understand the impact of applying different beta values in the WACC calculation.

#### 9.2.2 Risk Premium

As stated in section 7.1.3, the market risk premium is unobservable and difficult to determine an exact value. The risk premium for the Norwegian market based on analyst coverage and researchers is in the range of 5-6%. We have used a premium of 5% in our original WACC calculation, thus we are at the lower end of the specter. Hence it is valuable for our analysis to investigate how the WACC varies depending on changes in rm, while keeping the other parameters constant.

Damodaran (2015) research finds that the equity risk premium for the Norwegian market is 5.75%. Applying this rate to our WACC calculation gives a cost of capital of 9.23%, which results in a share price of NOK 46.89. Analysts such as NORNE Securities assume a rate of 6% resulting in a WACC of 9.48%. Using this discount rate gives a share price of NOK 43.47.

In conclusion, we see that using the top-end of the premium range in WACC calculating results in a much lower share price than our DCF suggests. However, we believe that using a risk premium in this range gives a required rate of return on equity well above historical ROE numbers delivered by PGS. Hence, we do not think the market can expect such premiums in the years to come. Secondly, we believe that PWC Norway, which has an in depth knowledge of the Norwegian market, is the best source for determining the risk premium. Hence, we believe that a 5% risk premium for the Norwegian market is the appropriate rate going forward.

### 9.2.3 Risk free rate

Changing the risk free rate, while keeping everything else constant, will also impact the forecasted WACC. We have used a 6 year average of the Norwegian 10-year bond rate in our analysis. This time horizon reflects the post financial crisis and the rate equals 2.97%. Altering this input to a 10-year average, changes the WACC to 8.95%, and results in a share price of NOK 51.00. Using the 5-year average of the Norwegian 10-year bond gives a WACC of 8.30%, and a share price of NOK 62.20. The three year average results in a WACC of 7.96% and a share price of NOK 68.89.

We believe the 10-year average is not representative as it includes values from the financial crisis, with interest rates above 4% given the current economic situation. Furthermore guidance from the Norwegian Central Bank does not indicate that the rate will increase in the years to come. The 3-year average rate is a too short time horizon giving very low interest rates, which may not be representative for the long-term interest rate.

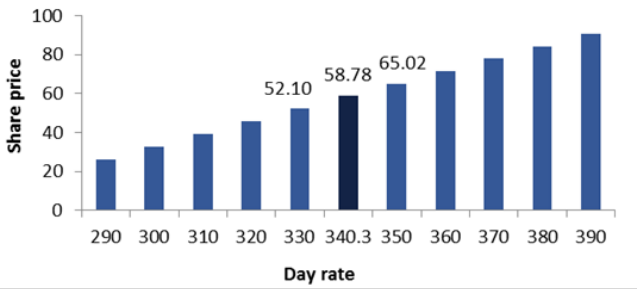
## 9.3 Share price sensitivity to forecasting drivers

The second scenario analysis is investigating how changes in the forecasting drivers affect the share price. The WACC is assumed to remain constant at our forecasted level of ~8.49%. As there are different drivers influencing each segment we analyze Marine Contracting and MC separately.

### 9.3.1 Marine contracting

In our DCF we have varied the price level according to market changes in each individual year as well as the terminal price going forward. In order to carry out the sensitivity analysis we have averaged the day rate in both forecasted and terminal period that gives us the share price as shown in our DCF. This average day rate going forward is ~340 USDth/day, which is higher than the historical level of ~301 USDth/day in 2014. We have expected the market recover from 2016 and onwards resulting in stronger day rates, hence the average is above 2014 levels. Figure 9.2 illustrates how changes in this average day rate over the period impacts the share price of PGS.

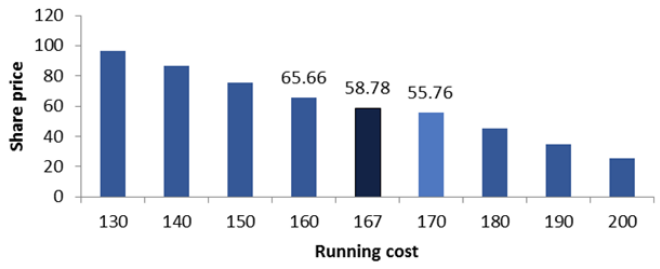
Figure 9.2– Day rate vs share price




Source: Own creation

Similar approach is done to see the impact of increased running costs on the share price. Forecasted running cost is projected to be 167 USDth/day per year, which is the same as 2014. This is due to the same GeoStreamer being used. As 9.3 illustrates, an increase in cost levels affect the share price negatively.

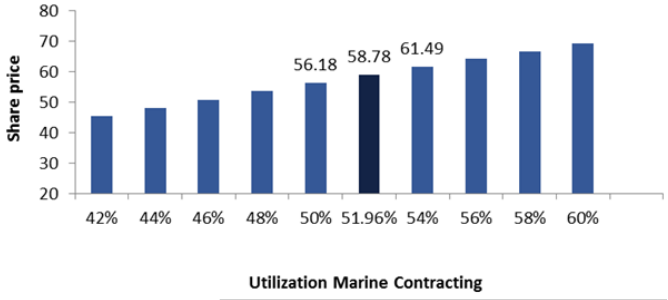
Figure 9.3– Running cost vs share price




Source: Own creation

Finally, we have investigated how changes in utilization rates in the Marine Contracting segment affect the share price. It is assumed that the utilization in MC remains as forecasted in the DCF. Given that PGS' fleet is the most advanced in the industry and E&P spending is expected to increase, we expect higher utilization rates in the years to come.

Figure 9.4– Utilization vs share price



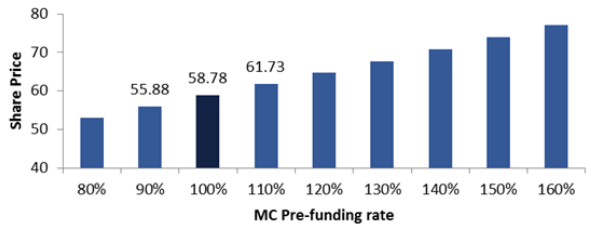

Source: Own creation

### 9.3.2 MultClient

As MC pre-funding rates and MC cash investment are the drivers affecting revenues in MC, the sensitivity analysis investigates how changes in these drivers affect the share price.

MC pre-funding is assumed to be constant at 100% in our DCF, due to guidance from PGS and market outlook. As historic levels have been from 100-120%, the downside risk is thought to be limited. Figure 9.5 shows how altering the pre funding rate affects the share price.

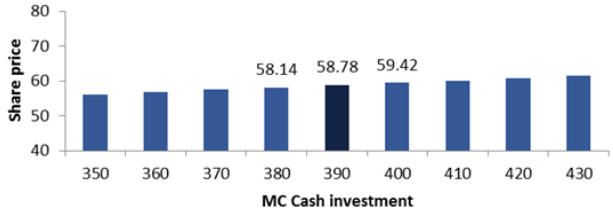
Figure 9.5– MC Pre-funding vs share price




Source: Own creation

The second driver of MC revenues is the level of MC cash investment which significantly driver by market conditions. Assuming 100% pre funding level as in our DCF, we see that changes in the nominal amount do not affect the share price significantly as figure 9.6 shows. Hence, the pre funding rate is a more important driver for MC revenues' impact on the share price.

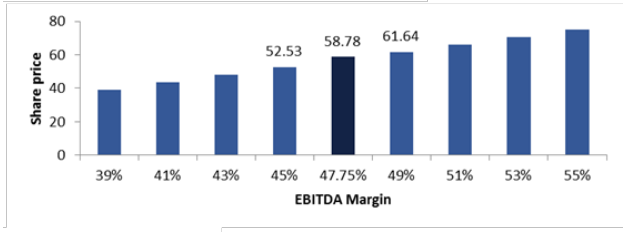
Figure 9.6– MC cash investment vs share price




Source: Own creation

The operational cost levels for the MC pre-funding segment is as previously explained forecasted based on expected EBITDA margins for PGS as a firm. The average EBITDA margin for PGS is 47.75% over the forecasted and terminal period. How changes in the EBITDA margin affects the operating cost for MC pre-funding and consequently the share price is illustrated in figure 9.7.

Figure 9.7– EBITDA margin vs share price




Source: Own creation

## 10.0 Discussion

Our forecasted share price of NOK 58.78 is ~20% higher than the average consensus. However, it is important to highlight that analyst reports came after the release of the Q4 numbers in February, with the exception of the Barclays report, which forecasts a share price of NOK 60.00, which was released in April. Hence, our forecast is slightly higher, as the oil price as recovered by ~14% since February. Furthermore, in our view there are two more reasons for the deviation, which will be discussed below.

The seismic industry has been hit hard by the decline in the oil price. As we expect that the oil price and consequent E&P spending will recover to 75 USD/bbl in 2016 and 81-82 USD/bbl in the long term, we have a more positive view than consensus among analysts on the market outlook. Consequently, we expect day rates and thus revenue going forward to be higher than consensus. However given the supply/demand outlook with vessels being scrapped short term balancing the market and with bidding activity set to increase as the oil price increases, we believe that our estimates for day rates and revenue are more in line with the long term supply and demand balance.

The time horizon in our forecast is also longer than all the investment banking analysts, as they only forecast up until 2016 or 2017. Thus, they start their terminal period, with a steady state growth rate, earlier than us. Hence we believe that our time horizon is more appropriate given the value of the deliveries of new vessels in 2016 is not fully captured until 2017. Thus our longer time horizon enables us to forecast the yearly growth in 2018 and 2019, which we see as higher than a terminal growth rate applied by analysts, before hitting the steady state of growth in future revenues. Forecasting with a longer time horizon does however bring higher uncertainty as future become harder to predict.

The range in analyst price targets is 40-60 NOK per share as seen in figure 10.1. Hence this shows the variation in analyst views as to when and how the market is going to develop in the future. There is great uncertainty as to how the oil price will develop and the impact this will have on the recovery in the seismic industry.

**Figure 10.1– Analyst target price**

| Company | Target Price |
|---|---|
| Barclays | NOK 60.00 |
| Canaccord | NOK 50.00 |
| Swedbank | NOK 44.00 |
| JP Morgan | NOK 44.00 |
| Pareto | NOK 43.00 |
| Norne | NOK 40.00 |
| Average | NOK 46.83 |

Source: Own creation, equity research

## 11.0 Conclusion

The purpose of this paper was to determine the theoretical fair value of the PGS share price per 16.04.2015. Based on our company and market analysis we recommend a BUY with a target price of NOK 58.78.

Annual revenues in 2014 amounted to $1,454m, a decline of 3% YOY, with a negative profit margin of 4%. PGS' newbuild program focuses on higher streamer capacity and reducing average fleet age, and the fleet is one of the most technologically advanced in the industry. Their fleet renewal will be completed by Q3'16 when the last of the Ramform Titans is delivered. Average ROE over last 5 years has been ~4%, and our forecasted ROE for the next 5 years is an average of ~6% annually.

The most important demand factors affecting PGS and the seismic industry is the petroleum companies E&P spending. These investments are driven by Oil and Gas prices. The average oil price has been ~$92/bbl for the last five years; however the oil price plummeted to ~$49/bbl in February 2015. The remainder of 2015 is expected to be tough for the seismic industry, as petroleum companies are expected to cut their seismic E&P spending by ~20%. Going forward into 2016 and beyond, we expect the oil price to recover to 75 USD/bbl in 2016 and 81-82 USD/bbl in the long term, which will lead to higher E&P spending from oil companies. This will result in higher bidding activity, and with the increase in demand we expect the day rates to increase to 351 USDth/day in 2019. Consequently, we forecast utilization rates to reach 86%.

Our strategic analysis shows that rivalry between the existing firms is high. This is because the companies have to compete for contracts and market share as we will not see expansion into new markets given current price levels. Furthermore, the high barriers to entry given capital requirements and advanced technology required, combined with the current market conditions results in a low threat of new entrants. The internal value chain analysis identifies that PGS has temporary competitive advantage in vessels, MC library and technology. Hence, they are well positioned relative to peers to compete in the market place both in the current conditions and take advantage of future opportunities.

In the last year, PGS was not able to create value for its shareholders with negative ROE of ~3% and ROIC of 2.1%, which is below the required rate of return. EBITDA margin also decreased by 7% YOY, as the lower prices put pressure on margins. As we expect the market to recover and low capex requirements after the 2016 vessel delivery, we estimate the key figures to return to approximately 2012 levels.

The total debt levels have increased over the last couple of years due to the newbuild program. In order to pay for the new vessels, we have adjusted the debt level on a yearly basis. The debt levels are assumed to remain constant after 2018, when the revolver is repaid and the newbuild program has come to an end. The NIBD/EBITDA ratio is expected to remain within the target range of 1.0-2.0x over the forecasted period and thus the probability of default is very low. Furthermore EBITDA/Net Interest is expected to be in the range of 10.0-17.0x, thus PGS can easily pay their interest expense. These are the main reasons why we rate the bond equal to the rating of Moody's, at Ba2, and two notches higher than S&P.

Based on the risk analysis of the company, we estimate a WACC of ~8.49%. The output of the DCF and the EVA model indicate an upside potential of ~33%, and this is further supported by the multiples analysis. In the short term the EVA shows that the firm is expected to destroy value for shareholders, as the cost of capital is higher than NOPAT. The trend is however positive and PGS is forecasted to deliver positive EVA in 2019 and onwards.

From the sensitivity analysis, it is evident that the WACC and growth inputs have significant impact on the share price. Changes in Beta, risk free rate and risk premium all significantly change the WACC and subsequent the share price. Furthermore, changes in the underlying growth assumptions such as an increase in day rates by ~6% keeping everything else constant yield a share price of NOK 71.43. Conversely, a decrease of ~6% results in a share price of NOK 45.59.

The estimated share price is above consensus, indicating that we are more positive regarding the outlook for both the seismic industry and PGS. Based upon the internal capabilities and structure identified in this paper, we believe that the share price has decreased too much as a result of market

conditions since PGS as the preferred name in the seismic industry. Hence, we see analysts as too conservative regarding the value of PGS. However, our recommendation is based on the long term, with most of the value expected from 2016 an onwards. Thus the investor has to have a long term investment horizon, as well as considering the underlying risks, before undertaking an investment in PGS.

## 12.0 Thesis in perspective

Given current market conditions there is speculation whether there will be consolidation in the industry. Thus an interest approach could have ben to investigate potential M&A activity where PGS acquires another company and whether this would create synergies and increased value for current shareholders.

There are also multiple other valuation methods that could have been chosen to value PGS. For example the residual income model could have been an appropriate method, as we do not expect PGS to solely generate positive FCFF over the forecasted period.

We could also have taken a different approach to estimate the operating cost of the MC segment instead of using EBITDA margin. This could have been done by using cost per streamer similar to the approach in the marine contract segment.

Finally we have estimated the cost per streamer as an average across the different vessels. However, as there are differences in the streamer capacity of the vessels, the running cost per vessel could have been calculated on a vessel-by-vessel basis. This would have required more detailed information regarding each vessel, which could have been difficult to obtain as PGS does not disclose this information.

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DNB Markets

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# Contents

# 14.0 Appendix

## Section 1

### Appendix 1.1 PGS Share development

*2005:*

PGS became a dedicated oil-services company in March 2005 after selling off their exploration and production company Pertra. During 2005, substantially all of PGS' debt was either repaid or refinanced (PGS IR News 2005). PGS now operates through three business units, Marine Geophysical, Onshore and Production

*2006:*

Announces plan to build 3rd generation Ramform vessel in March in a strong market with shortfall in supply. Average day rates in the industry for high end vessels continue to rise reaching $250k (Pareto, 2015). Extraordinary general meeting at the end of April where the shareholders approve the de-merger of Petrojarl. PGS release Q1 numbers in May above market expectations further contributing to the rise in the share price (DN, 2006a). Slight drop in the oil price shortly after makes the share price decline. Disappointing Q2 numbers made the share decline further (DN, 2006b). Sold stake in Petrojarl in August as well as exercising option to purchase another Ramform vessel at the end of September (PGS IR, 2006). A strong market place with increasing demand and growing day rates saw PGS reporting strong numbers for Q3 contributing to a further increase in the share price. Positive guidance from PGS in December sees the share price continuing to rise towards year end (DN, 2006c).

*2007:*

Deliver the best results in the history of the company for 2006 in February seeing the share increase to record heights in April (DN, 2007a). Strong results in Q1; however the results were below market expectations resulting in a drop in the share price (DN, 2007b). Day rates continue to rise as a result of the continued rise in oil prices and consequent high E&P spending. Day rates reach an industry average $295k for the high end 3D vessels (Pareto, 2015). Another record quarter in Q2 sees the share price rising again. Over a six week period from mid-august to the end of September the share rise more than

30%. PGS acquires MTEM limited, AGS Inc and Arrow Seimsic over the course of the year (Factset, 2015). After three strong quarters in 2007, PGS reports lower earnings from marine contract than previously guided due to longer yard and steaming time for two of the Ramform vessels with total margins for the year being lower than guided as a result. Consequently, the share price drops significantly towards the end of the year (DN, 2007c)

.

*2008:*

The announcement in January that CEO Svein Rennemo will retire in April was disappointing for the shareholders. Jon Eirik Reinhardsen was appointed new CEO and President in February. The PGS share had a tough end to 2007 after two result warnings in December and January resulting in several investment banks cutting their target estimates. Q4 did however perform better than expected and the positive guidance for 2008 given at the presentation saw investment firms upgrading PGS and the share price started to rise once more (DN 2008a). The share continued to rise as the order book looked strong for the remainder of the year in addition to acquiring the largest ever contract within high technology seismic with Brazilian Petrobras (DN 2008b). PGS also announced strong Q2 numbers, but did not manage to meet market expectations and the share started to decline as a result (DN, 2008c). As the financial crisis hit with full strength during the second half of the year with the oil price plummeting and resulting cuts in E&P spending and hence demand the PGS share plummeted. PGS did however report a record year in total for 2008.

*2009:*

The share price bottomed out in January and started to recover during the course of the year in line with once again rising oil prices. The recovery was however slow, with the market place experiencing low bidding activity and over supply of streamers with day rates continuing to decline. The first half of the year was particularly challenging however the order book increased for the first time in three quarters in June contributing to investment banks increasing their price targets for PGS (DN 2009a). The news of PGS selling their onshore division in December for $210m to Geokinetics was a better price than anticipated by brokers (DN 2009b). It was thus well received by the market as it put PGS in a strong financial position with cash to reduce their debt (DN 2009c)

*2010:*

Despite delivering lower than expected results for Q4 2009 the PGS share continued to rise during the four first months of 2010. With the market expecting day rates to increase quicker than previously expected in the market the PGS share was upgraded by banks such as Morgan Stanley (DN, 2010a). The below estimated results for Q1 at the end of April combined with the announcement that PGS did not expect the second quarter of the year to be any better saw the PGS share starting to decline significantly (DN, 2010b). The share started to increase once again on the back of better outlook for the industry as a whole as well as PGS because of better utilization, less yard time, higher prefunding rates and stronger effect of the GeoStreamer technology (DN, 2010c,d).

