Norwegian School of Economics

Bergen, Spring 2016

High Yield Bonds or Junk Bonds?

An empirical study of the Norwegian high yield corporate bond market in the years 2005 - 2015

Tord Gjørtz Brenden

Helge Leikvang

Supervisor: Jan Tore Klovland

Master Thesis in Financial Economics

NORWEGIAN SCHOOL OF ECONOMICS

Abstract

The objective of this thesis is to calculate the returns in the Norwegian high yield bond market between 2005 and 2015. To further strengthen our results, we attempt to find and measure explanatory factors for the differences in realised return. When high yield bonds were first introduced in the market, they were referred to as "junk bonds" to signify the deemed lower quality of the debt. In this thesis, we examine whether "junk" is a more appropriate name based on the return measured against the risk of the investment. To examine this, we calculated the return measured by the internal rate of return on 523 bonds and compared it to the return on Norwegian equities and government securities.

According to our calculations, Norwegian high yield bonds achieved a 0,2% nominal annual return between 2005 and 2015, while the Oslo Stock Exchange Benchmark returned 8,8%. More surprisingly, 5-year Norwegian government bonds returned 4,5% in the same period. Despite low overall returns, 65% of the bonds in our sample had higher returns than 5-year Norwegian government bonds. However, the remaining bonds provided poor returns, which significantly lowered the overall return.

Our result contradicts financial theory that higher risk should lead to higher returns, as high yield bonds carry higher risk than government securities. The relationship between risk and return is well settled in financial theory, which would indicate that Norwegian high yield investors have incorrectly priced the risk associated with these types of bonds. High yield issuance volume increased greatly between 2005 and 2015, and the market composition changed significantly. Further analysis indicates that our findings are impacted by macroeconomic events that occurred within our analysis period, and hence the results are time dependent. In summary, the market is twofold; some bonds ought to be defined as high yield, while others are better defined as "junk".

We would like to thank our supervisor Jan Tore Klovland for providing good guidance. In addition, we want to thank Torgeir Stensaker, Head of Fixed Income Norway at Nordea Investment Management, Lars Kirkeby, Chief Analyst Credit Research at Nordea Markets, Lars Tronsgaard, Deputy Director at Folketrygdfondet, Nicolai Bratt and Kristoffer Sletten at Nordea Debt Capital Markets, and Gunnar Torgersen, Partner at Holbergfondene. Lastly, we would thank Per-Marius Pettersen at Nordic Trustee.

Table of Contents

List of Figures:

List of Tables:

1 Introduction

High yield (HY) bonds are debt securities with a Standard & Poor's/Fitch rating lower than BBB- (Haugen, 2013). Bonds rated below BBB- carry significantly more credit risk than bonds categorised as investment grade (IG), i.e., bonds with a BBB- rating or higher, and therefore should have a higher expected return. When HY bonds first emerged they were referred to as "junk bonds", however as the market matured the name evolved to "high yield bonds". The name most likely changed to make it easier to market and sell the securities. The Norwegian HY corporate bond market (hereafter referred to as the HY market) is dominated by issuers in the oil and gas sector, but companies from other capital intensive industries, such as Shipping, Industry and Transportation, are also well represented. Sources differ on the current size of the HY market, but we can safely say that the current outstanding volume is in excess of NOK 200bn (Holbergfondene, 2016). Nordic Trustee, a company that acts as trustee on behalf of bondholders, has contributed to creating an efficient market structure, which has lowered the formal requirements to issue bonds in Norway. Foreign issuers have gradually established a presence in the Norwegian bond market due to the efficient infrastructure and lower cost of issuance (Nordic Trustee, 2015). Compared to other capital markets, the requirements to raise capital is low, while, investors' rights remain protected by Nordic Trustee.