*2011:*

After a strong end to 2010, the PGS share remained relatively flat during the first three months of 2011. PGS also ordered two new Ramform vessels with and option of two more in February as a step in their vessel investment and renewal strategy, expecting increasing demand going forward (DN 2011a). Disappointing Q1 results with negative earnings before taxes saw the PGS share decline in April. Despite reporting results above expectations in Q2 the drop in oil price and the uncertainty in the financial markets in Europe the share dropped significantly at the end of July (DN, 2011b). The share recovered toward the end of the year with PGS reporting another strong quarter. Investment houses also announced buy recommendations based on increasing oil prices and strong E&P outlook (DN, 2011c). Day rates began to rise again as well as increasing demand; however the market still had oversupply (Pareto, 2015)

*2012:*

The share price continued its positive trend in the beginning of 2012. PGS reported above expectations numbers for Q4 2011, surprising the market (DN 2012a). Positive market outlook with higher bidding activity, particularly the North Sea, supply remaining flat, and the highest oil price in nine months, further contributed to the increased share price (DN, 2012b). The share experienced a sudden drop in May due to the oil price declining by more than $20 in the same period as well as the uncertainty regarding Greece made the Oslo Børs index decline (DN, 2012c). The strong Q1 numbers reported in

May contributed to mitigate the fall further (DN 2012d). The remainder of the year saw the share rise steadily in a strong market with supply/demand in balance and increasing day rates with the oil price once again rising. PGS reported strong results for Q3 beating estimates as well as indicating day rates to increase further for the first half of 2013 (DN, 2012e)

*2013*

The share declined steadily in the first quarter of 2013. Goldman Sachs downgraded to sell at the end of January due to weaker market conditions going forward and current earnings multiples at 2007 levels (DN 2013a,). Additionally, PGS did not meet analyst expectations for Q4 2012 released in February. The share continued the decline in June on the back of negative signals at the "Eage" market conference with bidding activity in the Gulf of Mexico lagging which questions the future cash flow of oil companies and hence E&P seismic spending (DN, 2013b). The PGS share did however rise again in July on the back of above expectation results reported for Q2 2013 (DN, 2013c). The share declined steadily during the second half of the year with brokerages cutting price targets on the back of weaker market conditions (DN, 2013d, e). After the capital markets day in December, a number of investment houses cut their price targets expecting the seismic market to experience lower contract pricing with a negative view on the market as a whole for 2014 (DN, 2013f)

*2014:*

The share remained relatively stable for the first half of the year. However the investment houses continued its negative view on the seismic market cutting price target estimates for the PGS share (DN, 2014a). Even after indicating that Q1 would be a disappointing, PGS still managed to report below expectations when releasing the numbers in May and the share continued to decline as a result (DN, 2014b). The sharp decline in the oil price in the second half of the year with petroleum companies cutting their E&P spending with weak market outlook for 2015 saw the PGS share plummeting reaching the lowest level in November since January 2009 (DN, 2014c). The share did however increase slightly towards the end of the year despite the oil price continuing its fall (DN, 2014d. This was a result of PGS indicating on their capital markets that they have positioned themselves for the tough market conditions going forward with cuts in cap ex and postponing delivery of the two new vessels to late 2016.

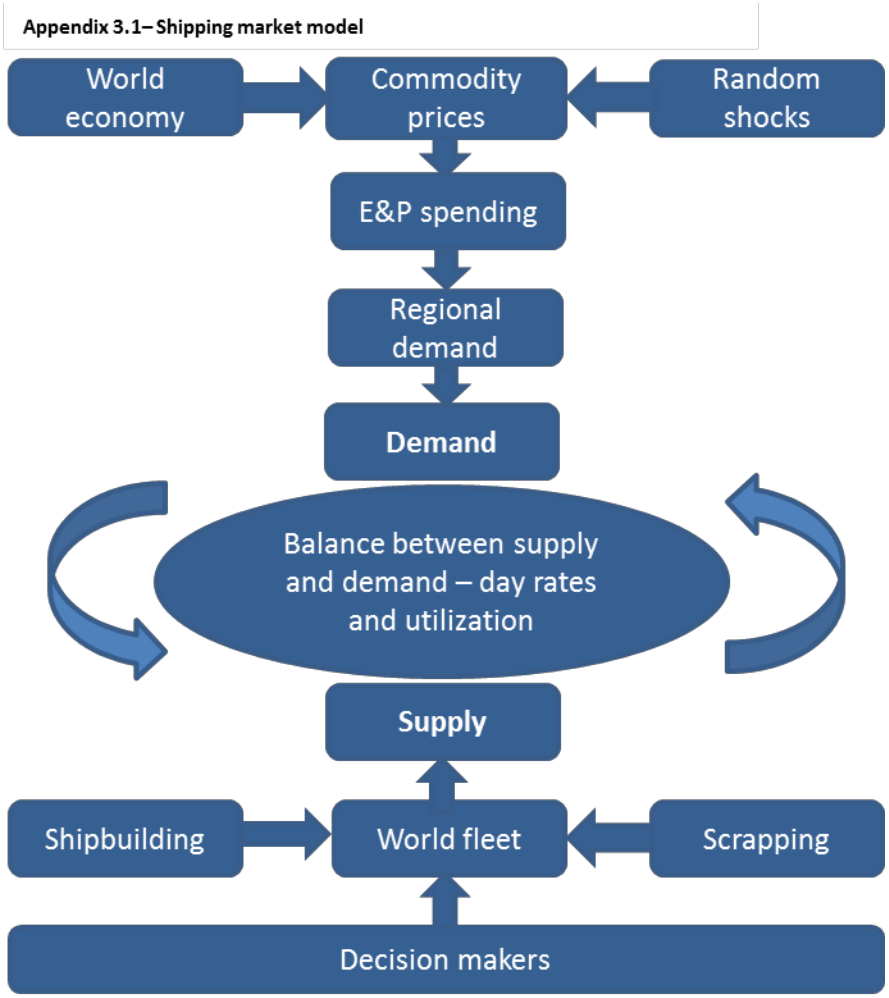
*2015:*

The share price has remained flat during the first quarter of 2015 with the oil price having bottomed out and remaining relatively stable.

# Section 2

## 3.0 Strategic Analysis

### Appendix 3.1 The Shipping Market Model




Source: Own creation, Stopford 2009

## Appendix 3.2 Global #3D fleet in contract or MC mode per region and utilization

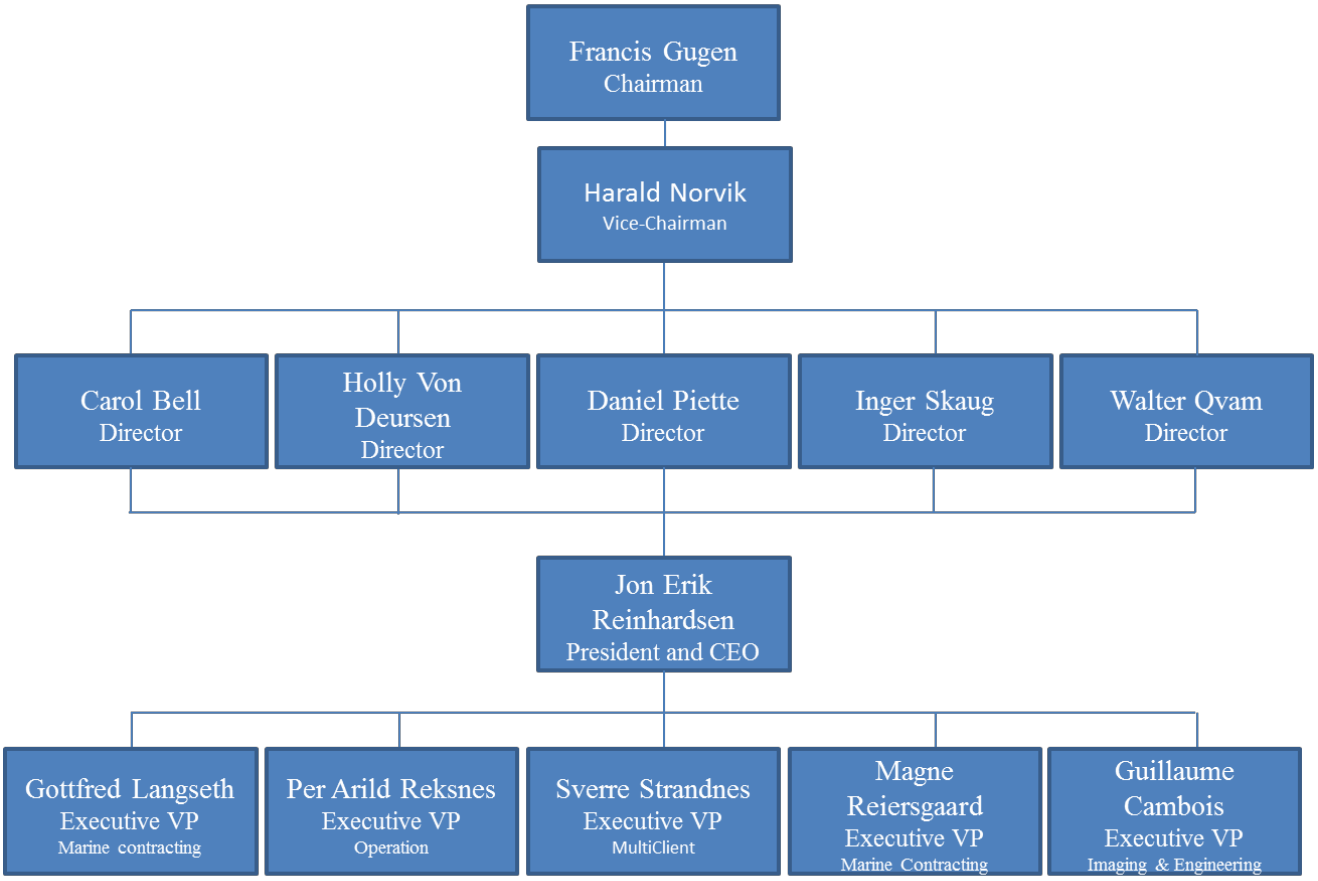
**Appendix 3.2– Global #3D fleet in contract or MC mode per region and utilization**

| Demand (# vessels) | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015e | 2016e |
|---|---|---|---|---|---|---|---|---|---|---|
| West Africa | 3 | 5 | 6 | 7 | 7 | 9 | 7 | 8 | 5 | 4 |
| ME/MED | 3 | 4 | 5 | 3 | 3 | 3 | 3 | 2 | 3 | 2 |
| E.Africa | 0 | 1 | 0 | 2 | 1 | 2 | 1 | 1 | 1 | 2 |
| Indian Occean (excl E.Afr.) | 3 | 4 | 5 | 3 | 3 | 1 | 2 | 1 | 3 | 2 |
| Brazil | 4 | 2 | 4 | 4 | 5 | 4 | 2 | 2 | 2 | 2 |
| SAM other | 1 | 1 | 1 | 0 | 2 | 2 | 4 | 2 | 3 | 4 |
| Norway | 5 | 7 | 4 | 4 | 5 | 6 | 6 | 5 | 3 | 4 |
| UK | 1 | 1 | 2 | 2 | 2 | 4 | 3 | 2 | 2 | 2 |
| US GoM | 6 | 7 | 5 | 6 | 2 | 6 | 6 | 6 | 5 | 5 |
| RoW (rest of world) | 9 | 12 | 8 | 12 | 17 | 17 | 15 | 12 | 9 | 13 |
| Demand (# vessels) | 37 | 44 | 41 | 43 | 47 | 52 | 50 | 43 | 36 | 40 |
| Vessel demand growth) | | 17% | -7% | 7% | 9% | 11% | -5% | -14% | -15% | 9% |
| Avg. 3D vessel supply | 45 | 50 | 51 | 52 | 61 | 65 | 65 | 58 | 55 | 56 |
| Net streamer supply growth | | 9% | 0% | 14% | 16% | 7% | 1% | 1% | -4% | 2% |
| Vessel utilization | 83% | 87% | 79% | 83% | 78% | 81% | 77% | 74% | 66% | 71% |
| Incremental demand | | 6 | -3 | 3 | 4 | 5 | -2 | -7 | -7 | 3 |
| Incremental supply (# vessels) | | 6 | 1 | 1 | 8 | 4 | 0 | -8 | -3 | 1 |
| # vessels to balance market | | 51 | 48 | 51 | 55 | 62 | 59 | 50 | 42 | 46 |
| Vessels oversupply @ 85% utilization | | -1 | 3 | 2 | 5 | 3 | 6 | 7 | 13 | 10 |

Source: Own creation, Swedbank 2015

## Appendix 3.3 Organizational structure

**Appendix 3.3– Organizational structure**




Source: Own creation, PGS

## 4.0 Financial statement analysis

## Appendix 4.1 Reformulated income statement

**Appendix 4.1– Reformulated Income statement**

| *Income Statement (USDm)* | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|
| **Core operations** | | | | | |
| **Revenues** | 1,135 | 1,253 | 1,518 | 1,502 | 1,454 |
| Vessel operating costs | | (557) | (574) | (617) | (649) |
| Sales, project and project management cost | | (134) | (167) | (154) | (166) |
| Imaging, Geoscience and Engineering cost | | (135) | (137) | (150) | (155) |
| Other | | (21) | (55) | (25) | (29) |
| Total cash cost of sales | - | (847) | (934) | (945) | (998) |
| Less Amount capitalized to MultiClient Libary | | 204 | 291 | 374 | 344 |
| Net Cost of Sales | (594) | (643) | (642) | (571) | (654) |
| R&D | (22) | (24) | (38) | (39) | (38) |
| SG&A | (56) | (51) | (61) | (63) | (60) |
| Other operating (expense) income | - | 4 | 1 | 1 | 1 |
| COGS | (672) | (714) | (741) | (672) | (750) |
| **EBITDA** | **463** | **539** | **777** | **830** | **703** |
| Depreciation | (135) | (161) | (140) | (131) | (181) |
| Amortization | (191) | (237) | (345) | (302) | (344) |
| Impairment (reversal) of long term assets | (79) | (3) | 1 | (15) | (74) |
| **Operating profit (EBIT)** | **58** | **139** | **294** | **382** | **104** |
| Tax on core operations | 3 | (9) | (25) | (74) | (43) |
| **NOPAT** | **61** | **129** | **269** | **308** | **61** |
| **Non core operations** | | | | | |
| Loss from associated companies | (10) | (12) | (4) | (14) | (31) |
| Interest expense | (47) | (42) | (38) | (32) | (30) |
| Other financial expense net | (3) | (20) | (23) | (8) | (27) |
| **Net financial profit/loss** | **(60)** | **(74)** | **(65)** | **(54)** | **(88)** |
| **Income before income tax** | **(2)** | **65** | **228** | **328** | **17** |
| **Tax adjustments** | | | | | |
| Corporate tax rate (Norway) | 28% | 28% | 28% | 28% | 28% |
| Tax | (14) | (30) | (43) | (90) | (68) |
| Tax on non core operating items (tax shield) | (17) | (21) | (18) | (15) | (25) |
| **Tax core operations** | **3** | **(9)** | **(25)** | **(74)** | **(43)** |
| **Net Income (loss)** | **(16)** | **35** | **186** | **238** | **(51)** |

Source: Own creation, PGS annual reports

## Appendix 4.2 Historical cost drivers

**Appendix 4.1– Historical cost drivers**

| *Cost drivers (in % ov revenues)* | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|
| Vessel operating costs | 0% | -44% | -38% | -41% | -45% |
| Sales, project and project management cost | 0% | -11% | -11% | -10% | -11% |
| Imaging, Geoscience and Engineering cost | 0% | -11% | -9% | -10% | -11% |
| Other | 0% | -2% | -4% | -2% | -2% |
| Amount capitalized to MultiClient Libary | 0% | 16% | 19% | 25% | 24% |
| | | | | | |
| R&D | -2% | -2% | -3% | -3% | -3% |
| SG&A | -5% | -4% | -4% | -4% | -4% |
| Other operating (income) expense | 0% | 0% | 0% | 0% | 0% |
| Depreciation | -12% | -13% | -9% | -9% | -12% |
| Amortization | -49% | -47% | -47% | -45% | -57% |
| Impairment (reversal) of long term assets | -7% | 0% | 0% | -1% | -5% |
| Tax rate (tax on core in % of EBIT) | 5% | -7% | -8% | -19% | -41% |
| | | | | | |
| Loss from associated companies | -1% | -1% | 0% | -1% | -2% |
| Interest rate (interest expense % of NIBD) | -17% | -10% | -9% | -5% | -3% |
| Other financial expense net | 0% | -2% | -2% | -1% | -2% |

Source: Own creation, PGS annual reports

## Appendix 4.3 Historical investment drivers

**Appendix 4.3– Historical investment drivers**

| *Investment Drivers* | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|
| **Non-current assets (% of revenue)** | | | | | |
| PP&E | 107% | 103% | 95% | 109% | 114% |
| MC Library | 27% | 27% | 25% | 38% | 48% |
| Deferred tax assets | 19% | 14% | 11% | 7% | 7% |
| Other long term assets | 2% | 2% | 5% | 6% | 4% |
| Equity accounted investments | 2% | 4% | 0% | 0% | 0% |
| Available for sale investments | 3% | 2% | 0% | 0% | 0% |
| Total non-current assets | 160% | 152% | 136% | 160% | 173% |
| | | | | | |
| **Current assets (% of revenue)** | | | | | |
| Accounts receivable | 20% | 18% | 12% | 12% | 18% |
| Accrued revenues and other receivables | 13% | 9% | 10% | 12% | 12% |
| Other current assets | 9% | 8% | 7% | 8% | 9% |
| Available for sale assets | 0% | 0% | 0% | 0% | 0% |
| Total current assets | 41% | 35% | 29% | 32% | 40% |
| | | | | | |
| **Non-interest bearing debt (% of revenue)** | | | | | |
| Deferred tax liabilities | 2% | 1% | 1% | 0% | 1% |
| Other long term liabilities | 8% | 5% | 5% | 4% | 5% |
| Accounts payable | 8% | 5% | 4% | 4% | 5% |
| Accrued expenses | 22% | 21% | 18% | 19% | 19% |
| Income tax payable | 4% | 2% | 2% | 2% | 3% |
| **Total non-interest bearing debt** | 44% | 34% | 29% | 30% | 33% |
| | | | | | |
| **Operating working capital** | -2% | 1% | 0% | 2% | 7% |
| | | | | | |
| **Equity (in % of revenue)** | 155% | 141% | 126% | 138% | 131% |
| | | | | | |
| **Interest bearing debt (in % of invested capital)** | | | | | |
| Long term debt | 39% | 34% | 39% | 37% | 39% |
| Long-term lease obligations | 0% | 0% | 0% | 0% | 0% |
| Short-term debt and current portion of LT debt | 0% | 8% | 0% | 0% | 1% |
| Current portion of lease obligations | 0% | 0% | 0% | 0% | 0% |
| **Interest bearing debt** | 39% | 43% | 39% | 38% | 40% |
| | | | | | |
| **Interest bearing assets (in % of invested capital)** | | | | | |
| Restricted cash non current | 3% | 4% | 4% | 3% | 2% |
| Restricted cash | 0% | 0% | 0% | 1% | 1% |
| Cash and cash equivalents | 21% | 19% | 17% | 10% | 2% |
| **Interest bearing assets** | 25% | 24% | 21% | 13% | 5% |
| | | | | | |
| NIBD as % of invested capital | 14% | 19% | 19% | 25% | 35% |