While there has been performed a lot of research on the US HY market, limited research exists on the Norwegian HY market due limited access to- and existence of data. Nordic Trustee's database Stamdata, is a major source for data on fixed income securities in Norway, however, data on traded volume and prices are difficult to obtain (Kirkeby, 2016), which limits the scope of research. Other master theses have looked at default and recovery rates, default prediction, how to explain credit spreads and returns in the HY market. Haugland and Brekke (2010) calculated and analysed default and recovery rates between 2005 and 2010. Bakjord and Berg (2012) registered and documented cash flows from each bond issued between 2005 and 2011, and calculated the return of each bond. They found that bonds issued between 2005 and 2011 achieved an annualised return of 0,51%.

Grøstad (2013) analysed determinants of default in the years 2006-2013. Knappskog and Ytterdal (2015) tried to measure and identify explanatory factors for coupon spreads at issue.

The main objective of this thesis is to calculate the returns in the HY segment of the Norwegian corporate bond market. The return has been compared to the Oslo Stock Exchange Benchmark (OSEBX), Norwegian government debt securities, the US HY market and an index on Norwegian HY mutual funds. Based on the return we will conduct a quantitative- and qualitative assessment of potential explanatory factors for differences in returns to strengthen our analysis.

Multiple aspects motivated us to write about the Norwegian HY market. Compelling courses at NHH triggered our interest in learning more about fixed income securities and how companies are financed. In Money and Banking we were introduced to the Norwegian corporate debt market by an article from the Norwegian central bank (Norges Bank), which discussed the emergence of the Norwegian HY market.

Through Finans|Bergen we came in touch with Torgeir Stensaker, Head of Fixed Income Norway at Nordea Investment Management, who openly questioned whether HY bonds had sufficiently compensated investors for the greater credit risk.

Bakjord and Berg (2012), argued that the Norwegian HY market is immature, and that the period they analysed was highly affected by the rapid growth of the market and by the US subprime crisis, which emerged in 2007. Their results contradict financial theory, which motivated us to do a return analysis of the Norwegian HY market over a longer time span with an alternative method for calculating returns. A longer analysis period would reduce the impact of business cycles and enable us to make stronger and more comprehensive conclusions regarding the Norwegian HY market.

Over the last decade, investors have poured more than NOK 20bn into Norwegian HY mutual funds in search for higher yield. The returns of those funds have been consistent. However, since to the large decline in the oil price starting mid-2014, the HY market has fallen dramatically. The market for bond issuances within certain sectors is effectively considered closed, and a significant amount of companies in the oil and gas industry are either in

preliminary or full restructuring negotiations with their banks and bondholders to postpone the payment of maturing debt.

On this background, we believed that additional analysis of the Norwegian HY market was warranted. Considering the enormous growth this segment has over the last decade, we wanted to explore whether investors have achieved sufficient returns or whether the more colloquial term “junk bonds” is a more descriptive name for these securities.

Our main finding is that between 2005 and 2015, Norwegian HY bonds achieved a 0,2% annual return. In the same period, Norwegian equities, measured by the OSEBX, returned 8,8%, which is not surprising as equities are riskier than bonds. More surprisingly, HY bonds had lower returns than Norwegian government securities. Akin to Bakjord and Berg (2012), our results contradict traditional financial theory that higher risk should yield higher returns. Furthermore, we created an index on Norwegian HY mutual funds which achieved a return of 3,9% and outperformed our sample. This result indicates that HY bonds could be an asset class where there are benefits to active management compared to passive management.

In this thesis, we will in Chapter 2 present basic bond theory, which gives the necessary framework for our analysis. In Chapter 3, we describe the Norwegian HY market: its history, fundamentals and future outlook. In Chapter 4, we present our sample and explain our selection process. This section also includes our assumptions and the framework we have used to calculate bond returns. In Chapter 5, we will introduce the methodology used to analyse our results. In Chapter 6, we discuss the period we have examined and present analyses of our results, while Chapter 7 contains the counter analyses to our results and future research ideas. Finally, in Chapter 8, we present and discuss our conclusions.

2 Bond Theory

Chapter Summary

In this chapter, we will explain basic bond concepts, the capital structure, and different types of risk related to corporate bonds.

2.1 Bond Basics

What is a bond?

A bond is a debt security, which is issued by borrowers to obtain capital either for short- or long-term needs. When a bond is issued, the issuer (debtor) makes contractual obligations to pay the lender (creditor) a certain amount of cash at predetermined dates in the future (Sundaresan, 2009).

Issued Amount

The first aspect of a bond agreement is the issued amount or principal, which is how much the issuer is borrowing. The issued amount is split into several bonds with a par value or face value (FV), which is the claim each bondholder has on the firm's assets. Bond prices are usually quoted as a percentage of par value (Sundaresan, 2009). Some of the HY bonds issued in Norway are tap issues. Tap issues allow the borrower to issue additional tranches of bonds to increase the issued amount. By having a tap issue provision, the company can, with the help of an investment bank, quickly place new bonds to investors under the same loan agreement (Sletten, 2016).

Coupon Payments

The coupon is the annualised percentage of par value that the bondholder will receive per period.[1] Furthermore, return type determines whether the bond pays a floating rate (FRN) or a fixed rate. FRN bonds pay a coupon that is a predetermined spread (the margin) over a reference rate, which is usually an interbank lending rate[2], usually set to correspond with the denominated currency of the bond. The coupon frequency determines whether a bond issuer is obligated to make payments annually, semi-annually or quarterly. However, the exact amount of interest depends on the number of interest days in the period between interest payments, which depends

[1] Coupon rates are annualised to make rates comparable.

[2] The short-term rates, up to one year, banks charge on lending to other banks.

on the type of day count convention being used. For fixed rate bonds, interest days are normally calculated by counting the number of days between coupon payments, though assuming that there are 30 days in a month, and dividing by 360. With FRN bonds, interest days are usually calculated by using actual amount of days between coupon payments and dividing by 360, also known as ACT/360 (Norwegian Society of Financial Analysts, 2015).

$$FRN\ Coupon\ Payment = (Spread + Reference\ rate) \times Issued\ Amount\ \times FRN\ day\ count\ convention$$

$$Fixed\ Coupon\ Payment = Coupon\ Rate\ \times Issued\ Amount\ \times\ Fixed\ day\ count\ convention$$

Repayment Structure

A bond will either be an amortising bond, meaning that the issuer will gradually repay the issued amount in instalments, or a bullet bond, meaning that the issuer will repay the full issued amount at maturity in a balloon payment (Sundaresan, 2009).

Imbedded Options

A call option gives the bond issuer the right, but not the obligation to buy back the bonds before maturity. The callability is an opportunity to refinance when it is preferable for the issuer, e.g. when market interest rates decline. The call price is usually at a premium to the FV of the bonds to compensate the bondholders for early redemption. This functionality is positive for the issuer and a source of reinvestment risk for the bondholders. The call option limits investors return from bond price appreciation, hence callable bonds offer higher interest rates than non-callable bonds (Mishkin, 2012).

A put option gives the bondholder the right, but not the obligation, to sell the bond back to the issuer. Regular put options are rare in our data set; however, put options triggered by a change of control are common. When there is a change of control in a company, bondholders are given a put option normally with an exercise price of 101% (Eriksson, 2015).

Payment-In-Kind (PIK) Interest

A PIK option gives the issuer the right or requires the issuer to not pay a cash interest, instead the interest is capitalised so that the issued amount increases. The purpose of a PIK-interest is to preserve liquidity and it is frequently used in distress cases or as a ratchet mechanism where the

bonds will accrue PIK-interest until a more senior obligation has been repaid. After a PIK-interest has been incurred, the next coupon will be calculated based on a higher FV (Brittenham and Sellinger, 2014).