Source: Own creation, PGS annual reports

## Appendix 4.4 Reformulated balance sheet

**Appendix 4.4– Reformulated balance sheet**

| Analytical Balance Sheet (USDm) | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|
| **CORE OPERATIONS** | | | | | |
| ***Non-current assets*** | | | | | |
| PP&E | 1,213 | 1,293 | 1,438 | 1,630 | 1,664 |
| MC Library | 311 | 334 | 382 | 577 | 695 |
| Goodwill | 140 | 140 | 140 | 140 | 140 |
| Other long term assets | 27 | 24 | 80 | 85 | 55 |
| Other intangible assets | 103 | 135 | 143 | 165 | 184 |
| Deferred tax assets | 211 | 178 | 170 | 110 | 96 |
| Equity accounted investments | 25 | 49 | 0 | 0 | 0 |
| Available for sale investments | 33 | 25 | 0 | 0 | 0 |
| **Total non-current assets** | **2,062** | **2,177** | **2,353** | **2,706** | **2,834** |
| ***Current assets*** | | | | | |
| Accounts receivable | 225 | 221 | 176 | 177 | 266 |
| Accrued revenues and other receivables | 145 | 110 | 154 | 183 | 181 |
| Other current assets | 98 | 105 | 110 | 125 | 136 |
| Available for sale assets | 0 | 6 | 0 | 0 | 0 |
| **Total current assets** | **469** | **442** | **440** | **485** | **583** |
| ***Non-interest-bearing debt*** | | | | | |
| Deferred tax liabilities | 21 | 17 | 9 | 6 | 14 |
| Accounts payable | 95 | 62 | 61 | 66 | 75 |
| Accrued expenses | 245 | 266 | 276 | 279 | 272 |
| Income tax payable | 44 | 21 | 31 | 34 | 38 |
| Other long term liabilities | 91 | 63 | 71 | 62 | 77 |
| **Total non-interest-bearing debt** | **496** | **429** | **447** | **448** | **477** |
| **Operating working capital** | **-27** | **13** | **-7** | **37** | **106** |
| **Invested capital net operating assets** | **2,035** | **2,190** | **2,346** | **2,743** | **2,940** |
| **NON-CORE OPERATIONS** | | | | | |
| ***Equity*** | | | | | |
| **Total equity** | **1,755.3** | **1,771.7** | **1,912** | **2,066** | **1,902** |
| ***Net interest-bearing debt*** | | | | | |
| Long term debt | 784 | 753 | 916 | 1,020 | 1,160 |
| Short-term debt and current portion of LT debt | 0 | 183 | 1 | 11 | 25 |
| Long-term lease obligations | 0 | 0 | 0 | 0 | 0 |
| Current portion of lease obligations | 0 | 0 | 0 | 0 | 0 |
| **Interest-bearing debt** | **784** | **937** | **917** | **1,030** | **1,185** |
| Restricted cash non current | 66 | 89 | 86 | 75 | 72 |
| Restricted cash current | 5 | 5 | 7 | 15 | 20 |
| Cash and cash equivalents | 433 | 425 | 390 | 264 | 55 |
| **Interest-bearing assets** | **504** | **518** | **483** | **353** | **147** |
| **Net interest-bearing debt** | **280** | **418** | **434** | **677** | **1,038** |
| **Invested capital net financial assets** | **2,035** | **2,190** | **2,346** | **2,743** | **2,940** |

Source: Own creation, PGS annual reports

## Appendix 4.5 Cash flow statement

**Appendix 4.5– Cash flow**

| Cash flow (USDm) | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|
| NOPAT | 61 | 129 | 269 | 308 | 61 |
| Depreciation | 135 | 161 | 140 | 131 | 181 |
| Amortization | 191 | 237 | 345 | 302 | 344 |
| Impairment (reversal) of long term assets | 79 | 3 | (1) | 15 | 74 |
| Change in operating working capital | 128 | (40) | 21 | (44) | (69) |
| Capex | (484) | (552) | (660) | (863) | (727) |
| **Free cash flow to firm** | 110 | (62) | 114 | (151) | (136) |
| | | | | | |
| Change in Net interest bearing debt | (513) | 138 | 16 | 243 | 361 |
| Net financial items | (60) | (74) | (65) | (54) | (88) |
| Tax on non core operating items (tax shield) | 17 | 21 | 18 | 15 | 25 |
| **Free cash flow to equity** | (445) | 23 | 83 | 53 | 162 |
| Dividends | (1) | (1) | (42) | (61) | (84) |
| **Cash surplus** | **(446)** | **22** | **41** | **(8)** | **78** |

Source: Own creation, PGS annual reports

# Appendix 4.6 Reformulated income statement and balance sheet of PGS peers

Appendix 4.6.1– Reformulated income statement - CGG

| Reformulated Income Statement (USDm) | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|
| Revenue | 2,189 | 2,270 | 3,414 | 3,768 | 3,097 |
| EBITDA | 760 | 826 | 1,006 | 1,140 | 994 |
| EBIT | 67 | 148 | 331 | -395 | -698 |
| Taxes on EBIT | -40 | -78 | -147 | -141 | -190 |
| NOPAT | 28 | 69 | 184 | -536 | -887 |
| Net Financial Items | -97 | -124 | -176 | -214 | -244 |
| Net interest expense | -102 | -106 | -152 | -179 | -181 |
| Tax saving from debt financing | -26 | -33 | -48 | -58 | -66 |
| Net Profit | **-43** | **-21** | **55** | **-692** | **-1,065** |

Source: Own creation, CGG annual reports

**Appendix 4.6.2– Reformulated balance sheet - CGG**

| Analytical Balance Sheet (USDm) | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|
| **CORE OPERATIONS** | | | | | |
| ***Non-current assets*** | | | | | |
| PP&E | 782 | 914 | 1,160 | 1,558 | 1,238 |
| Goodwill | 2,012 | 2,078 | 2,416 | 2,483 | 2,042 |
| Other intangible assets | 721 | 669 | 935 | 1,272 | 1,374 |
| Deferred tax assets | 135 | 146 | 171 | 223 | 98 |
| Investments and other financial assets, net | 27 | 19 | 54 | 48 | 142 |
| Investments in companies under equity method | 73 | 100 | 125 | 326 | 138 |
| **Total non-current assets** | **3,750** | **3,925** | **4,860** | **5,909** | **5,031** |
| ***Current assets*** | | | | | |
| Inventories and work in-progress, net | 265 | 279 | 419 | 505 | 417 |
| Income tax assets | 85 | 92 | 112 | 118 | 146 |
| Other current assets | 121 | 121 | 140 | 176 | 127 |
| Trade accounts and notes receivables | 695 | 677 | 889 | 987 | 943 |
| Assets held for sale | 73 | 50 | 394 | 38 | 38 |
| **Total current assets** | **1,238** | **1,220** | **1,953** | **1,824** | **1,671** |
| ***Non-interest-bearing debt*** | | | | | |
| Deferred tax liabilities | 117 | 86 | 106 | 149 | 154 |
| Other non-current liabilities | 35 | 39 | 47 | 42 | 31 |
| Accrued payroll costs | 109 | 144 | 210 | 251 | 223 |
| Income taxes payables | 62 | 124 | 97 | 74 | 72 |
| Advance billings to customers | 25 | 39 | 36 | 52 | 54 |
| Other current liabilities | 196 | 210 | 300 | 284 | 232 |
| Provisions - non current portion | 88 | 83 | 124 | 143 | 220 |
| Provisions - current portion | 42 | 27 | 21 | 73 | 106 |
| Trade accounts and notes payables | 296 | 299 | 506 | 558 | 444 |
| **Total non-interest-bearing debt** | **969** | **1,049** | **1,446** | **1,625** | **1,536** |
| **Operating working capital** | **269** | **171** | **507** | **199** | **135** |
| **Invested capital net operating assets** | **4,020** | **4,097** | **5,367** | **6,107.7** | **5,166.0** |
| **NON-CORE OPERATIONS** | | | | | |
| ***Equity*** | | | | | |
| **Total equity** | **2,870** | **3,006** | **4,582** | **3,890** | **2,746** |
| ***Net interest-bearing debt*** | | | | | |
| Bank overdrafts | 5 | 5 | 4 | 5 | 3 |
| Current portion of financial debt | 75 | 50 | 48 | 247 | 76 |
| Financial debt | 1,407 | 1,447 | 2,253 | 2,496 | 2,700 |
| **Interest-bearing debt** | **1,486** | **1,501** | **2,305** | **2,748** | **2,779** |
| Cash and cash equivalents | 336 | 411 | 1,520 | 530 | 359 |
| **Interest-bearing assets** | **336** | **411** | **1,520** | **530** | **359** |
| **Net interest-bearing debt** | **1,150** | **1,090** | **785** | **2,218** | **2,420** |
| **Invested capital net financial assets** | **4,020** | **4,097** | **5,367** | **6,107.7** | **5,166.0** |

Source: Own creation, CGG annual reports

**Appendix 4.6.3– Reformulated income statement - Dolphin**

| Reformulated Income Statement ($000's) | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|
| Revenue | 2 | 98 | 221 | 246 | 440 |
| EBITDA | -1 | 14 | 81 | 76 | 125 |
| EBIT | -4 | 3 | 41 | 31 | 55 |
| Taxes on EBIT | 4 | -3 | -7 | -10 | -18 |
| NOPAT | 0.1 | 0 | 34 | 21 | 37 |
| | | | | | |
| Net Financial Items | 0 | -2 | -2 | -12 | -20 |
| Net interest expense | 0 | 0 | -1 | -8 | -16 |
| Tax saving from debt financing | 0 | -1 | 0 | -3 | -5 |
| | | | | | |
| Net Profit | **0.1** | **-1** | **33** | **12** | **22** |

Source: Own creation, Dolphin annual reports

**Appendix 4.6.4– Reformulated balance sheet - Dolphin**

| Analytical Balance Sheet ($000's) | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|
| **CORE OPERATIONS** | | | | | |
| ***Non-current assets*** | | | | | |
| PP&E | 0 | 77 | 137 | 220 | 302 |
| MC Library | 0 | 9 | 39 | 86 | 112 |
| Goodwill | 0 | 0 | 6 | 7 | 7 |
| Other intangible assets | 2 | 2 | 1 | 2 | 5 |
| Deferred tax assets | 5 | 4 | 1 | 4 | 0 |
| **Total non-current assets** | **7** | **91** | **184** | **320** | **425** |
| | | | | | |
| ***Current assets*** | | | | | |
| Accounts receivable | 0 | 26 | 74 | 28 | 64 |
| Accrued revenues and other receivables | 0 | 9 | 20 | 29 | 70 |
| Inventories and prepayments | 0 | 7 | 13 | 34 | 43 |
| Cash and cash equivalents | 63 | 57 | | | |
| **Total current assets** | **63** | **99** | **108** | **90** | **177** |
| | | | | | |
| ***Non-interest-bearing debt*** | | | | | |
| Long term liabilities | 0 | 30 | 0 | 0 | 0 |
| Short-term debt and current portion of LT debt (non interest b | 0 | 12 | 0 | 0 | 0 |
| Deferred tax liabilities | 0 | 0 | 3 | 13 | 18 |
| Accounts payable | 0 | 16 | 35 | 41 | 108 |
| Other short term liabilities | 1 | 10 | 20 | 15 | 17 |
| Income tax payable | 0 | 0 | 0 | 0 | 0 |
| Other long term liabilities | 0 | 0 | 2 | 2 | 1 |
| Partnershare | 0 | 2 | 0 | 0 | 0 |
| **Total non-interest-bearing debt** | **1** | **70** | **60** | **70** | **143** |
| | | | | | |
| **Operating working capital** | **62** | **28** | **47** | **20** | **35** |
| | | | | | |
| **Invested capital net operating assets** | **69** | **119** | **231** | **339** | **459** |
| | | | | | |
| **NON-CORE OPERATIONS** | | | | | |
| ***Equity*** | | | | | |
| **Total equity** | **70** | **116** | **189** | **245** | **261** |
| | | | | | |
| ***Net interest-bearing debt*** | | | | | |
| | | | | | |
| Interest bearing loan | - | 4 | 105 | 154 | 204 |
| Short term debt and curret portion of long term debt | - | - | 22 | 23 | 39 |
| **Interest-bearing debt** | - | **4** | **127** | **177** | **243** |
| | | | | | |
| Cash and cash equivalents | | | 78 | 75 | 37 |
| Investment in shares | 0 | 0 | 0 | 0 | 1 |
| Long term receivables (interest bearing) | 0 | 0 | 7 | 7 | 6 |
| **Interest-bearing assets** | **0** | **0** | **85** | **83** | **44** |
| | | | | | |
| **Net interest-bearing debt** | **0** | **4** | **42** | **95** | **199** |
| | | | | | |
| **Invested capital net financial assets** | **69** | **119** | **231** | **339** | **459** |

Source: Own creation, Dolphin annual reports

**Appendix 4.6.5 – Reformulated income statement - Polarcus**

| Reformulated income statement ($000's) | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|
| Revenue | 123 | 299 | 529 | 532 | 467 |
| EBITDA | 31 | 76 | 190 | 212 | 150 |
| EBIT | 3 | 16 | 91 | 118 | -1 |
| Taxes on EBIT | -8 | -13 | -23 | -21 | -21 |
| NOPAT | -6 | 3 | 68 | 97 | -22 |
| | | | | | |
| Net Financial Items | -31 | -47 | -80 | -74 | -77 |
| Net Interest expense | -6 | -30 | -52 | -50 | -43 |
| Tax saving from debt financing | -8 | -13 | -22 | -20 | -21 |
| | | | | | |
| Net Profit | **-28** | **-31** | **10** | **43** | **-79** |

Source: Own creation, Polarcus annual reports

**Appendix 4.6.6– Reformulated balance sheet - Polarcus**

| Analytical Balance Sheet ($000's) | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|
| **CORE OPERATIONS** | | | | | |
| ***Non-current assets*** | | | | | |
| PP&E | 479 | 867 | 1,000 | 973 | 928 |
| MC Library | 0 | 10 | 49 | 89 | 89 |
| Vessel prepayments | 28 | 28 | 0 | 0 | 0 |
| Other intangible assets | 3 | 1 | 0 | 37 | 32 |
| Vessel buyback options | 20 | 0 | 0 | 0 | 0 |
| Vessels under construction | 201 | 5 | 0 | 0 | 0 |
| Equity accounted investments | 0 | 0 | 3 | 2 | 2 |
| **Total non-current assets** | **730** | **911** | **1,052** | **1,101** | **1,051** |
| | | | | | |
| ***Current assets*** | | | | | |
| Accounts receivable | 18 | 55 | 76 | 42 | 58 |
| Prepaid expenses | 2 | 5 | 0 | 0 | 0 |
| Other current assets | 26 | 52 | 64 | 91 | 56 |
| Available for sale assets | 0 | 0 | 128 | 0 | 0 |
| **Total current assets** | **47** | **112** | **268** | **133** | **115** |
| | | | | | |
| ***Non-interest-bearing debt*** | | | | | |
| Deferred tax liabilities | 0 | 0 | 0 | 0 | 0 |
| Accounts payable | 30 | 28 | 44 | 39 | 19 |
| Accrued expenses | 7 | 4 | 46 | 30 | 40 |
| Income tax payable | 0 | 0 | 0 | 0 | 0 |
| Other long term liabilities | 73 | 111 | 294 | 277 | 236 |
| Other accrued expenses | 7 | 17 | 0 | 0 | 0 |
| Employee pension accrual | 0 | 0 | 0 | 0 | 0 |
| Deferred payments to vendors | 60 | 0 | 0 | 0 | 0 |
| Liability for warrants | 7 | 0 | 0 | 0 | 0 |
| Other financial liabilities | 0 | 0 | 0 | 0 | 13 |
| **Total non-interest-bearing debt** | **184** | **161** | **384** | **345** | **309** |
| | | | | | |
| **Operating working capital** | **-137** | **-49** | **-116** | **-212** | **-194** |
| | | | | | |
| **Invested capital net operating assets** | **593** | **863** | **936** | **889** | **857** |
| | | | | | |
| **NON-CORE OPERATIONS** | | | | | |
| ***Equity*** | | | | | |
| **Total equity** | **392** | **430** | **481** | **528** | **485** |
| | | | | | |
| ***Net interest-bearing debt*** | | | | | |
| | | | | | |
| Long term debt | 162 | 299 | 202 | 203 | 227 |
| Short-term debt and current portion of LT debt | 11 | 13 | 127 | 79 | 44 |
| Long-term lease obligations | 194 | 171 | 160 | 154 | 165 |
| Current portion of lease obligations | 22 | 25 | 17 | 6 | 8 |
| Interest payable | 9 | 9 | 0 | 0 | 0 |
| **Interest-bearing debt** | **399** | **517** | **507** | **442** | **445** |
| | | | | | |
| Restricted cash current | 111 | 24 | 8 | 20 | 8 |
| Cash and cash equivalents | 87 | 60 | 44 | 60 | 65 |
| **Interest-bearing assets** | **198** | **84** | **52** | **81** | **74** |
| | | | | | |
| **Net interest-bearing debt** | **201** | **433** | **455** | **361** | **371** |
| | | | | | |
| **Invested capital net financial assets** | **593** | **863** | **936** | **889** | **857** |

Source: Own creation, Polarcus annual reports

**Appendix 4.6.7– Reformulated income statement - Seabird**

| Reformulated income statement ($000's) | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|
| Revenue | 94 | 82 | 163 | 178 | 129 |
| EBITDA | 5 | -9 | 39 | 32 | -8 |
| EBIT | -48 | -97 | 4 | 5 | -80 |
| Taxes on EBIT | -9 | -9 | -13 | -2 | -7 |
| NOPAT | -57 | -105 | -8 | 3 | -87 |
| | | | | | |
| Net Financial Items | -15 | -21 | -13 | -13 | -18 |
| Net interest expense | -8 | -16 | -11 | -10 | -9 |
| Tax saving from debt financing | -4 | -6 | -4 | -3 | -5 |
| | | | | | |
| Net Profit | **-68** | **-120** | **-18** | **-7** | **-100** |