Covenants

Covenants can be actions that the issuer is required to do, affirmative covenants, or actions that the issuer is restricted from doing, negative covenants. The purpose of covenants is to control the bondholder-stockholder conflict and protect the bondholders from losses (Smith and Warner, 1979). Covenants can be incurrence or maintenance.[3] Maintenance covenants are tested periodically, for example, certain financial measures must be achieved quarterly or semi-annually. If an issuer has incurrence covenants, the covenants represent a continuous obligation for the issuer, e.g. restrictions on payment of dividends, issuance of new debt or asset sales (Graebner and McDonald, 2014).

There are many types of covenants, however we will only focus on financial covenants, which require the issuer to maintain a certain level of financial performance, usually measured by financial ratios, e.g. equity ratio or interest coverage ratio.[4] If covenants are breached and, if applicable, not remedied within a grace period, the breach will constitute an "event of default". If an event of default has occurred, the bondholders have the right to declare the bonds, including accrued interest, costs and expenses, to be in default and due for immediate payment (Doulai and Wells, 2013). For minor covenant breaches, a mutual agreement between the bondholders and the issuers is often reached, whereby the issuer normally pays a fee between 0,5% - 2,5% of the FV of the bonds to compensate the bondholders for waiving or amending the covenants.

Different types of bonds

Generally, bonds with time-to-maturity of more than a year pay coupons, whereas bonds with time-to-maturity shorter than a year do not pay coupons. Bonds that do not pay coupons are more commonly known as zero-coupon bonds (ZCB) or certificates, and are the simplest type of

[3] Most HY bonds have incurrence covenants (Eriksson, 2015).

[4] Equity ratio is the issuer's ratio of equity to assets, which is a measure solvency. Generally, interest coverage ratio is the issuers' ratio of Earnings Before Interest and Taxes (EBIT) to interest expense. This ratio measures the issuer's ability to pay its interest obligations.

bond (Bodie, Kane and Marcus, 2011). Another type of bond is a convertible bond, which gives the bondholders the option to convert bonds for a predetermined number of other securities of the issuer, usually common shares (Smith and Warner, 1979). Shareholders often do not consider convertible bonds as a good source of funding, as issuing convertible bonds might dilute the shareholders' ownership (Fossan-Waage, Holseter and Lewis, 2015).

2.2 Financing and the Capital Structure

The relative amount of debt, equity, and other securities that a firm have outstanding constitutes its capital structure (Berk and DeMarzo, 2011). For debt in the capital structure, it is important to distinguish between senior and subordinated debt, and whether debt is secured or unsecured.

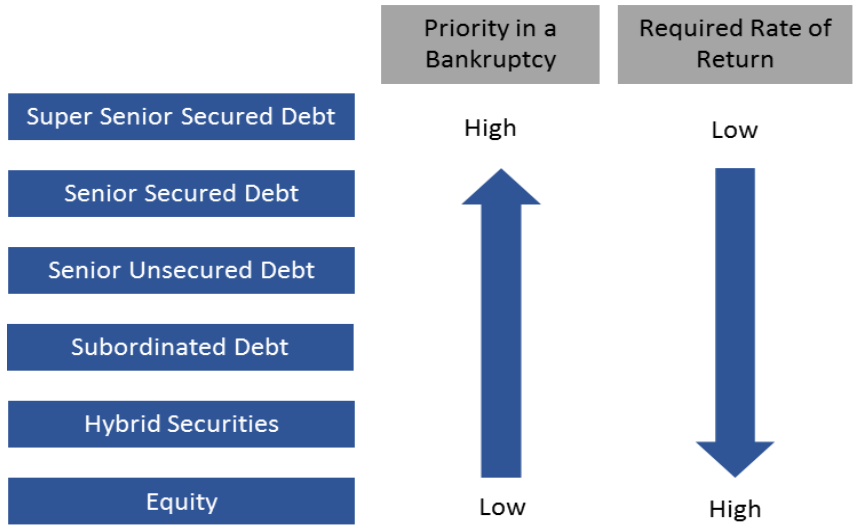
Seniority

From a legal standpoint, debt ranks above residual claims such as equity. In the event of a bankruptcy, debt holders will be paid before equity holders, which is why debt has a lower required rate of return than equity. Similarly, senior debt ranks above subordinated debt. Subordinated bondholders have the lowest priority of all debt holders in a company, and demand the highest coupon rate because they will get their investment back the latest (Sundaresan, 2009).