Source: Own creation, Seabird annual reports

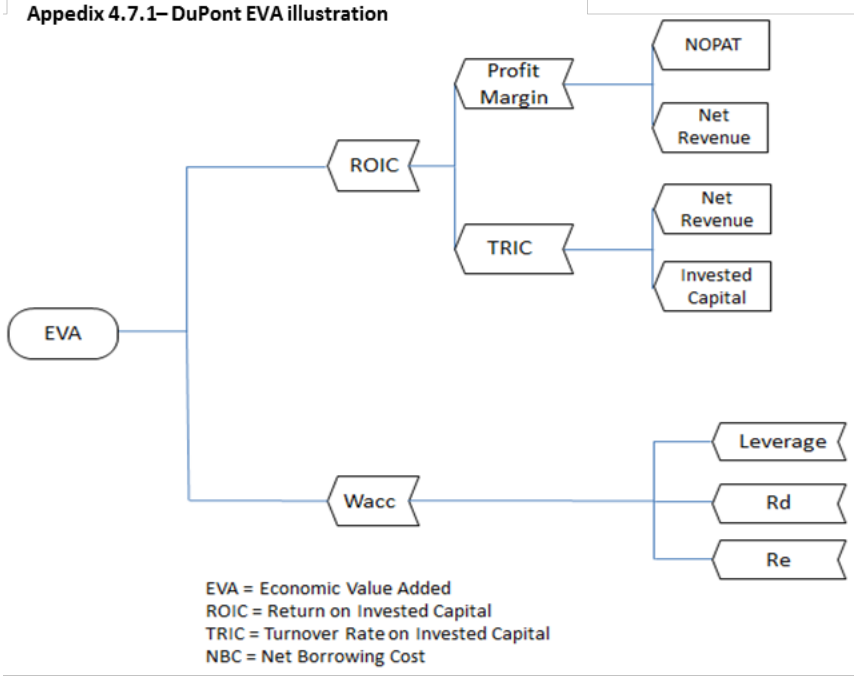
**Appendix 4.6.8 – Reformulated balance sheet- Seabird**

| Analytical Balance Sheet ($000's) | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|
| **CORE OPERATIONS** | | | | | |
| ***Non-current assets*** | | | | | |
| PP&E | 276 | 137 | 131 | 123 | 79 |
| MC Library | 6 | 17 | 3 | 7 | 15 |
| Goodwill | 9 | 1 | 1 | 1 | 0 |
| Capital work in progress | 1 | 0 | 0 | 0 | 0 |
| Deferred tax assets | 14 | 0 | 0 | 0 | 0 |
| Patent technology | 4 | 0 | 0 | 0 | 0 |
| **Total non-current assets** | **310** | **155** | **135** | **131** | **94** |
| | | | | | |
| ***Current assets*** | | | | | |
| Trade receivables | 40 | 31 | 33 | 25 | 14 |
| Due from related parties | 0 | 0 | 0 | 0 | 0 |
| Inventories | 4 | 5 | 4 | 4 | 4 |
| Other current assets | 3 | 15 | 10 | 16 | 22 |
| **Total current assets** | **48** | **51** | **47** | **45** | **40** |
| | | | | | |
| ***Non-interest-bearing debt*** | | | | | |
| | | | | | |
| Fair value of conversion rights | 7 | 0 | 0 | 0 | 0 |
| Other long term liabilities | 1 | 1 | 0 | 0 | 0 |
| Trade and other payables | 45 | 48 | 27 | 25 | 64 |
| Tax liabilities | 0 | 0 | 14 | 6 | 6 |
| Provisions for end of service benefits | 0 | 0 | 1 | 1 | 0 |
| Provisions | 0 | 0 | 0 | 0 | 10 |
| **Total non-interest-bearing debt** | **53** | **49** | **42** | **32** | **80** |
| | | | | | |
| **Operating working capital** | **-5** | **2** | **5** | **14** | **-39** |
| | | | | | |
| **Invested capital net operating assets** | **305** | **157** | **140** | **145** | **54** |
| | | | | | |
| **NON-CORE OPERATIONS** | | | | | |
| ***Equity*** | | | | | |
| **Total equity** | **133** | **49** | **53** | **58** | **-41** |
| | | | | | |
| ***Net interest-bearing debt*** | | | | | |
| | | | | | |
| Interest bearing loan | 137 | 100 | 94 | 72 | 0 |
| Short term debt and curret portion of long term debt | 36 | 21 | 8 | 27 | 102 |
| **Interest-bearing debt** | **173** | **121** | **102** | **99** | **102** |
| | | | | | |
| Cash and cash equivalents | 1 | 13 | 15 | 12 | 7 |
| **Interest-bearing assets** | **1** | **13** | **15** | **12** | **7** |
| | | | | | |
| **Net interest-bearing debt** | **172** | **108** | **87** | **87** | **95** |
| | | | | | |
| **Invested capital net financial assets** | **305** | **157** | **140** | **145** | **54** |

Source: Own creation, Seabird annual reports

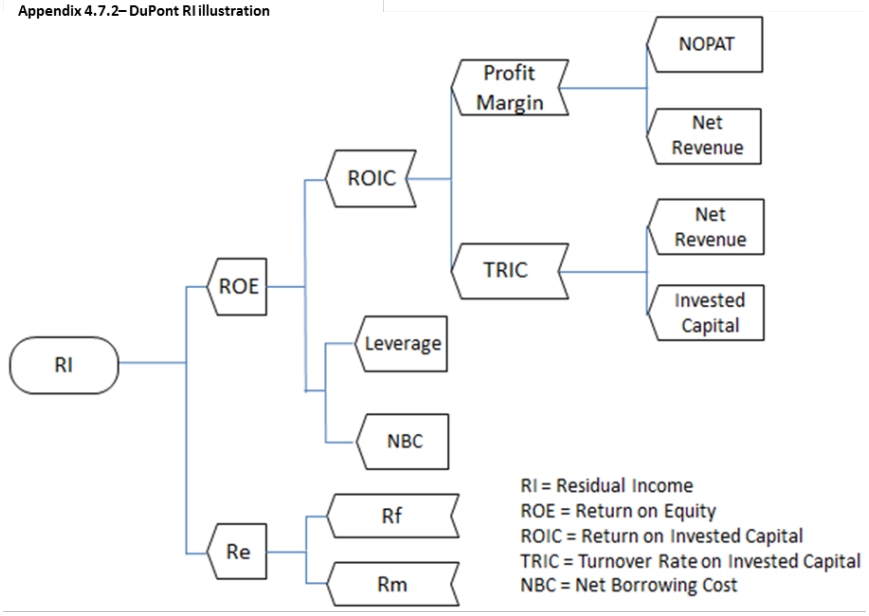
## Appendix 4.7 DuPont analysis PGS and Peers

**Appedix 4.7.1– DuPont EVA illustration**




Source: Own creation, Petersen and Plenborg 2012

**Appendix 4.7.2– DuPont RI illustration**




Source: Own creation, Petersen and Plenborg 2012

**Appendix 4.7.3 – DuPont analysis - PGS**

| Dupont | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|
| ROIC | 3.0% | 5.9% | 11.5% | 11.2% | 2.1% |
| ROIC #2 | 3.0% | 5.9% | 11.5% | 11.2% | 2.1% |
| | | | | | |
| Profit margin | 5.3% | 10.3% | 17.7% | 20.5% | 4.2% |
| | | | | | |
| Turnover rate of invested capital | **0.56** | **0.57** | **0.65** | **0.55** | **0.49** |
| | | | | | |
| Net borrowing cost (NBC) | 27.4% | 22.7% | 19.3% | 10.2% | 10.8% |
| Net financial expenses after tax | -77 | -95 | -84 | -69 | -112 |
| NIBD | 280 | 418 | 434 | 677 | 1,038 |
| BVE | 1,755 | 1,772 | 1,912 | 2,066 | 1,902 |
| | | | | | |
| Spread | -24.4% | -16.8% | -7.8% | 1.0% | -8.7% |
| | | | | | |
| ROE | -0.9% | 1.9% | 9.7% | 11.5% | -2.7% |
| ROE (Net profit/BVE) | -0.9% | 1.9% | 9.7% | 11.5% | -2.7% |
| | | | | | |
| Leverage (NIBD/BVE) | 0.2 | 0.2 | 0.2 | 0.3 | 0.5 |
| | | | | | |
| re | 10.5% | 10.5% | 10.5% | 10.5% | 10.5% |
| Wacc | 8.5% | 8.5% | 8.5% | 8.5% | 8.5% |
| Value added (RI) | -201 | -152 | -16 | 21 | -251 |
| Value added (EVA) | -112 | -56 | 70 | 75 | -188 |

Source: Own creation, PGS annual reports, Petersen and Plenborg 2012

**Appendix 4.7.4 – DuPont analysis - CGG**

| Dupont | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|
| ROIC | 0.7% | 1.7% | 3.4% | -8.8% | -17.2% |
| ROIC #2 | 0.7% | 1.7% | 3.4% | -8.8% | -17.2% |
| | | | | | |
| Profit margin | 1.3% | 3.1% | 5.4% | -14.2% | -28.6% |
| | | | | | |
| Turnover rate of invested capital | **0.54** | **0.55** | **0.64** | **0.62** | **0.60** |
| | | | | | |
| Net borrowing cost (NBC) | 6.2% | 8.3% | 16.4% | 7.0% | 7.3% |
| Net financial expenses after tax | -71 | -90 | -129 | -156 | -178 |
| NIBD | 1,150 | 1,090 | 785 | 2,218 | 2,420 |
| BVE | 2,870 | 3,006 | 4,582 | 3,890 | 2,746 |
| | | | | | |
| Spread | -5.5% | -6.6% | -13.0% | -15.8% | -24.5% |
| | | | | | |
| ROE | -1.5% | -0.7% | 1.2% | -17.8% | -38.8% |
| ROE (Net profit/average BVE of last 2 years) | -1.5% | -0.7% | 1.2% | -17.8% | -38.8% |
| | | | | | |
| Leverage (NIBD/BVE) | 0.40 | 0.36 | 0.17 | 0.57 | 0.88 |
| | | | | | |
| re | 14.6% | 14.6% | 14.6% | 14.6% | 14.6% |
| Wacc | 12.1% | 12.1% | 12.1% | 12.1% | 12.1% |
| Value added (RI) | -463 | -461 | -615 | -1,261 | -1,466 |
| Value added (EVA) | -458 | -426 | -465 | -1,274 | -1,512 |

Source: Own creation, CGG annual reports, Petersen and Plenborg 2012

**Appendix 4.7.5 – DuPont analysis - Dolphin**

| Dupont | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|
| ROIC | 0% | 0% | 15% | 6% | 8% |
| ROIC #2 | 0% | 0% | 15% | 6% | 8% |
| | | | | | |
| Profit margin | 4.0% | 0.5% | 15.3% | 8.5% | 8.3% |
| | | | | | |
| Turnover rate of invested capital | **0.02** | **0.82** | **0.96** | **0.73** | **0.96** |
| | | | | | |
| Net borrowing cost (NBC) | 3.6% | 36.6% | 2.9% | 9.0% | 7.3% |
| Net financial expenses after tax | 0 | -1 | -1 | -9 | -15 |
| NIBD | 0 | 4 | 42 | 95 | 199 |
| BVE | 70 | 116 | 189 | 245 | 261 |
| | | | | | |
| Spread | -3.6% | -36.2% | 11.8% | -2.8% | 0.6% |
| | | | | | |
| ROE | 0.1% | -0.8% | 17.3% | 5.1% | 8.5% |
| ROE (Net profit/BVE) | 0.1% | -0.8% | 17.3% | 5.1% | 8.5% |
| | | | | | |
| Leverage (NIBD/BVE) | -0.01 | 0.03 | 0.22 | 0.39 | 0.76 |
| | | | | | |
| re | 10.1% | 10.1% | 10.1% | 10.1% | 10.1% |
| Wacc | 8.9% | 8.9% | 8.9% | 8.9% | 8.9% |
| Value added (RI) | -7 | -13 | 14 | -12 | -4 |
| Value added (EVA) | -6 | -10 | 13 | -9 | -4 |

Source: Own creation, Dolphin annual reports, Petersen and Plenborg 2012

**Appendix 4.7.6 – DuPont analysis – Polarcus**

| Dupont | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|
| ROIC | -1.0% | 0.3% | 7.3% | 11.0% | -2.6% |
| ROIC #2 | -1.0% | 0.3% | 7.3% | 11.0% | -2.6% |
| | | | | | |
| Profit margin | -4.7% | 0.9% | 12.8% | 18.3% | -4.79% |
| | | | | | |
| Turnover rate of invested capital | **0.21** | **0.35** | **0.57** | **0.60** | **0.54** |
| | | | | | |
| Net borrowing cost (NBC) | 11.2% | 7.9% | 12.8% | 15.0% | 15.2% |
| Net financial expenses after tax | -23 | -34 | -58 | -54 | -56 |
| NIBD | 201 | 433 | 455 | 361 | 371 |
| BVE | 392 | 430 | 481 | 528 | 485 |
| | | | | | |
| Spread | -12.2% | -7.6% | -5.5% | -4.0% | -17.8% |
| | | | | | |
| ROE | -7.2% | -7.3% | 2.0% | 8.2% | -16.2% |
| ROE (Net profit/BVE) | -7.2% | -7.3% | 2.0% | 8.2% | -16.2% |
| | | | | | |
| Leverage (NIBD/BVE) | 0.51 | 1.01 | 0.94 | 0.68 | 0.76 |
| | | | | | |
| re | 18.5% | 18.5% | 18.5% | 18.5% | 18.5% |
| Wacc | 11.8% | 11.8% | 11.8% | 11.8% | 11.8% |
| Value added (RI) | -101 | -111 | -79 | -54 | -168 |
| Value added (EVA) | -75 | -99 | -42 | -7 | -123 |

Source: Own creation, Polarcus annual reports, Petersen and Plenborg 2012

**Appendix 4.7.7 – DuPont analysis – Seabird**

| Dupont | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|
| ROIC | -18.7% | -66.9% | -6.0% | 1.9% | -159.9% |
| ROIC #2 | -18.7% | -66.9% | -6.0% | 1.9% | -159.9% |
| | | | | | |
| Profit margin | -60.8% | -128.6% | -5.1% | 1.5% | -67.2% |
| | | | | | |
| Turnover rate of invested capital | **0.31** | **0.52** | **1.16** | **1.23** | **2.38** |
| | | | | | |
| Net borrowing cost (NBC) | 6.2% | 14.2% | 11.2% | 10.8% | 13.6% |
| Net financial expenses after tax | -11 | -15 | -10 | -9 | -13 |
| NIBD | 172 | 108 | 87 | 87 | 95 |
| BVE | 133 | 49 | 53 | 58 | -41 |
| | | | | | |
| Spread | -24.9% | -81.1% | -17.2% | -8.9% | -173.5% |
| | | | | | |
| ROE | -50.8% | -244.1% | -34.4% | -11.6% | 243.9% |
| ROE (Net profit/BVE) | -50.8% | -244.1% | -34.4% | -11.6% | 243.9% |
| | | | | | |
| Leverage (NIBD/BVE) | 1.29 | 2.19 | 1.66 | 1.51 | na |
| | | | | | |
| re | 23.7% | 23.7% | 23.7% | 23.7% | 23.7% |
| Wacc | 14.5% | 14.5% | 14.5% | 14.5% | 14.5% |
| Value added (RI) | -99 | -132 | -31 | -20 | -90 |
| Value added (EVA) | -101 | -128 | -29 | -18 | -95 |

Source: Own creation, Seabird annual reports, Petersen and Plenborg 2012

Appendix 4.8 Historic fleet overview

**Appendix 4.8 – Vessel overview and # streamers per vessel historically**

| | 2010 | | | | 2011 | | | | 2012 | | | | 2013 | | | | 2014 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |
| *Ramform Valiant* | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| *Ramform Viking* | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| *Ramform Vanguard* | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| *Ramform Challenger* | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| *Ramform Explorer* | 8 | 8 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| *Pacific Explorer* | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | | | | | |
| *Atlantic Explorer* | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| *Nordic Explorer* | | | | | 6 | 6 | 6 | 6 | | | | | | | | | | | | |
| *Ocean Explorer* | | | | | | | | | | | | | | | | | | | | |
| *Orient Explrorer* | | | | | | | | | | | | | | | | | | | | |
| *Sanco Spirit* | | | | | | | | | | | | | | | | | 1 | 1 | 1 | 1 |
| *Ramform Sovereign* | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| *Ramform Sterling* | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| *Apollo* | | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| *Ramform Titan* | | | | | | | | | | | | | | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| *Ramform Atlas* | | | | | | | | | | | | | | | | | 16 | 16 | 16 | 16 |
| *Ramford Tethys* | | | | | | | | | | | | | | | | | | | | |
| *Ramford Hyperion* | | | | | | | | | | | | | | | | | | | | |
| **Total # of streamers** | **94** | **104** | **106** | **106** | **112** | **112** | **114** | **114** | **108** | **108** | **108** | **108** | **108** | **124** | **124** | **118** | **135** | **135** | **135** | **135** |
| Total # of vessels | 9 | 10 | 10 | 10 | 11 | 11 | 11 | 11 | 10 | 10 | 10 | 10 | 10 | 11 | 11 | 10 | 12 | 12 | 12 | 12 |

Source: Own creation, PGS

## Appendix 4.9 Marine Contracting historical price and cost level

**Appendix 4.9 – Marine Contracting historical price and cost level**

| | 2010 | | | | 2011 | | | | 2012 | | | | 2013 | | | | 2014 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |
| Amount of streamer mnds per quarter | 282 | 312 | 318 | 318 | 336 | 336 | 342 | 342 | 324 | 324 | 324 | 324 | 324 | 372 | 372 | 354 | 405 | 405 | 405 | 405 |
| Allocation | 0.59 | 0.46 | 0.57 | 0.79 | 0.60 | 0.49 | 0.59 | 0.67 | 0.57 | 0.40 | 0.46 | 0.47 | 0.54 | 0.50 | 0.37 | 0.41 | 0.36 | 0.48 | 0.62 | 0.59 |
| Streamer mnd used for contracting | 166 | 144 | 181 | 251 | 202 | 165 | 202 | 229 | 185 | 130 | 149 | 152 | 175 | 186 | 138 | 145 | 146 | 194 | 251 | 239 |
| Price per streamer mnd | 0.93 | 0.88 | 0.92 | 0.72 | 0.79 | 0.84 | 0.82 | 0.72 | 0.95 | 0.99 | 1.10 | 1.03 | 1.18 | 1.04 | 1.13 | 0.84 | 0.80 | 0.88 | 0.95 | 0.72 |
| Contracting revenue | 155 | 127 | 166 | 181 | 159 | 138 | 165 | 165 | 175 | 129 | 164 | 156 | 207 | 193 | 156 | 122 | 116 | 172 | 239 | 172 |
| | | | | | | | | | | | | | | | | | | | | |
| Cost per streamer mnd | 0.54 | 0.54 | 0.54 | 0.54 | 0.53 | 0.53 | 0.53 | 0.53 | 0.57 | 0.57 | 0.57 | 0.57 | 0.47 | 0.47 | 0.47 | 0.47 | 0.46 | 0.46 | 0.46 | 0.46 |
| Operating cost contracting | 89 | 77 | 97 | 135 | 107 | 87 | 107 | 121 | 106 | 74 | 85 | 87 | 83 | 88 | 65 | 69 | 68 | 90 | 116 | 111 |