Security

Secured debt, also known as asset-backed debt, has collateral in specific assets or categories of assets of a firm. In a bankruptcy, secured creditors are more likely to recover their principal because they have contractual right to the entire proceeds from a sale of the collateralised asset, which is why secured debt will have a lower required rate of return (Sundaresan, 2009). For example, a shipping company might secure its debt with a mortgage over a specific vessel, or a drilling company might collateralise its debt with a specific drilling rig (Fossan-Waage et al., 2015). Smith and Warner (1979) argue that the issuance of secured debt lowers the total costs of borrowing for a company, often the best security will be used for senior bank loans. Unsecured bonds, also known as debentures, have no collateral and are therefore riskier, and investors will demand a higher coupon rate to hold these bonds (Bodie et al., 2011).

Figure 1: Capital Structure



Source: Own illustration[5]

One study of the Norwegian HY market found that unsecured bonds had higher recovery rates than secured bonds (Knappskog and Ytterdal, 2012). This is an unexpected finding that contradicts financial and legal theory. A potential reason for this result is that the quality of the companies issuing unsecured bonds was better than that of companies issuing secured bonds. Often investors will prefer to hold unsecured debt from issuers with strong, diversified and resilient business models. According to Lars Kirkeby, Chief Analyst Credit Research at Nordea Markets, many secured bonds in the Norwegian HY market have been project financing, i.e. that the bonds were only attached to a specific asset, e.g. a drilling rig or vessel, and not a company with established operations. If a project finance bond defaulted, then the only source of income and recovery would be the collateralised asset. If a regular company defaults, recovery can be retrieved from both assets and the general earning power of the company (Kirkeby, 2016).

Why Do Firms Issue Bonds?

According to Modigliani and Miller (1958), Proposition I, the market value of any firm is independent of its capital structure, i.e. how a firm is financed is irrelevant[6]. This proposition is based on many strict assumptions, such as no taxes, bankruptcy or agency costs, which do not hold in the real world. Because a firm's interest expense or cost of debt is tax deductible while

[5] Hybrid securities are securities with debt and equity components, e.g. convertible instruments.

[6] The proportion of debt and equity.

the cost of equity is not deductible, there is a tax benefit to having debt in the capital structure. However, as the firm increases the amount of debt, the cost of equity increases and eventually the cost of debt starts to increase due to higher bankruptcy risk.[7]

There are two major sources of external financing, the corporate bond market and commercial banks. There are benefits and disadvantages to each source, and the popularity of each varies among jurisdictions. Lately, commercial banks have become more regulated as a consequence of several banking crises the last 30 years. New regulation, such as Basel III, have higher capital requirements for commercial loans, which makes the loans more expensive for the banks to have on their balance sheet (Saunders and Cornett, 2014). As a result, banks are becoming reluctant to lend more to companies, which has forced companies into the bond market (Lorentzen, 2012).

The market participants we have met, generally divide those who use the bond market into three categories:

1. Companies that can achieve better financing terms in the bond market than from commercial banks.
2. Companies that use the bond market as an additional source to commercial bank loans.
3. Companies that are not able to obtain funding from commercial banks.