Source: Own creation

## Appendix 4.10 Marine Contracting historical income statement

**Appendix 4.10 – Marine Contracting historical income statement**

| Marine Contracting | | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|---|
| Revenue | USDm | 629 | 627 | 624 | 678 | 698 |
| Cash operating expenses | " | (403) | (359) | (356) | (303) | (383) |
| Gross margin | " | 226 | 268 | 267 | 375 | 315 |
| SG&A (inc. stock based compensation) | " | - | - | - | - | |
| EBITDA | " | 226 | 268 | 267 | 375 | 315 |
| | | | | | | |
| ***Operations*** | | | | | | |
| Number of streamers | # | 1272 | 1368 | 1296 | 1416 | 1620 |
| Number of streamers, average | " | 1230 | 1356 | 1296 | 1422 | 1605 |
| Average Streamers months used for contracting | # | 738 | 678 | 622 | 640 | 819 |
| Utilization | " | 60% | 50% | 48% | 45% | 51% |
| | | | | | | |
| Price per streamer | USDth/mnd | 0.86 | 0.79 | 1.02 | 1.05 | 0.84 |
| Price per streamer | USDth/day | 26 | 24 | 30 | 31 | 25 |
| Day rate | USDth/day | 272 | 244 | 329 | 355 | 301 |
| | | | | | | |
| Cost per streamer | USDth/mnd | 0.54 | 0.53 | 0.57 | 0.47 | 0.46 |
| Cost per streamer | USDth/day | 16 | 16 | 17 | 14 | 14 |
| Running cost (including cost capitalized to MC) | USDth/day | 169 | 163 | 186 | 160 | 167 |

Source: Own creation

## Appendix 4.11 MultiClient historical drivers

**Appendix 4.11 – MultiClient historical drivers**

| | 2010 | | | | 2011 | | | | 2012 | | | | 2013 | | | | 2014 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |
| Amount of streamers per month | 282 | 312 | 318 | 318 | 336 | 336 | 342 | 342 | 324 | 324 | 324 | 324 | 324 | 372 | 372 | 354 | 405 | 405 | 405 | 405 |
| Allocation | 33% | 31% | 29% | 9% | 20% | 33% | 34% | 8% | 31% | 48% | 42% | 28% | 38% | 26% | 57% | 46% | 47% | 37% | 21% | 19% |
| Total revenues in MC | 77 | 60 | 104 | 150 | 52 | 159 | 144 | 146 | 158 | 236 | 187 | 147 | 152 | 155 | 171 | 194 | 139 | 135 | 119 | 206 |
| | | | | | | | | | | | | | | | | | | | | |
| Revenue from pre-funding | 34 | 34 | 54 | 76 | 34 | 90 | 61 | 38 | 109 | 150 | 121 | 81 | 93 | 65 | 108 | 94 | 74 | 75 | 55 | 86 |
| MC cash investment | 52 | 52 | 39 | 24 | 46 | 68 | 62 | 29 | 53 | 82 | 91 | 71 | 73 | 68 | 121 | 111 | 116 | 100 | 70 | 58 |
| MC pre-funding % | 66% | 66% | 139% | 314% | 75% | 131% | 99% | 134% | 206% | 183% | 141% | 114% | 127% | 96% | 90% | 85% | 64% | 75% | 79% | 149% |
| | | | | | | | | | | | | | | | | | | | | |
| Revenues from late sales | 42 | 26 | 51 | 74 | 18 | 70 | 83 | 108 | 49 | 86 | 66 | 66 | 59 | 90 | 63 | 99 | 65 | 60 | 64 | 120 |
| Opex MC | 53 | 44 | 48 | 18 | 34 | 54 | 63 | 16 | 68 | 76 | 70 | 55 | 73 | 45 | 85 | 73 | 72 | 62 | 45 | 41 |
| | | | | | | | | | | | | | | | | | | | | |
| Total operating expense | 160 | 143 | 166 | 203 | 169 | 163 | 187 | 200 | 219 | 159 | 166 | 198 | 193 | 172 | 150 | 159 | 154 | 166 | 213 | 218 |

Source: Own creation

## Appendix 4.12 MultiClient historical income statement

**Appendix 4.12 – MultiClient historical income statement**

| Multi Client | | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|---|
| Revenue | | 391 | 502 | 728 | 672 | 600 |
| Pre Funding | USD/m | 198 | 224 | 461 | 361 | 291 |
| Late Sales | | 192 | 278 | 267 | 311 | 309 |
| Cash operating expense | " | (206) | (244) | (320) | (316) | (287) |
| Pre funding | | (164) | (167) | (276) | (281) | (233) |
| Late sales | | (42) | (77) | (44) | (36) | (54) |
| Gross margin | " | 185 | 258 | 408 | 355 | 313 |
| SG&A (inc. stock based compensation) | " | | | - | - | |
| EBITDA | " | 185 | 258 | 408 | 355 | 313 |
| EBITDA margin | | 53% | 49% | 44% | 47% | 48% |
| | | | | | | |
| ***Operations*** | | | | | | |
| MC cash investment | " | (167) | (204) | (297) | (373) | (344) |
| MC pre-funding % | USD/day | 146% | 110% | 161% | 100% | 92% |
| Number of streamers | # | 1272 | 1368 | 1296 | 1416 | 1620 |
| Number of streamers, average | " | 1230 | 1356 | 1296 | 1422 | 1620 |
| Utilization | " | 26% | 24% | 37% | 42% | 31% |
| Streamers used for multiclient | # | 314 | 322 | 483 | 594 | 502 |

Source: Own creation

## Appendix 4.13 – Historical key ratios PGS

**Appendix 4.13 – Historical key ratios**

| *Capitalisation* | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|
| Shares, average | 217.8 | 217.8 | 217.8 | 217.8 | 217.8 |
| Shares, end period | 217.8 | 217.8 | 217.8 | 217.8 | 217.8 |
| Share price | 14.1 | 11.0 | 15.7 | 11.4 | 5.6 |
| Market cap. | 3,067.2 | 2,387.2 | 3,428.3 | 2,485.0 | 1,216.5 |
| | | | | | |
| **Net interest bearing debt** | 279.9 | 418.2 | 434.2 | 677.2 | 1,038.0 |
| Enterprise value | 3,347.1 | 2,805.4 | 3,862.5 | 3,162.2 | 2,254.5 |
| | | | | | |
| ***Key figures*** | | | | | |
| EPS | (0.07) | 0.16 | 0.85 | 1.09 | (0.23) |
| FCFPS | 0.5 | (0.3) | 0.5 | (0.7) | (0.6) |
| BVPS | 8.1 | 8.1 | 8.8 | 9.5 | 8.7 |
| Net interest rate | 16.8% | 10.1% | 8.7% | 4.8% | 2.9% |
| Tax rate | 636.3% | (46.5)% | (18.8)% | (27.3)% | (404.8)% |
| P/E | (190.7) | 69.2 | 18.5 | 10.4 | (23.9) |
| P/FCFF | 27.8 | (38.4) | 30.2 | (16.4) | (9.0) |
| P/B | 1.7 | 1.3 | 1.8 | 1.2 | 0.6 |
| Div yield | 0.0% | 0.1% | 1.2% | 2.5% | 1.7% |
| EV/EBIT | 57.9 | 20.2 | 13.1 | 8.3 | 21.6 |
| EV/EBITDA | 7.2 | 5.2 | 5.0 | 3.8 | 3.2 |
| EV/Sales | 2.9 | 2.2 | 2.5 | 2.1 | 1.6 |
| ROIC | 3% | 6% | 11% | 11% | 2% |
| ROE | (0.92)% | 1.95% | 9.71% | 11.54% | (2.68)% |
| ROCE, pretax | 5.7% | 12.7% | 25.1% | 27.9% | 7.1% |
| ROA | (0.6)% | 1.3% | 6.6% | 7.5% | (1.5)% |
| Revenue growth | (15.9)% | 10.4% | 21.1% | (1.1)% | (3.2)% |
| EBITDA margin | 40.8% | 43.0% | 51.2% | 55.2% | 48.4% |
| EBIT margin | 5.1% | 11.1% | 19.4% | 25.4% | 7.2% |
| Net profit margin | (1.42)% | 2.75% | 12.22% | 15.87% | (3.50)% |
| NIBD/EBITDA | 0.6 | 0.8 | 0.6 | 0.8 | 1.5 |
| EBITDA/Net interest | 9.9 | 12.8 | 20.6 | 25.7 | 23.4 |
| FCFF/NIBD | 39% | (15)% | 26% | (22)% | (13)% |
| Book equity/Total assets | 69% | 68% | 68% | 65% | 56% |
| Book equity/NIBD | 627% | 424% | 440% | 305% | 183% |
| EBIT growth | -75% | 140% | 112% | 30% | -73% |
| EBITDA growth | -33% | 16% | 44% | 7% | -15% |

Source: Own creation

## 6.0 Forecasting

## Appendix 6.1 Forecasted income statement

**Appendix 6.1– Forecasted Income statement**

| *Income Statement (USDm)* | 2015e | 2016e | 2017e | 2018e | 2019e | 2020e |
|---|---|---|---|---|---|---|
| **Core operations** | | | | | | |
| **Revenues** | 1,238 | 1,402 | 1,666 | 1,773 | 1,864 | 1,902 |
| Vessel operating costs | (560) | (677) | (757) | (776) | (792) | (799) |
| Sales, project and project management cost | (134) | (152) | (180) | (192) | (202) | (206) |
| Imaging, Geoscience and Engineering cost | (125) | (142) | (169) | (179) | (189) | (192) |
| Other | (28) | (31) | (37) | (40) | (42) | (43) |
| Total cash cost of sales | (848) | (1,002) | (1,144) | (1,187) | (1,224) | (1,240) |
| Less Amount capitalized to MultiClient Libary | 235 | 308 | 400 | 443 | 466 | 476 |
| Net Cost of Sales | (612) | (694) | (744) | (744) | (758) | (765) |
| R&D | (29) | (32) | (38) | (41) | (43) | (44) |
| SG&A | (53) | (60) | (71) | (76) | (80) | (81) |
| Other operating (expense) income | 1 | 1 | 2 | 2 | 2 | 2 |
| COGS | (692) | (785) | (852) | (859) | (879) | (888) |
| **EBITDA** | **546** | **617** | **815** | **914** | **984** | **1,014** |
| Depreciation | (136) | (154) | (167) | (177) | (186) | (190) |
| Amortization | (308) | (295) | (320) | (342) | (354) | (364) |
| Impairment (reversal) of long term assets | (33) | (37) | (44) | (47) | (49) | (50) |
| **Operating profit (EBIT)** | **69** | **131** | **284** | **348** | **395** | **410** |
| Tax on core operations | **(19)** | **(35)** | **(77)** | **(94)** | **(107)** | **(111)** |
| **NOPAT** | **50** | **95** | **208** | **254** | **288** | **299** |
| **Non core operations** | | | | | | |
| Loss from associated companies | (13) | (15) | (17) | (19) | (20) | (20) |
| Interest expense | (52) | (52) | (63) | (62) | (58) | (58) |
| Other financial expense net | (14) | (16) | (19) | (20) | (21) | (22) |
| **Net financial profit/loss** | **(79)** | **(83)** | **(99)** | **(101)** | **(99)** | **(99)** |
| **Income before income tax** | **(10)** | **48** | **185** | **247** | **296** | **311** |
| **Tax adjustments** | | | | | | |
| Corporate tax rate (Norway) | 27% | 27% | 27% | 27% | 27% | 27% |
| Tax | | | | | | |
| Tax on non core operating items (tax shield) | 21.3 | 22.3 | 26.8 | 27.2 | 26.6 | 26.8 |
| **Tax core operations** | | | | | | |
| **Net Income (loss)** | **(7)** | **35** | **135** | **181** | **216** | **227** |

Source: Own creation

## Appendix 6.2 Forecasted balance sheet

**Appendix 6.2– Forecasted balance sheet**

| Balance Sheet (USDm) | 2015e | 2016e | 2017e | 2018e | 2019e | 2020e |
|---|---|---|---|---|---|---|
| **Non-current assets** | | | | | | |
| PP&E | 1,777 | 1,973 | 2,006 | 2,029 | 2,042 | 2,084 |
| MC Library | 668 | 692 | 722 | 750 | 774 | 790 |
| Deferred tax assets | 87 | 98 | 117 | 124 | 130 | 133 |
| Other long term assets | 47 | 53 | 64 | 68 | 71 | 73 |
| Goodwill | 140 | 140 | 140 | 140 | 140 | 143 |
| Other intangible assets | 184 | 184 | 184 | 184 | 184 | 188 |
| Equity accounted investments | - | - | - | - | - | - |
| Available for sale investments | - | - | - | - | - | - |
| **Total non-current assets** | **2,902** | **3,140** | **3,232** | **3,294** | **3,342** | **3,411** |
| | | | | | | |
| **Current assets** | | | | | | |
| Accounts receivable | 196 | 222 | 264 | 281 | 295 | 301 |
| Accrued revenues and other receivables | 140 | 158 | 188 | 200 | 210 | 214 |
| Other current assets | 104 | 118 | 140 | 149 | 156 | 160 |
| Available for sale assets | 1 | 1 | 2 | 2 | 2 | 2 |
| **Total current assets** | **441** | **499** | **593** | **631** | **663** | **677** |
| | | | | | | |
| **Non Interest Bearing Debt** | | | | | | |
| Deferred tax liabilities | 13 | 14 | 17 | 18 | 19 | 20 |
| Accounts payable | 67 | 75 | 90 | 95 | 100 | 102 |
| Accrued expenses | 243 | 276 | 328 | 349 | 366 | 374 |
| Income tax payable | 31 | 35 | 42 | 44 | 47 | 48 |
| Other long term liabilities | 67 | 76 | 91 | 96 | 101 | 103 |
| **Total Non Interest bearing debt** | **421** | **477** | **567** | **603** | **634** | **647** |
| | | | | | | |
| Net working capital | 20 | 22 | 26 | 28 | 30 | 30 |
| | | | | | | |
| **Invested Net operating assets** | **2,922** | **3,163** | **3,259** | **3,322** | **3,371** | **3,441** |
| | | | | | | |
| Equity primo | 1,902 | 1,884 | 1,905 | 2,016 | 2,164 | 2,213 |
| Net Income (loss) | (7) | 35 | 135 | 181 | 216 | 227 |
| Dividends | (10) | (14) | (24) | (32) | (167) | (157) |
| Equity ultimo | 1,884 | 1,905 | 2,016 | 2,164 | 2,213 | 2,283 |
| Net Interest Bearing Debt | 1,038 | 1,258 | 1,243 | 1,158 | 1,158 | 1,158 |
| **Invested Capital Net Financial Assets** | **2,922** | **3,163** | **3,259** | **3,322** | **3,371** | **3,441** |

Source: Own creation

## Appendix 6.3 PP&E, Depreciation & Amortization forecast

**Appendix 6.3 – PP&E, Depreciation & Amortization forecast**

| | 2010 | 2011 | 2012 | 2013 | 2014 | 2015e | 2016e | 2017e | 2018e | 2019e | 2020e |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total revenue | 1,135 | 1,253 | 1,518 | 1,502 | 1,454 | 1,238 | 1,402 | 1,666 | 1,773 | 1,864 | 1,902 |
| Contract revenue | 629 | 627 | 624 | 678 | 698 | 566 | 674 | 865 | 917 | 974 | 989 |
| Revenue MC | 391 | 502 | 728 | 672 | 600 | 560 | 600 | 650 | 695 | 720 | 740 |
| | | | | | | | | | | | |
| PP&E | 1,213 | 1,293 | 1,438 | 1,630 | 1,664 | 1,777 | 1,973 | 2,006 | 2,029 | 2,042 | 2,084 |
| | | | | | | | | | | | |
| Purchase of tangible fixed assets | (224) | (299) | (359) | (439) | (384) | (250) | (350) | (200) | (200) | (200) | (232) |
| | | | | | | | | | | | |
| Depreciation | (135) | (161) | (140) | (131) | (181) | (136) | (154) | (167) | (177) | (186) | (190) |
| Depreciation % total revenue | -12% | -13% | -9% | -9% | -12% | -11% | -11% | -10% | -10% | -10% | -10% |
| | | | | | | | | | | | |
| Amortization of MC | (191) | (237) | (345) | (302) | (344) | (308) | (295) | (320) | (342) | (354) | (364) |
| Amortization rates (% of MC total revenue) | -49% | -47% | -47% | -45% | -57% | -55% | -49% | -49% | -49% | -49% | -49% |

Source: Own creation, PGS annual reports

## Appendix 6.4 Net cost of sales

**Appendix 6.4 – Net cost of sales**

| *Cost drivers (in % ov revenues)* | 2015e | 2016e | 2017e | 2018e | 2019e | 2020e |
|---|---|---|---|---|---|---|
| Vessel operating costs | -45% | -48% | -45% | -44% | -43% | -42% |
| Sales, project and project management cost | -11% | -11% | -11% | -11% | -11% | -11% |
| Imaging, Geoscience and Engineering cost | -10% | -10% | -10% | -10% | -10% | -10% |
| Other | -2% | -2% | -2% | -2% | -2% | -2% |
| Amount capitalized to MultiClient Libary | 19% | 22% | 24% | 25% | 25% | 25% |
| | | | | | | |
| R&D | -2% | -2% | -2% | -2% | -2% | -2% |
| SG&A | -4% | -4% | -4% | -4% | -4% | -4% |
| Other operating (income) expense | 0% | 0% | 0% | 0% | 0% | 0% |
| Depreciation | -11% | -11% | -10% | -10% | -10% | -10% |
| Amortization | -55% | -49% | -49% | -49% | -49% | -49% |
| Impairment (reversal) of long term assets | -3% | -3% | -3% | -3% | -3% | -3% |
| Tax rate (tax on core in % of EBIT) | -27% | -27% | -27% | -27% | -27% | -27% |
| | | | | | | |
| Loss from associated companies | -1% | -1% | -1% | -1% | -1% | -1% |
| Interest rate (interest expense % of NIBD) | -5% | -5% | -5% | -5% | -5% | -5% |
| Other financial expense net | -1% | -1% | -1% | -1% | -1% | -1% |

Source: Own creation,

## Appendix 6.5 Net cost of sales

**Appendix 6.5 – Net cost of sales**

| *Investment Drivers* | 2015e | 2016e | 2017e | 2018e | 2019e | 2020e |
|---|---|---|---|---|---|---|
| **Non-current assets (% of revenue)** | | | | | | |
| PP&E | | | | | | |
| MC Library | 54% | 49% | 43% | 42% | 42% | 42% |
| Deferred tax assets | 7% | 7% | 7% | 7% | 7% | 7% |
| Other long term assets | 4% | 4% | 4% | 4% | 4% | 4% |
| Equity accounted investments | 0% | 0% | 0% | 0% | 0% | 0% |
| Available for sale investments | 0% | 0% | 0% | 0% | 0% | 0% |
| Total non-current assets | 65% | 60% | 54% | 53% | 52% | 52% |
| | | | | | | |
| **Current assets (% of revenue)** | | | | | | |
| Accounts receivable | 16% | 16% | 16% | 16% | 16% | 16% |
| Accrued revenues and other receivables | 11% | 11% | 11% | 11% | 11% | 11% |
| Other current assets | 8% | 8% | 8% | 8% | 8% | 8% |
| Available for sale assets | 0% | 0% | 0% | 0% | 0% | 0% |
| Total current assets | 36% | 36% | 36% | 36% | 36% | 36% |
| | | | | | | |
| **Non-interest bearing debt (% of revenue)** | | | | | | |
| Deferred tax liabilities | 1% | 1% | 1% | 1% | 1% | 1% |
| Other long term liabilities | 5% | 5% | 5% | 5% | 5% | 5% |
| Accounts payable | 5% | 5% | 5% | 5% | 5% | 5% |
| Accrued expenses | 20% | 20% | 20% | 20% | 20% | 20% |
| Income tax payable | 3% | 3% | 3% | 3% | 3% | 3% |
| **Total non-interest bearing debt** | 34% | 34% | 34% | 34% | 34% | 34% |
| | | | | | | |
| **Operating working capital** | 2% | 2% | 2% | 2% | 2% | 2% |

Source: Own creation,

## Appendix 6.6 Forecasted fleet overview

**Appendix 6.6 – Vessel overview and # streamers per vessel in forecasted period**

| | 2015 | | | | 2016 | | | | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | | | | |
| *Ramform Valiant* | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| *Ramform Viking* | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| *Ramform Vanguard* | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| *Ramform Challenger* | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| *Ramform Explorer* | | 10 | 10 | | | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| *Pacific Explorer* | | | | | | | | | | | | |
| *Atlantic Explorer* | 6 | 6 | 6 | 6 | | | | | | | | |
| *Nordic Explorer* | | | | | | | | | | | | |
| *Ocean Explorer* | | | | | | | | | | | | |
| *Orient Explrorer* | | | | | | | | | | | | |
| *Sanco Spirit* | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | |
| *Ramform Sovereign* | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| *Ramform Sterling* | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| *Apollo* | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| *Ramform Titan* | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| *Ramform Atlas* | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| *Ramford Tethys* | | | | | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| *Ramford Hyperion* | | | | | | | 16 | 16 | 16 | 16 | 16 | 16 |
| **Total # of streamers** | **125** | **135** | **135** | **125** | **135** | **145** | **161** | **161** | **160** | **160** | **160** | **160** |
| Total # of vessels | 11 | 12 | 12 | 11 | 11 | 12 | 13 | 13 | 12 | 12 | 12 | 12 |

Source: Own creation, PGS

*Assumptions:*

- Ramform Explorer winter stacked in 2015 and 2016 (stacked in Q4 and Q1)
- Atlantic Explorer scrapped after 2015.
- Sanco Spirit scrapped at the end of 2016
- Ramform Tethrys and Ramform Hyperion delivered as scheduled in Q1 and Q3 2016.
- No newbuilds after 2016

## Appendix 6.7 Marine Contracting forecasted price and cost level

**Appendix 6.7 – Marine Contracting forecasted price and cost level**

| | 2015 | | | | 2016 | | | | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | | | | |
| Amount of streamer month per quarter | 375 | 405 | 405 | 375 | 405 | 435 | 483 | 483 | 1920 | 1920 | 1920 | 1920 |
| Allocation | 51% | 51% | 51% | 51% | 50% | 50% | 50% | 50% | 52% | 52% | 52% | 52% |
| Streamer mnd used for contracting | 191 | 207 | 207 | 191 | 203 | 218 | 242 | 242 | 998 | 998 | 998 | 998 |
| Price per streamer month | 0.71 | 0.71 | 0.71 | 0.71 | 0.75 | 0.75 | 0.75 | 0.75 | 0.87 | 0.92 | 0.98 | 0.99 |
| Contracting revenue | 136 | 147 | 147 | 136 | 151 | 162 | 180 | 180 | 865 | 917 | 974 | 989 |
| | | | | | | | | | | | | |
| Cost per streamer month | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 |

Source: Own creation

*Key formulas:*

$$Amount\ of\ streamer\ months\ per\ quarter = Total\ \#streamers \times 3$$

$$Streamer\ month\ used\ for\ contracting = amount\ of\ streamer\ months\ per\ Q \times Allocation$$

$$Price\ per\ streamer\ month = last\ year\ price \times (1 + assumed\ growth\ rate)$$

$$Contracting\ revenue = Price\ per\ streamer \times streamer\ months\ used\ for\ contracting$$

## Appendix 6.8 Forecasted Marine Contracting income statement

**Appendix 6.8 – Marine Contracting forecasted income statement**

| Marine Contracting | | 2015e | 2016e | 2017e | 2018e | 2019e | 2020e |
|---|---|---|---|---|---|---|---|
| Revenue | USDm | 566 | 674 | 865 | 917 | 974 | 989 |
| Cash operating expenses | " | (352) | (444) | (463) | (463) | (463) | (463) |
| Gross margin | " | 214 | 230 | 402 | 454 | 511 | 526 |
| SG&A (inc. stock based compensation) | " | | | | | | |
| EBITDA | " | 214 | 230 | 402 | 454 | 511 | 526 |
| | | | | | | | |
| ***Operations*** | | | | | | | |
| Number of streamers | # | 1,560 | 1,806 | 1,920 | 1,920 | 1,920 | 1,920 |
| Number of streamers, average | " | 1,590 | 1,683 | 1,863 | 1,920 | 1,920 | 1,920 |
| Average Streamers months used for contracting | # | 811 | 842 | 969 | 998 | 998 | 998 |
| Utilization | " | 51% | 50% | 52% | 52% | 52% | 52% |
| | | | | | | | |
| Price per streamer | USDth/mnd | 0.71 | 0.75 | 0.87 | 0.92 | 0.98 | 0.99 |
| Price per streamer | USDth/day | 21 | 22 | 26 | 28 | 29 | 30 |
| Day rate | USDth/day | 256 | 269 | 312 | 331 | 351 | 357 |
| | | | | | | | |
| Cost per streamer | USDth/mnd | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 |
| Cost per streamer | USDth/day | 14 | 14 | 14 | 14 | 14 | 14 |
| Running cost (including cost capitalized to MC) | USDth/day | 167 | 167 | 167 | 167 | 167 | 167 |

Source: Own creation

## Appendix 6.9 MultiClient forecasted drivers

**Appendix 6.9 – MultiClient forecasted drivers**

| | 2015 | | | | 2016 | | | | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | | | | |
| Amount of streamers per month | 405 | 405 | 405 | 405 | 435 | 435 | 483 | 483 | 1920 | 1920 | 1920 | 1920 |
| Allocation | 28% | 28% | 28% | 28% | 32% | 32% | 32% | 32% | 34% | 34% | 34% | 34% |
| Total revenues in MC | 130 | 135 | 140 | 155 | 140 | 145 | 150 | 165 | 650 | 695 | 720 | 740 |
| | | | | | | | | | | | | |
| Revenue from pre-funding | 70 | 70 | 70 | 70 | 80 | 80 | 80 | 80 | 350 | 370 | 380 | 400 |
| MC cash investment | 70 | 70 | 70 | 70 | 80 | 80 | 80 | 80 | 350 | 370 | 380 | 400 |
| MC pre-funding % | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% |
| | | | | | | | | | | | | |
| Revenues from late sales | 60 | 65 | 70 | 85 | 60 | 65 | 70 | 85 | 300 | 325 | 340 | 340 |
| Opex MC | 48 | 55 | 55 | 57 | 57 | 56 | 60 | 63 | 293 | 310 | 322 | 329 |
| | | | | | | | | | | | | |
| Total PGS revenue | 288 | 330 | 328 | 338 | 341 | 337 | 362 | 378 | 1659 | 1757 | 1822 | 1860 |
| Total operating expense | 173 | 198 | 197 | 203 | 177 | 175 | 188 | 197 | 862 | 913 | 947 | 966 |
| | | | | | | | | | | | | |
| EBITDA margin | | | | 40% | | | | 48.0% | 48% | 48% | 48% | 48% |
| Average 5-year EBITDA margin | 48.0% | | | | | | | | | | | |

Source: Own creation

## Appendix 6.10 Forecasted MultiClient income statement

**Appendix 6.10 – MultiClient forecasted income statement**

| Multi Client | | 2015e | 2016e | 2017e | 2018e | 2019e | 2020e |
|---|---|---|---|---|---|---|---|
| Revenue | | 560 | 600 | 650 | 695 | 720 | 740 |
| Pre Funding | USD/m | 280 | 320 | 350 | 370 | 380 | 400 |
| Late Sales | | 280 | 280 | 300 | 325 | 340 | 340 |
| Cash operating expense | " | (216) | (236) | (293) | (310) | (322) | (329) |
| Gross margin | " | 344 | 364 | 357 | 385 | 398 | 411 |
| EBITDA | " | 344 | 364 | 357 | 385 | 398 | 411 |
| | | | | | | | |
| ***Operations*** | | | | | | | |
| MC cash investment | " | (280) | (320) | (350) | (370) | (380) | (400) |
| MC pre-funding % | USD/day | 100% | 100% | 100% | 100% | 100% | 100% |
| Number of streamers | # | 1,620 | 1,836 | 1,920 | 1,920 | 1,920 | 1,920 |
| Number of streamers, average | " | 1,620 | 1,797 | 1,878 | 1,920 | 1,920 | 1,920 |
| Utilization | " | 28% | 32% | 34% | 34% | 34% | 34% |
| Streamers used for multiclient | # | 454 | 575 | 639 | 653 | 653 | 653 |

Source: Own creation

## Appendix 6.11 Key ratios

**Appendix 6.11 – Forecasted key ratios**

| *Capitalisation* | | 2015e | 2016e | 2017e | 2018e | 2019e | 2020e |
|---|---|---|---|---|---|---|---|
| Shares, average | m | 217.8 | 217.8 | 217.8 | 217.8 | 217.8 | 217.8 |
| Shares, end period | " | 217.8 | 217.8 | 217.8 | 217.8 | 217.8 | 217.8 |
| Share price | USD | 5.7 | 5.7 | 5.7 | 5.7 | 5.7 | 5.7 |
| Market cap. | USDm | 1,235.2 | 1,235.2 | 1,235.2 | 1,235.2 | 1,235.2 | 1,235.2 |
| | | | | | | | |
| **Net interest bearing debt** | " | 1,038.0 | 1,258.0 | 1,243.0 | 1,158.0 | 1,158.0 | 1,158.0 |
| Enterprise value | " | 2,273.2 | 2,493.2 | 2,478.2 | 2,393.2 | 2,393.2 | 2,393.2 |
| | | | | | | | |
| ***Key figures*** | | | | | | | |
| EPS | USD | (0.03) | 0.16 | 0.62 | 0.83 | 0.99 | 1.04 |
| FCFFPS | " | 0.3 | (0.7) | 0.5 | 0.9 | 1.1 | 1.1 |
| BVPS | " | 8.6 | 8.7 | 9.3 | 9.9 | 10.2 | 10.5 |
| Net interest rate | % | 7.6% | 7.2% | 7.9% | 8.4% | 8.5% | 8.6% |
| Tax rate | " | 27.0% | 27.0% | 27.0% | 27.0% | 27.0% | 27.0% |
| P/E | .x | (167.3) | 35.1 | 9.1 | 6.8 | 5.7 | 5.4 |
| P/FOCF | " | 18.2 | (8.5) | 11.1 | 6.5 | 5.2 | 5.4 |
| P/B | " | 0.7 | 0.6 | 0.6 | 0.6 | 0.6 | 0.5 |
| Div yield | % | 0.8% | 1.2% | 1.9% | 2.6% | 13.5% | 12.7% |
| EV/EBIT | .x | 33.0 | 19.1 | 8.7 | 6.9 | 6.1 | 5.8 |
| EV/EBITDA | " | 4.2 | 4.0 | 3.0 | 2.6 | 2.4 | 2.4 |
| EV/Sales | " | 1.8 | 1.8 | 1.5 | 1.3 | 1.3 | 1.3 |
| ROIC | | 1.7% | 3% | 6% | 8% | 9% | 9% |
| ROE | % | (0.39)% | 1.85% | 6.70% | 8.34% | 9.77% | 9.93% |
| ROCE, pretax | " | 2.3% | 4.3% | 8.9% | 10.6% | 11.8% | 12.0% |
| ROA | " | (0.2)% | 1.0% | 3.5% | 4.6% | 5.4% | 5.5% |
| Revenue growth | " | (14.8)% | 13.2% | 18.9% | 6.4% | 5.1% | 2.1% |
| EBITDA margin | " | 44.1% | 44.0% | 48.9% | 51.6% | 52.8% | 53.3% |
| EBIT margin | " | 5.6% | 9.3% | 17.1% | 19.6% | 21.2% | 21.6% |
| Net profit margin | " | (0.60)% | 2.51% | 8.11% | 10.19% | 11.60% | 11.92% |
| NIBD/EBITDA | .x | 1.9 | 2.0 | 1.5 | 1.3 | 1.2 | 1.1 |
| EBITDA/Net interest | " | 10.5 | 11.9 | 13.0 | 14.7 | 17.0 | 17.5 |
| FCFF/NIBD | " | 7% | (12)% | 9% | 16% | 21% | 20% |
| Book equity/Total assets | " | 56% | 52% | 53% | 55% | 55% | 56% |
| Book equity/NIBD | " | 181% | 151% | 162% | 187% | 191% | 197% |
| EBIT growth | | -34% | 90% | 118% | 22% | 13% | 4% |
| EBITDA growth | | -22% | 13% | 32% | 12% | 8% | 3% |

Source: Own creation

# Appendix 6.12 Moody's credit rating system

**Appendix 6.12 – Moody's credit rating system**

**Grid score**

| Score | Rating |
|---|---|
| 1 | Aaa |
| 3 | Aa |
| 6 | A |
| 9 | Baa |
| 12 | Ba |
| 15 | B |
| 18 | Caa |

**Assets**

| Asset value (USDbn | | Rating | Score |
|---|---|---|---|
| < | > | | |
| 0.5 | -99999.0 | Caa | 18 |
| 2.0 | 0.5 | B | 15 |
| 4.0 | 2.0 | Ba | 12 |
| 8.0 | 4.0 | Baa | 9 |
| 12.0 | 8.0 | A | 6 |
| 25.0 | 12.0 | Aa | 3 |
| 999999.0 | 25.0 | Aaa | 1 |

**Grid-indicated rating**

| Score | | Rating |
|---|---|---|
| < | > | |
| 1.5 | 0.0 | Aaa |
| 2.5 | 1.5 | Aa1 |
| 3.5 | 2.5 | Aa2 |
| 4.5 | 3.5 | Aa3 |
| 5.5 | 4.5 | A1 |
| 6.5 | 5.5 | A2 |
| 7.5 | 6.5 | A3 |
| 8.5 | 7.5 | Baa1 |
| 9.5 | 8.5 | Baa2 |
| 10.5 | 9.5 | Baa3 |
| 11.5 | 10.5 | Ba1 |
| 12.5 | 11.5 | Ba2 |
| 13.5 | 12.5 | Ba3 |
| 14.5 | 13.5 | B1 |
| 15.5 | 14.5 | B2 |
| 16.5 | 15.5 | B3 |
| 17.5 | 16.5 | Caa1 |
| 18.0 | 17.5 | Caa2 |

**EBIT/Assets**

| % | | Rating | Score |
|---|---|---|---|
| < | > | | |
| 2% | -99999% | Caa | 18 |
| 5% | 2% | B | 15 |
| 8% | 5% | Ba | 12 |
| 11% | 8% | Baa | 9 |
| 15% | 11% | A | 6 |
| 22% | 15% | Aa | 3 |
| | 22% | Aaa | 1 |

**EBIT/Interest**

| .x | | Rating | Score |
|---|---|---|---|
| < | > | | |
| 1.5 | -99999.0 | Caa | 18 |
| 2.5 | 1.5 | B | 15 |
| 5.0 | 2.5 | Ba | 12 |
| 7.5 | 5.0 | Baa | 9 |
| 10.0 | 7.5 | A | 6 |
| 16.0 | 10.0 | Aa | 3 |
| | 16.0 | Aaa | 1 |

**Debt/Book capitalizaton**

| % | | Rating | Score |
|---|---|---|---|
| < | > | | |
| 5% | -99999% | Aaa | 1 |
| 15% | 5% | Aa | 3 |
| 25% | 15% | A | 6 |
| 35% | 25% | Baa | 9 |
| 55% | 35% | Ba | 12 |
| 70% | 55% | B | 15 |
| | 70% | Caa | 18 |

**Debt/EBITDA**

| .x | | Rating | Score |
|---|---|---|---|
| < | > | | |
| 0.25 | -99999.00 | Aaa | 1 |
| 1.00 | 0.25 | Aa | 3 |
| 2.00 | 1.00 | A | 6 |
| 3.00 | 2.00 | Baa | 9 |
| 4.00 | 3.00 | Ba | 12 |
| 6.00 | 4.00 | B | 15 |
| | 6.00 | Caa | 18 |