During the last couple of years, the bond market has at times been a cheaper way to raise debt than traditional bank loans, and due to tougher capital requirements, banks have refrained from lending more to companies (Ekeseth, 2012). In a meeting with Lars Tronsgaard, Deputy Managing Director at Folketrygdfondet, he argued that companies in the Oil and gas services sector (Drilling, Seismic, Supply and Services), which are a major part of the HY market in Norway, have issued debt when they rather should have issued equity due to over-optimism, favourable financing terms and high demand from bond investors.

[7] For a deeper discussion of cost of capital and capital structure, see Modigliani and Miller (1958).

Bond Pricing

The price, or value, of any asset is the present value of its expected future cash flows discounted at an appropriate discount rate (Berk and Demarzo, 2011). According to Merton (1974), the price or value of a bond depends on three factors:

1. The required return on riskless (in terms of default) debt
2. The provisions and restrictions contained in the loan agreement
3. The probability that the firm will be unable to satisfy some or all of the issue requirements

The framework by Merton (1974) illustrates that investors should be compensated for the risk-free rate, the bond characteristics such as covenants, return type, security and seniority, and the credit risk of the company. The sum of all the risk aspects of a bond is the market interest rate. The market interest rate is the appropriate discount rate for the future cash flows of the bond and more often referred to as the yield to maturity (YTM). The YTM is the return anticipated if the bond is held to maturity and should reflect the inherent risk of the bond.[8]

$$P = \sum_{t=1}^{N} \frac{C_t}{(1+r)^t} + \frac{FV}{(1+r)^N}$$

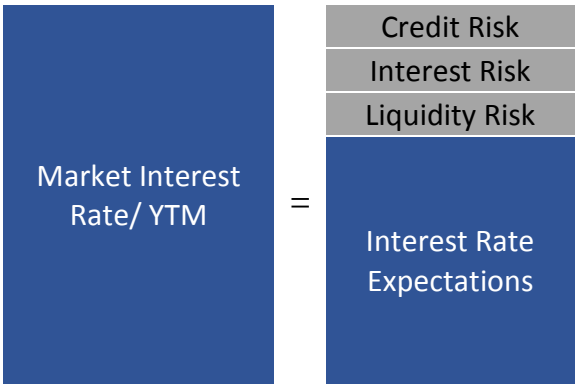
P = Bond Price
r = Market Interest Rate/YTM
C = Periodic cash interest payment
FV = Face value or par value of the bond
t = time in years
N = Total number of years

2.3 Bond Risk

In this section, we will discuss credit risk, interest rate risk and liquidity risk, which affect the YTM of a bond. We will focus mostly on credit risk because it is the main driver of yield for HY bonds (Torgersen, 2016).

[8] Variations of this equation will be showed in other sections. While the equations will be presented with minor differences, they are derived from the same concepts.

Figure 2: Market Interest Rate/ Market Yield



Source: Own illustration and Valset (2003).[9]

Credit Risk

Credit risk is the risk that the issuer may not be able to service all or some of the promised obligations due to financial distress, restructuring[10] or bankruptcy, i.e. default on the payment obligations set out in the bond agreement. Corporate bonds are divided into two classes based on perceived credit/default risk: IG and HY (Sundaresan, 2009). Default is defined by credit rating agency Moody's in three alternative ways (Moody's, 2007)[11]:

1. *A missed or delayed disbursement of interest and/or principal, including delayed payments made within a grace period.* [12]
2. *Bankruptcy, administration, legal receivership, or other legal blocks (perhaps by regulators) to the timely payment of interest and/or principal.*
3. *A distressed exchange occurs where:*
    a. *the issuer offers debt holders a new security or package of securities that amount to a diminished financial obligation (such as preferred or common stock, or debt with a lower coupon or par amount, lower seniority, or longer maturity); or*
    b. *the exchange had the apparent purpose of helping the borrower avoid default.*

[9] The amount that each risk factor contributes to the market interest rate is not scaled in the figure.

[10] Restructuring is the process of renegotiating or rewriting financial contracts outside courts and liquidation is the process of restructuring under court supervision (Gilson, 2010).

[11] The description of default is collected directly from Moody´s FAQ (2016).

[12] Companies are often given a grace period on interest payments, but if the company does not settle payments within the grace period then it is in default.

Credit Ratings

Credit ratings draw the line between IG and HY bonds, and try to capture the credit risk of a company. Official ratings are set by a credit rating agency, such as Moody's, S&P and Fitch. Because the spread over the risk-free rate determines the price of the bond, the achieved credit rating greatly affects the price and availability of funding for the issuer. Ratings can be given to both a company and its different tranches of debt. They are not necessarily the same because the rating agencies evaluate the credit quality of the issuer and the bond's subordination when they assign ratings (Cederlof and Liedgren, 2015). Credit ratings are based on analysis of common financial and operational ratios. These ratios try to evaluate the profitability, liquidity, solvency and capital structure of a company. An official credit rating is often important to achieve attention from investors because some institutional investors are mandated to only invest in rated securities (Goldstein and Huang, 2015). The importance of official credit ratings is much more apparent in the US; official ratings are not required and rather uncommon in Norwegian HY.

Table 1: Credit Rating System

	Moody's	S&P	Fitch	Probability of Default
Investment Grade	Aaa	AAA	AAA	0,03 %
	Aa1	AA+	AA+	0,15 %
	Aa2	AA	AA	
	Aa3	AA-	AA-	
	A1	A+	A+	0,38 %
	A2	A	A	
	A3	A-	A-	
	Baa1	BBB+	BBB+	1,12 %
	Baa2	BBB	BBB	
	Baa3	BBB-	BBB-	
High Yield	Ba1	BB+	BB+	6,34 %
	Ba2	BB	BB	
	Ba3	BB-	BB-	
	B1	B+	B+	15,77 %
	B2	B	B	
	B3	B-	B-	
	Caa1	CCC+	CCC+	33,61 %
	Caa2	CCC	CCC	
	Caa3	CCC-	CCC-	
	Ca	CC	CC+	
		C	CC	
			CC-	
	D	D	D	Default

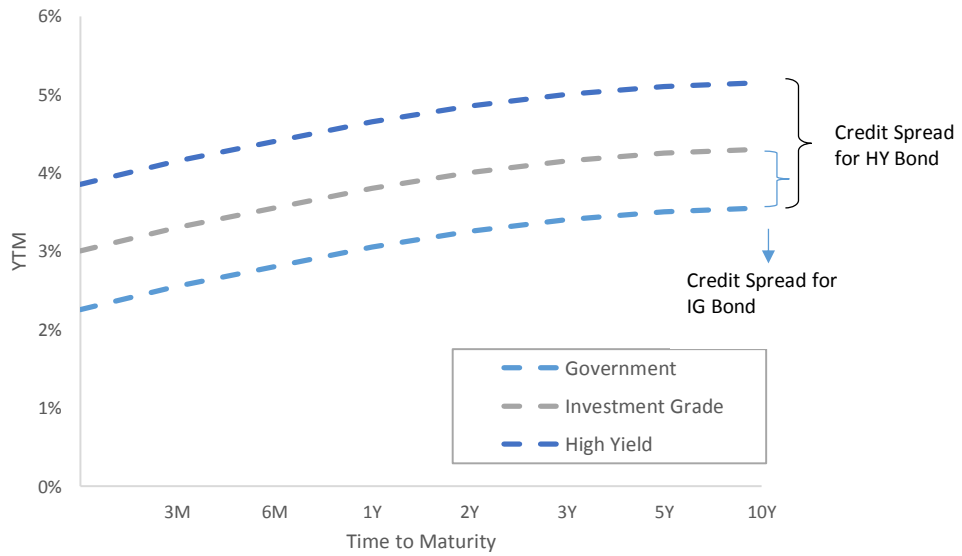
Source: ABG Sundal Collier (2014)

The credit rating agencies have been under pressure in the aftermath of the subprime crisis due to a perceived conflict of interest which some argue led to incorrect assessments of risks by the credit agencies. To obtain an official rating, firms have to pay the credit rating agencies. Critics argue that the agencies have incentives to be generous with ratings, as their business model requires clients that are willing to pay for it. This trend has been called credit rating inflation since the agencies give the firms too favourable credit ratings (Goldstein and Huang, 2015).