Source: Own creation, Moody's

## Appendix 6.13 PGS credit rating input

**Appendix 6.13 – PGS credit rating input**

| Assets | | | | | | | Calculations | |
|---|---|---|---|---|---|---|---|---|
| | **2010** | **2011** | **2012** | **2013** | **2014** | **2015e** | | |
| USDm | 2,531 | 2,619 | 2,793 | 3,191 | 3,416 | 3,359 | Score | weighted |
| **EBIT/Assets** | | | | | | | 12.0 | 3.0 |
| | **2010** | **2011** | **2012** | **2013** | **2014** | **2015e** | | |
| USDm | 2% | 5% | 11% | 12% | 3% | 2% | 14.0 | 2.8 |
| **EBIT/Interest** | | | | | | | 15.0 | 1.5 |
| | **2010** | **2011** | **2012** | **2013** | **2014** | **2015e** | | |
| .x | 1.2 | 3.3 | 7.8 | 11.8 | 3.5 | 1.5 | 15.0 | 3.0 |
| **Debt/EBITDA** | | | | | | | 6.0 | 0.6 |
| | **2010** | **2011** | **2012** | **2013** | **2014** | **2015e** | | |
| .x | 0.6 | 0.8 | 0.6 | 0.8 | 1.5 | 1.8 | 12.0 | 1.2 |
| **Debt/Book capitalization** | | | | | | | | |
| | **2010** | **2011** | **2012** | **2013** | **2014** | **2015e** | | **12.1** |
| .x | 0.14 | 0.19 | 0.19 | 0.25 | 0.35 | 0.36 | | |

Source: Own creation, Moody's

# 7.0 Cost of capital

## Appendix 7.1 Regression beta output

**Appendix 7.1 – Regression beta output**

| *Regression Statistics* | |
|---|---|
| Multiple R | 0.760278288 |
| R Square | 0.578023075 |
| Adjusted R Square | 0.574416434 |
| Standard Error | 0.081551712 |
| Observations | 119 |

ANOVA

| | *df* | *SS* | *MS* | *F* | *Significance F* |
|---|---|---|---|---|---|
| Regression | 1 | 1.065880468 | 1.065880468 | 160.2663455 | 1.15534E-23 |
| Residual | 117 | 0.778129771 | 0.006650682 | | |
| Total | 118 | 1.844010239 | | | |

| | *Coefficients* | *Standard Error* | *t Stat* | *P-value* | *Lower 95%* | *Upper 95%* | *Lower 95.0%* | *Upper 95.0%* |
|---|---|---|---|---|---|---|---|---|
| Intercept | -0.005940346 | 0.007554995 | -0.786280631 | 0.433292713 | -0.020902618 | 0.009021926 | -0.020902618 | 0.009021926 |
| X Variable 1 | 1.509375789 | 0.119227438 | 12.65963449 | 1.15534E-23 | 1.273252095 | 1.745499482 | 1.273252095 | 1.745499482 |

Source: Own creation

## Appendix 7.2 Capital structure of peers

**Appendix 7.2.1 – Capital structure CGG**

| CGG | | | | | | |
|---|---|---|---|---|---|---|
| | 2010 | 2011 | 2012 | 2013 | 2014 | Average |
| NIBD | 1,149.70 | 1,090.30 | 785.00 | 2,217.60 | 2,419.80 | |
| Interest expense | 102.1 | 106.3 | 151.5 | 179.4 | 180.6 | |
| Debt cost of captial | 8.88% | 9.75% | 19.30% | 8.09% | 7.46% | 10.70% |
| | | | | | | |
| Market Cap | $ 4,569.39 | $ 3,553.17 | $ 4,811.03 | $ 3,038.62 | $ 1,066.20 | |
| Shares outstanding | 158.12 | 158.57 | 163.41 | 176.73 | 177.10 | |
| Share Price euro | 21.73 | 17.30 | 22.59 | 12.58 | 4.98 | |
| EUR/USD | 1.3301 | 1.2956 | 1.3033 | 1.37 | 1.21 | |
| D/V | 0.20 | 0.23 | 0.14 | 0.42 | 0.69 | 0.34 |
| E/V | 0.80 | 0.77 | 0.86 | 0.58 | 0.31 | 0.66 |
| D/E | 0.25 | 0.31 | 0.16 | 0.73 | 2.27 | 0.74 |

Source: Own creation, CGG annual reports

**Appendix 7.2.2 – Capital structure Doplhin**

| DOLP | | | | | | |
|---|---|---|---|---|---|---|
| | 2010 | 2011 | 2012 | 2013 | 2014 | Average |
| NIBD | - | 3.63 | 42.10 | 94.61 | 198.64 | |
| Interest expense | - | 0.375 | 1.17 | 7.556 | 15.879 | |
| Debt cost of captial | na | 10.34% | 2.78% | 7.99% | 8% | 7.27% |
| | | | | | | |
| Market Cap | $ 6.18 | $ 99.89 | $ 376.74 | $ 264.37 | $ 134.26 | |
| Shares outstanding | 10.69 | 183.73 | 305.30 | 345.23 | 345.40 | |
| Share price NOK | 3.4 | 3.25 | 6.9 | 4.7 | 2.9 | |
| D/V | 0 | 0.04 | 0.10 | 0.26 | 0.60 | 0.25 |
| E/V | 1 | 0.96 | 0.90 | 0.74 | 0.40 | 0.75 |
| D/E | | 0.04 | 0.11 | 0.36 | 1.48 | 0.50 |

Source: Own creation, Dolphin annual reports

**Appendix 7.2.3 – Capital structure Polarcus**

| PLCS | | | | | | |
|---|---|---|---|---|---|---|
| | 2010 | 2011 | 2012 | 2013 | 2014 | Average |
| NIBD | 201.031 | 433.185 | 454.858 | 361.281 | 371.05 | |
| Interest expense | 5.818 | 29.632 | 51.718 | 49.681 | 43.227 | |
| Debt cost of captial | 2.89% | 6.84% | 11.37% | 13.75% | 12% | 9.30% |
| | | | | | | |
| Market Cap | 271.99 | 218.83 | 602.29 | 387.59 | $ 56.56 | |
| Shares outstanding | 263.17 | 467.20 | 507.20 | 507.22 | 669.81 | |
| Share Price NOK | 6.08 | 2.80 | 6.64 | 4.69 | 0.63 | |
| D/V | 0.42 | 0.66 | 0.43 | 0.48 | 0.87 | 0.57 |
| E/V | 0.58 | 0.34 | 0.57 | 0.52 | 0.13 | 0.43 |
| D/E | 0.74 | 1.98 | 0.76 | 0.93 | 6.56 | 2.19 |

Source: Own creation, Polarcus annual reports

**Appendix 7.2.4 – Capital structure Seabird**

| Seabird | | | | | | |
|---|---|---|---|---|---|---|
| | 2010 | 2011 | 2012 | 2013 | 2014 | Average |
| NIBD | 172.067 | 107.732 | 87.406 | 87.115 | 95.245 | |
| Interest expense | 8.293 | 16.484 | 10.765 | 10.331 | 8.969 | |
| Debt cost of captial | 4.82% | 15.30% | 12.32% | 11.86% | 9.42% | 10.74% |
| | | | | | | |
| Market Cap | $ 862.14 | $ 120.91 | $ 65.20 | $ 28.80 | $ 7.33 | |
| Shares outstanding | 174.90 | 314.26 | 43.93 | 57.58 | 57.58 | |
| Share price NOK | 29.00 | 2.30 | 8.3 | 3.07 | 0.95 | |
| D/V | 0.17 | 0.47 | 0.57 | 0.75 | 0.93 | 0.58 |
| E/V | 0.83 | 0.53 | 0.43 | 0.25 | 0.07 | 0.42 |
| D/E | 0.20 | 0.89 | 1.34 | 3.02 | 12.99 | 3.69 |

Source: Own creation, Seabird annual reports

# Appendix 7.3 Bottom-up beta

**Appendix 7.3 – Bottom-up beta calculations**

| Company | Beta | Bloomberg adj | Standard error | D/V | E/V | D/E | rd | rf | Rm | re | Tc | Wacc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DOLP | 1.07 | 1.00 | 0.15 | 0.25 | 0.75 | 0.50 | 7.27% | 2.97% | 5.00% | 10.1% | 27% | 8.9% |
| PLCS | 2.60 | 2.07 | 0.14 | 0.57 | 0.43 | 2.19 | 9.30% | 2.97% | 5.00% | 18.5% | 27% | 11.8% |
| Seabird | 3.34 | 2.56 | 0.28 | 0.58 | 0.42 | 3.69 | 10.74% | 2.97% | 5.00% | 23.7% | 27% | 14.5% |
| CGG | 1.80 | 1.47 | 0.12 | 0.34 | 0.66 | 0.74 | 10.70% | 3.18% | 6.35% | 14.6% | 33% | 12.1% |
| Average | 2.20 | 1.77 | 0.09 | 0.43 | 0.57 | 1.78 | | | | | 29% | 11.8% |

| | |
|---|---|
| Unlevered Beta PGS (bottom up approach) | 0.97 |
| Levered Beta PGS (bottom up approach) | **1.18** |

Source: Own creation, Damodaran 2012

# Appendix 7.4 Fundamental factor beta

**Appendix 7.4 – Fundamental beta approach**

| **Types of operating risk** | **Risk level** | **The firm's ability to manage operating risk** |
|---|---|---|
| **External risk** | | **Not sufficient** |
| Oil price and E&P spending | High | Low ability to influence prices |
| Vessel supply | Low | Low order book of new vessels |
| Country specific risk | Medium | Dispersed political risk and sanctions |
| **Strategic risk** | | **Not sufficient** |
| Rivalry among competitors | Very high | High pressure on margin and low demand |
| Supplier power | Low | Low demand for newbuilds and tough labour market |
| Bargaining power of buyers | Moderate | Negotiating power of the buyers is high, while at the same time not being too price sensitive |
| Threat of substitute services | Low | No available substitutes |
| Threat of entry | Low | High barriers to entry and low demand level and prices |
| Market growth | High | Weak market and thus high risk of more instable operating earnings |
| **Operational Risk** | | **Reasonable** |
| Quality of fleet | Low | Modern fleet, low age, most cost efficient |
| Utilisation of fleet | High | Weak market and low demand |
| Product Innovation | Low | Lead in product innovation |
| Financial structure | Medium | High level of fixed costs but low leverage level |
| **Total assessment of operating risk** | **High** | **PGS market and earnings are under severe pressure** |
| **Types of financial risk** | **Risk level** | **The firm's ability to manage financial risk** |
| Financial leverage | Low | Low leverage compared to the industry and solid debt structure |
| Access to financial markets | Low | Good access to new debt facilities |
| **Loan characteristics** | | |
| Variable interest rate | Low | Outlook for LIBOR is to remain low in forecasted time horizon |
| Short term to maturity | low | No debt maturing before 2018 |
| Foreign currency | Medium | Fluctuating USD/NOK rate influence earnings |
| **Total assessment of financial risk** | **Neutral** | |
| **Total risk** | **Neutral** | |
| **Beta** | **1.30** | |

Source: Own creation, Petersen and Plenborg 2012

## Appendix 7.5 PGS WACC using different beta approaches

**Appendix 7.5 – PGS WACC using different beta approaches**

| Bottom-up approach | 2015e | 2016e | 2017e | 2018e | 2019e | 2020e |
|---|---|---|---|---|---|---|
| Unlevered | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Levered Beta | 1.36 | 1.44 | 1.41 | 1.35 | 1.34 | 1.33 |
| Rf | 2.97% | 2.97% | 2.97% | 2.97% | 2.97% | 2.97% |
| Rm | 5.00% | 5.00% | 5.00% | 5.00% | 5.00% | 5.00% |
| Re | 9.77% | 10.16% | 10.00% | 9.72% | 9.67% | 9.62% |
| rd | 6.22% | 6.22% | 6.22% | 6.22% | 6.22% | 6.22% |
| Tc | 27.0% | 27.0% | 27.0% | 27.0% | 27.0% | 27.0% |
| D/EV | 0.36 | 0.40 | 0.38 | 0.35 | 0.34 | 0.34 |
| E/EV | 0.64 | 0.60 | 0.62 | 0.65 | 0.66 | 0.66 |
| D/E | 0.55 | 0.66 | 0.62 | 0.54 | 0.52 | 0.51 |
| **WACC** | **7.91%** | **7.93%** | **7.92%** | **7.91%** | **7.91%** | **7.91%** |

| Regression beta (no Bloomberg adjustment | 2015e | 2016e | 2017e | 2018e | 2019e | 2020e |
|---|---|---|---|---|---|---|
| Unlevered | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 |
| Levered Beta | 1.73 | 1.83 | 1.79 | 1.72 | 1.71 | 1.69 |
| Rf | 2.97% | 2.97% | 2.97% | 2.97% | 2.97% | 2.97% |
| Rm | 5.00% | 5.00% | 5.00% | 5.00% | 5.00% | 5.00% |
| Re | 11.63% | 12.13% | 11.93% | 11.56% | 11.51% | 11.44% |
| rd | 6.22% | 6.22% | 6.22% | 6.22% | 6.22% | 6.22% |
| Tc | 27.0% | 27.0% | 27.0% | 27.0% | 27.0% | 27.0% |
| D/EV | 0.36 | 0.40 | 0.38 | 0.35 | 0.34 | 0.34 |
| E/EV | 0.64 | 0.60 | 0.62 | 0.65 | 0.66 | 0.66 |
| D/E | 0.55 | 0.66 | 0.62 | 0.54 | 0.52 | 0.51 |
| **WACC** | **9.12%** | **9.11%** | **9.11%** | **9.12%** | **9.12%** | **9.12%** |

| Fundemental Factors | 2015e | 2016e | 2017e | 2018e | 2019e | 2020e |
|---|---|---|---|---|---|---|
| Unlevered | 1.06 | 1.06 | 1.06 | 1.06 | 1.06 | 1.06 |
| Levered Beta | 1.49 | 1.58 | 1.54 | 1.48 | 1.47 | 1.46 |
| Rf | 2.97% | 2.97% | 2.97% | 2.97% | 2.97% | 2.97% |
| Rm | 5.00% | 5.00% | 5.00% | 5.00% | 5.00% | 5.00% |
| Re | 10.43% | 10.86% | 10.69% | 10.37% | 10.32% | 10.26% |
| rd | 6.22% | 6.22% | 6.22% | 6.22% | 6.22% | 6.22% |
| Tc | 27.0% | 27.0% | 27.0% | 27.0% | 27.0% | 27.0% |
| D/EV | 0.36 | 0.40 | 0.38 | 0.35 | 0.34 | 0.34 |
| E/EV | 0.64 | 0.60 | 0.62 | 0.65 | 0.66 | 0.66 |
| D/E | 0.55 | 0.66 | 0.62 | 0.54 | 0.52 | 0.51 |
| **WACC** | **8.34%** | **8.35%** | **8.34%** | **8.34%** | **8.34%** | **8.34%** |

Source: Own creation

## Appendix 7.6 Norwegian central bank bond rates

**Appendix 7.6 – Historic Norwegian Central Bank bond rates**

NORGES BANK

17-02-2015 09:02

**Diverse renter, årsgjennomsnitt av daglige noteringer**

| | Nominell rente | | | Effektiv rente | | | Effektiv syntetisk rente | | | | Nominell rente |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Styringsrente** | | | **Obligasjoner** | | | **Statskassevekssler** | | | | **NOWA** |
| | Foliorente *Sight deposit rate* | Reserverate | Døgnlånsrente *Overnight lending rate* | 3 års *3 year* | 5 års *5 year* | 10 års *10year* | 3 mnd *3 month* | 6 mnd 6 month | 9 mnd *9 month* | 12 mnd *12 month* | Overnight |
| 2014 | 1.49 | 0.49 | 2.49 | 1.52 | 1.82 | 2.52 | 1.24 | 1.25 | 1.27 | 1.29 | 1.48 |
| 2013 | 1.50 | 0.50 | 2.50 | 1.63 | 1.93 | 2.58 | 1.519 | 1.518 | 1.5125 | 1.516 | 1.50 |
| 2012 | 1.55 | 0.55 | 2.55 | 1.44 | 1.59 | 2.10 | 1.547 | 1.560 | 1.5470 | 1.531 | 1.55 |
| 2011 | 2.14 | 1.16 | 3.14 | 2.24 | 2.56 | 3.12 | 2.134 | 2.145 | 2.1040 | 2.118 | 2.17 |
| 2010 | 1.92 | | 2.92 | 2.46 | 2.83 | 3.52 | 2.168 | 2.270 | 2.2789 | 2.247 | |
| 2009 | 1.75 | | 2.75 | 2.71 | 3.33 | 4.00 | 1.822 | 1.905 | 1.9216 | 1.977 | |
| 2008 | 5.32 | | 6.32 | 4.53 | 4.43 | 4.47 | 5.242 | 5.265 | 5.2524 | 5.212 | |
| 2007 | 4.38 | | 5.59 | 4.79 | 4.77 | 4.78 | 4.557 | 4.686 | 4.8098 | 4.845 | |
| 2006 | 2.74 | | 4.74 | 3.74 | 3.90 | 4.07 | 2.960 | 3.089 | 3.2295 | 3.371 | |
| 2005 | 1.92 | | 3.92 | 2.90 | 3.27 | 3.74 | 2.010 | 2.119 | 2.2502 | 2.372 | |
| 2004 | 1.82 | | 3.82 | 2.95 | 3.61 | 4.36 | 1.842 | 1.849 | 1.9249 | 2.005 | |
| 2003 | 4.21 | | 6.21 | 4.24 | 4.58 | 5.04 | 3.923 | 3.773 | 3.7340 | 3.721 | |
| 2002 | 6.73 | | 8.73 | 6.39 | 6.36 | 6.38 | | | | | |
| 2001 | 6.98 | | 8.98 | 6.44 | 6.31 | 6.24 | | | | | |
| 2000 | 6.22 | | 8.22 | 6.61 | 6.38 | 6.22 | | | | | |
| 1999 | 6.35 | | 8.35 | 5.39 | 5.39 | 5.52 | | | | | |
| 1998 | 5.51 | | 7.51 | 5.32 | 5.34 | 5.40 | | | | | |
| 1997 | 3.38 | | 5.38 | 4.62 | 5.12 | 5.89 | | | | | |
| 1996 | 4.48 | | 6.48 | 5.46 | 5.98 | 6.78 | | | | | |
| 1995 | 4.75 | | 6.75 | 6.36 | 6.89 | 7.43 | | | | | |
| 1994 | 4.78 | | 6.78 | 6.59 | 7.04 | 7.46 | | | | | |
| 1993 | 6.50 | | 7.95 | 6.54 | 6.62 | 6.86 | | | | | |
| 1992 | 9.50 | | 10.64 | 10.54 | 9.78 | 9.62 | | | | | |
| 1991 | 8.34 | | 9.94 | 10.05 | 9.91 | 9.99 | | | | | |
| 1990 | | | 10.82 | 10.97 | 10.71 | 10.68 | | | | | |
| 1989 | | | 10.60 | 10.93 | 10.81 | 10.86 | | | | | |
| 1988 | | | 13.08 | 13.13 | 13.07 | 12.88 | | | | | |
| 1987 | | | 13.90 | 13.79 | 13.58 | 13.31 | | | | | |
| 1986 | | | 14.16 | | 13.56 | 13.30 | | | | | |
| 1985 | | | 11.36 | | 12.90 | 12.91 | | | | | |
| 1984 | | | 10.80 | | | | | | | | |
| 1983 | | | 10.06 | | | | | | | | |
| 1982 | | | 11.03 | | | | | | | | |

Source: Norwegian Central Bank

## 8.0 Valuation

## Appendix 8.1 Equity forecast, capex and cash flow statement

**Appendix 8.1 – Equity forecast, capex and cash flow statement**

| Equity forecast | 2015e | 2016e | 2017e | 2018e | 2019e | 2020e |
|---|---|---|---|---|---|---|
| Equity primo | 1,902 | 1,884 | 1,905 | 2,016 | 2,164 | 2,213 |
| Net Income (loss) | (7) | 35 | 135 | 181 | 216 | 227 |
| Dividends | (10) | (14) | (24) | (32) | (167) | (157) |
| Equity ultimo | 1,884 | 1,905 | 2,016 | 2,164 | 2,213 | 2,283 |
| Net Interest Bearing Debt | 1,038 | 1,258 | 1,243 | 1,158 | 1,158 | 1,158 |
| **Invested Capital Net Financial Assets** | **2,922** | **3,163** | **3,259** | **3,322** | **3,371** | **3,441** |

| Capex | | | | | | |
|---|---|---|---|---|---|---|
| Total Non-current assets primo | (2,834) | (2,902) | (3,140) | (3,232) | (3,294) | (3,342) |
| Depreciation | 136 | 154 | 167 | 177 | 186 | 190 |
| Amortization | 308 | 295 | 320 | 342 | 354 | 364 |
| Impairment (reversal) of long term assets | 33 | 37 | 44 | 47 | 49 | 50 |
| Total Non-current assets ultimo | 2,902 | 3,140 | 3,232 | 3,294 | 3,342 | 3,411 |
| Capex | 546 | 725 | 622 | 628 | 637 | 673 |

| Cash flow (USDm) | | | | | | |
|---|---|---|---|---|---|---|
| NOPAT | 50 | 95 | 208 | 254 | 288 | 299 |
| Depreciation | 136 | 154 | 167 | 177 | 186 | 190 |
| Amortization | 308 | 295 | 320 | 342 | 354 | 364 |
| Impairment (reversal) of long term assets | 33 | 37 | 44 | 47 | 49 | 50 |
| Change in operating working capital | 86 | (3) | (4) | (2) | (1) | (1) |
| Capex | (546) | (725) | (622) | (628) | (637) | (673) |
| **Free cash flow to firm** | 68 | (145) | 112 | 191 | 239 | 230 |
| | | | | | | |
| Change in Net interest bearing debt | - | 220 | (15) | (85) | - | - |
| Net financial items | (79) | (83) | (99) | (101) | (99) | (99) |
| Tax on non core operating items (tax shield) | 21 | 22 | 27 | 27 | 27 | 27 |
| **Free cash flow to equity** | 10 | 14 | 24 | 32 | 167 | 157 |
| Dividends | (10) | (14) | (24) | (32) | (167) | (157) |
| **Cash surplus** | - | - | - | - | - | - |

Source: Own creation

## 9.0 Sensitivity analysis

## Appendix 9.1 Share price with bottom-up beta

**Appendix 9.1 – Share price with bottom-up beta approach**

| | WACC | Pessimistic | | | Realistic | | | Optimistic |
|---|---|---|---|---|---|---|---|---|
| Growth | 70.03 | 1.0% | 1.25% | 1.50% | 2.1% | 2.5% | 2.75% | 3.00% |
| Optimistic | 6.5% | 76.04 | 80.90 | 86.26 | 100.61 | 114.36 | 123.73 | 134.43 |
| | 7.0% | 67.52 | 71.59 | 76.04 | 87.76 | 98.75 | 106.09 | 114.36 |
| | 7.5% | 60.32 | 63.77 | 67.52 | 77.28 | 86.26 | 92.17 | 98.75 |
| Realistic | 7.9% | 55.19 | 58.24 | 61.54 | **70.03** | 77.75 | 82.78 | 88.33 |
| | 8.5% | 48.79 | 51.37 | 54.14 | 61.20 | 67.52 | 71.59 | 76.04 |
| Pessimistic | 9.0% | 44.10 | 46.37 | 48.79 | 54.90 | 60.32 | 63.77 | 67.52 |
| | 10% | 39.97 | 41.97 | 44.10 | 49.45 | 54.14 | 57.11 | 60.32 |

Source: Own creation

## Appendix 9.2 Share price with fundamental beta

**Appendix 9.2 – Share price with fundamental beta approach**

| | WACC | Pessimistic | | | Realistic | | | Optimistic |
|---|---|---|---|---|---|---|---|---|
| Growth | 61.46 | 1.0% | 1.25% | 1.50% | 2.1% | 2.5% | 2.75% | 3.00% |
| Optimistic | 7.0% | 65.44 | 69.43 | 73.79 | 85.28 | 96.05 | 103.26 | 111.36 |
| | 7.5% | 58.37 | 61.77 | 65.44 | 75.01 | 83.81 | 89.61 | 96.05 |
| | 8.0% | 52.32 | 55.23 | 58.37 | 66.46 | 73.79 | 78.56 | 83.81 |
| Realistic | 8.3% | 48.69 | 51.34 | 54.18 | **61.46** | 67.99 | 72.21 | 76.83 |
| | 9.0% | 42.48 | 44.70 | 47.07 | 53.07 | 58.37 | 61.77 | 65.44 |
| Pessimistic | 9.5% | 38.43 | 40.39 | 42.48 | 47.72 | 52.32 | 55.23 | 58.37 |
| | 10% | 34.83 | 36.58 | 38.43 | 43.05 | 47.07 | 49.60 | 52.32 |

Source: Own creation

## Appendix 9.3 Share price with regression beta without Bloomberg adjustment

**Appendix 9.3 – Share price with regression beta (no Bloomberg adjustment)**

| | WACC | Pessimistic | | | Realistic | | | Optimistic |
|---|---|---|---|---|---|---|---|---|
| Growth | 48.57 | 1.0% | 1.25% | 1.50% | 2.1% | 2.5% | 2.75% | 3.00% |
| Optimistic | 7.5% | 54.96 | 58.23 | 61.77 | 71.01 | 79.50 | 85.09 | 91.31 |
| | 8.0% | 49.12 | 51.93 | 54.96 | 62.76 | 69.83 | 74.43 | 79.50 |
| | 8.5% | 44.05 | 46.50 | 49.12 | 55.80 | 61.77 | 65.63 | 69.83 |
| Realistic | 9.1% | 38.66 | 40.74 | 42.96 | **48.57** | 53.51 | 56.67 | 60.08 |
| | 9.5% | 35.71 | 37.61 | 39.62 | 44.68 | 49.12 | 51.93 | 54.96 |
| Pessimistic | 10.0% | 32.24 | 33.92 | 35.71 | 40.17 | 44.05 | 46.50 | 49.12 |
| | 11% | 29.13 | 30.64 | 32.24 | 36.20 | 39.62 | 41.76 | 44.05 |

Source: Own creation

## Appendix 9.4 Share price with Rm = 5.75%

**Appendix 9.4 – Share price with Rm = 5.75%**

| | WACC | Pessimistic | | | Realistic | | | Optimistic |
|---|---|---|---|---|---|---|---|---|
| Growth | 46.89 | 1.0% | 1.25% | 1.50% | 2.1% | 2.5% | 2.75% | 3.00% |
| Optimistic | 7.5% | 54.46 | 57.72 | 61.24 | 70.42 | 78.87 | 84.44 | 90.63 |
| | 8.0% | 48.65 | 51.45 | 54.46 | 62.22 | 69.26 | 73.83 | 78.87 |
| | 8.5% | 43.61 | 46.04 | 48.65 | 55.30 | 61.24 | 65.07 | 69.26 |
| Realistic | 9.2% | 37.34 | 39.35 | 41.49 | **46.89** | 51.65 | 54.68 | 57.95 |
| | 9.5% | 35.32 | 37.20 | 39.21 | 44.24 | 48.65 | 51.45 | 54.46 |
| Pessimistic | 10.0% | 31.86 | 33.54 | 35.32 | 39.76 | 43.61 | 46.04 | 48.65 |
| | 11% | 28.77 | 30.27 | 31.86 | 35.80 | 39.21 | 41.34 | 43.61 |

Source: Own creation

## Appendix 9.5 Share price with Rm = 6%

**Appendix 9.5 – Share price with Rm = 6%**

| | WACC | Pessimistic | | | Realistic | | | Optimistic |
|---|---|---|---|---|---|---|---|---|
| Growth | 43.47 | 1.0% | 1.25% | 1.50% | 2.1% | 2.5% | 2.75% | 3.00% |
| Optimistic | 8.0% | 47.66 | 50.43 | 53.40 | 61.08 | 68.03 | 72.56 | 77.54 |
| | 8.5% | 42.68 | 45.08 | 47.66 | 54.23 | 60.11 | 63.90 | 68.03 |
| | 9.0% | 38.32 | 40.43 | 42.68 | 48.37 | 53.40 | 56.62 | 60.11 |
| Realistic | 9.5% | 34.61 | 36.48 | 38.47 | **43.47** | 47.85 | 50.63 | 53.63 |
| | 10.0% | 31.06 | 32.72 | 34.48 | 38.87 | 42.68 | 45.08 | 47.66 |
| Pessimistic | 10.5% | 28.00 | 29.49 | 31.06 | 34.96 | 38.32 | 40.43 | 42.68 |
| | 11% | 28.00 | 29.49 | 31.06 | 34.96 | 38.32 | 40.43 | 42.68 |

Source: Own creation

## Appendix 9.6 Share price with 10-year average 10-year bond rate

**Appendix 9.6 – Share price with 10 year average 10-year bond rate= Rf = 3.49%**

| | WACC | Pessimistic | | | Realistic | | | Optimistic |
|---|---|---|---|---|---|---|---|---|
| Growth | 51.00 | 1.0% | 1.25% | 1.50% | 2.1% | 2.5% | 2.75% | 3.00% |
| Optimistic | 7.5% | 55.66 | 58.95 | 62.52 | 71.82 | 80.38 | 86.02 | 92.28 |
| | 8.0% | 49.77 | 52.60 | 55.66 | 63.52 | 70.64 | 75.28 | 80.38 |
| | 8.5% | 44.67 | 47.13 | 49.77 | 56.50 | 62.52 | 66.40 | 70.64 |
| Realistic | 8.96% | 40.58 | 42.77 | 45.10 | **51.00** | 56.23 | 59.57 | 63.20 |
| | 9.5% | 36.27 | 38.18 | 40.20 | 45.30 | 49.77 | 52.60 | 55.66 |
| Pessimistic | 10.0% | 32.76 | 34.47 | 36.27 | 40.76 | 44.67 | 47.13 | 49.77 |
| | 10.5% | 29.63 | 31.16 | 32.76 | 36.76 | 40.20 | 42.36 | 44.67 |

Source: Own creation

## Appendix 9.7 Share price with 5-year average 10-year bond rate

**Appendix 9.7 – Share price with 5 year average 10-year bond rate = Rf = 2.77%**

| | WACC | Pessimistic | | | Realistic | | Optimistic | |
|---|---|---|---|---|---|---|---|---|
| Growth | 62.20 | 1.0% | 1.25% | 1.50% | 2.1% | 2.5% | 2.75% | 3.00% |
| Optimistic | 7.0% | 65.63 | 69.63 | 73.99 | 85.51 | 96.30 | 103.51 | 111.63 |
| | 7.5% | 58.55 | 61.95 | 65.63 | 75.21 | 84.03 | 89.84 | 96.30 |
| | 8.0% | 52.48 | 55.41 | 58.55 | 66.65 | 73.99 | 78.77 | 84.03 |
| Realistic | 8.30% | 49.26 | 51.94 | 54.82 | **62.20** | 68.82 | 73.11 | 77.81 |
| | 9.0% | 42.63 | 44.85 | 47.23 | 53.24 | 58.55 | 61.95 | 65.63 |
| Pessimistic | 9.5% | 38.57 | 40.54 | 42.63 | 47.88 | 52.48 | 55.41 | 58.55 |
| | 10.0% | 34.96 | 36.71 | 38.57 | 43.20 | 47.23 | 49.77 | 52.48 |

Source: Own creation

## Appendix 9.8 Share price with 3-year average 10-year bond rate

**Appendix 9.8 – Share price with 3 year average 10-year bond rate= Rf = 2.4%**

| | WACC | Pessimistic | | | Realistic | | Optimistic | |
|---|---|---|---|---|---|---|---|---|
| Growth | 68.89 | 1.0% | 1.25% | 1.50% | 2.1% | 2.5% | 2.75% | 3.00% |
| Optimistic | 6.5% | 75.75 | 80.61 | 85.95 | 100.26 | 113.98 | 123.33 | 134.01 |
| | 7.0% | 67.26 | 71.32 | 75.75 | 87.45 | 98.41 | 105.74 | 113.98 |
| | 7.5% | 60.07 | 63.52 | 67.26 | 76.99 | 85.95 | 91.85 | 98.41 |
| Realistic | 7.96% | 54.34 | 57.34 | 60.57 | **68.89** | 76.45 | 81.37 | 86.79 |
| | 8.5% | 48.57 | 51.15 | 53.91 | 60.96 | 67.26 | 71.32 | 75.75 |
| Pessimistic | 9.0% | 43.90 | 46.16 | 48.57 | 54.67 | 60.07 | 63.52 | 67.26 |
| | 9.5% | 39.78 | 41.77 | 43.90 | 49.24 | 53.91 | 56.88 | 60.07 |

Source: Own creation

## 10 Summary of interviews

### Appendix 10.1 Interview Bård Stenberg- VP Corporate Communications, PGS

*Hvordan regnes operating expense per segment?*

Dette er litt komplisert. Kort fortalt er det båtallokeringen som er nøkkelen å bruke for å allokere kostnader mellom vår kontrakts divisjon og vårt Multiclient segment, som er de to største og mest inntektsbringende forretningsområdene våre.

Alle segmentene bortsett fra DP&Technology fordeles i all hovedsak etter vessel allocation der vi oppgir hvor mye av 3D båtkapasiteten vår som brukes til kontraktsarbeid og hvor mye som brukes til multiclient arbeid. Kostnaden til DP&Technology (som nå heter Imaging & Engineering) fordeles omtrent 40-50% til MultiClient (som følge av at vi prosesserer våre egne MultiClient data) resten fordeles til Imaging & Engineering. Det beløpet som vi aktiverer og som i våre noter refereres til "Cash investment in MultiCLient libary" kommer til fradrag på OPEX'en til MultiClient divisjonen.

*Hva er dag rate på skipene deres?*

Det kommenterer vi ikke på som følge av at dagratene vi får varierer veldig avhengig av størrelsen på jobben, lengde på streamerne, antall streamere som brukes, separasjon mellom streamerer, forskjellig kostnadsnivå i forskjellige region etc. Vi hadde for eksempel i fjor en båt som hadde dagrate på omtrent USD 700.000 dagen. Denne jobben var i et område med mye ekstra kostander og marginen ble på linje med gjennomsnittet for 2013 som lå på omtrent 30% på EBIT nivå, til tross for en fantastisk dagrate. Når vi byr på jobber fokuserer vi på å tjene mest mulig dollar per jobb og det er EBIT per streamer våre salgsfolk forholder seg til. Skal dere estimere våre kontraktsinntekter kan dere gjøre det basert på inntekt per streamer måneder. I dag har vi 134 streamere i flåten. I et kvartal har vi totalt 134*3 streamere. Ut fra vessel allocation oppgir vi hvor mange % av kapasiteten som brukes til kontrakt i et kvartal og da kan du regne ut streamer måneder brukt til kontrakt i kvartalet ((134*3)*% allokert til kontrakt) for å finne pris per streamer måned brukt til kontrakt så har vi oppgitt kontraktsinntekter for forrige kvartal (som er beste estimat for markedsprisingen). Merk at vi de siste årene har fått mer kapasitet og det er illustrert i vedlegget. Vi får også mer kapasitet neste år.

*Hva er utilisation per skip?*

Den er 100% når du justerer for tid vi bruker på å forflytte båten mellom jobber og den tiden skipet har verftsopphold. På et år brukes omtrent 8-10% av flåtetiden til forflytning mellom jobber, 4-5% på verft og resten til kontrakts- eller MC jobbing.

*Hva er operating days per skip?*

Justert for steaming og yard går båtene non-stop året rundt.

*Hvordan estimerer dere MultiClient inntekter?*

Når det gjelder estimering av MultiClient inntekter så kan du ikke bruke samme metode som for kontrakt. I vår guiding for 2015 sier vi at vi kommer til å investere omtrent $275-300 millioner i MultiClient. Vi sier samtidig at vi forventer en pre-funding rate på omtrent 100% (Mc pre-funding inntekter/MC cash investments), så da har vi indirekte gitt et estimat for MultiClient pre-funding inntekter på omtrent $275-300 millioner for 2015. Over tid har vi sagt at vi skal ha en pre-funding rate mellom 80-120%, og ser du hva vi har oppnådd de siste årene er snittet godt over 100%. Videre har vi indikert til markedet at omtrent 35% av effektiv båt-tid (som er MC allocation i forhold til MC+kontrakt allocation. Da ser vi på faktisk båt-tid uten steaming og yard) skal benyttes til MultiClient og 65% til kontraktsarbeider. Vi får en større flåte neste år og skal allokeringen forbli omtrent 35/65 så betyr det at MultiClient cash investeringer vil i fremtiden ligge et sted mellom $300-400 millioner, og så er det opp til dere å estimere pre-funding nivået vi oppnår for å få estimater på pre-funding inntekter.

I tillegg til pre-funding inntekter består totale MultiClient inntekter også av late sales. Ettersom vi fortsetter å investere i MultiClient og får et større bibliotek så forventer vi også at late sales inntektene vil øke i årene som kommer.

Hvordan den kvartals vise utviklingen blir på MultiClient salget varierer, og pre-funding inntektene avhenger naturligvis av hvor mye kapasitet vi allokerer til MultiClient in kvartalet. På generelt grunnlag så er vanligvis Q1 det svakeste MultiClient kvartalet. Q2 og Q3 drar nytte av MultiClient prosjektene vi gjør i Nordsjøen, mens Q4 er et kvartal der vi oppnår best late sales. Årsaken til at Q4

alltid er et godt kvartal for late sales er "budget flush" fra oljeselskapene. De ser at de har penger på budsjettet de ikke har brukt opp og seismikkdata fra eksisterende biblioteker er et fornuftig innkjøp og veldig lett tilgjengelig.