Credit Spread

US government bonds are considered risk-free, in the sense of credit risk, because they are backed by the full faith and credit of the US government. The US government theoretically has the ability to raise taxes or print money in case it is not able to honour its obligations. One way to quantify credit risk is therefore to look at the spread between treasury bonds and corporate bonds with similar time-to-maturity. This spread is known as the credit spread. The riskier a company is the higher its credit spread will be (Sundaresan, 2009).

Figure 3: Hypothetical Yield Curve for IG and HY bonds



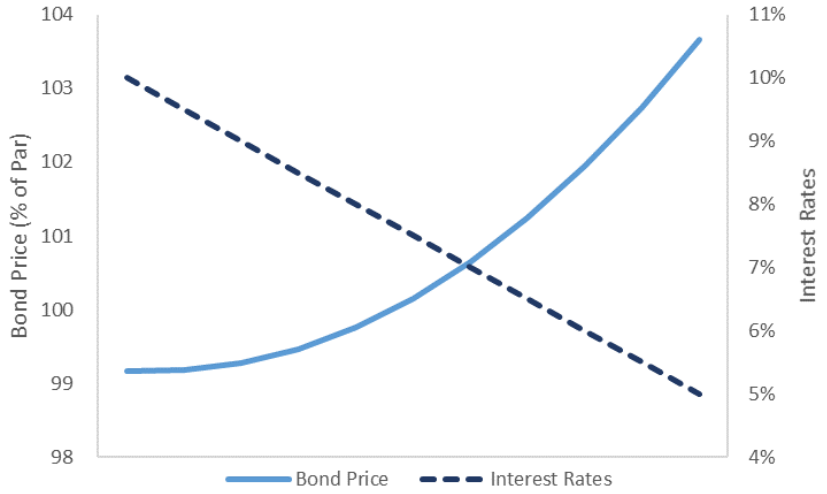
Source: Own illustration

Interest Rate Risk

Interest rate risk is the risk that the value of an investment will change due to changes in interest rate levels. Fixed bonds are exposed to interest rate risk, while FRN bonds are exposed to minimal

interest rate risk, as they are re-priced every time the reference rate is set.[13] As illustrated in Figure 4, there is an inverse relationship between the price of a bond and interest rates. If interest rates fall, the price of fixed bonds will go up because the bond offers an attractive return based on new market interest rates, and this will decrease the YTM. If interest rates increase, the bond, compared to bonds being issued with similar credit risk, will no longer sufficiently compensate the investor. This will decrease prices for fixed bonds because investors will be willing to pay less for the promised cash flows, which will increase the YTM (Sundaresan, 2009).

Figure 4: Bond Prices and Interest Rate Movements



Source: Own illustration

The sensitivity to interest rate changes of a bond can be measured by calculating the modified duration and convexity. Modified duration quantifies how much the price of a bond changes when the yield changes. It is calculated by dividing the Macaulay duration[14] by the market price of the bond. Altman (1998) points out that, due to higher coupon rates, the Macaulay duration on HY bonds is lower than that of other types of bonds, i.e. HY bonds should not be as sensitive to interest rate fluctuations because a higher portion of the present value of the cash flows will be received sooner. Convexity measures how much the slope of the price-yield curve changes for a

[13] An FRN bond that pays a certain spread over a 3M interbank rate is re-priced every 3 months when the reference rate is set (Sundaresan, 2009).

[14] Macaulay Duration is the discounted cash flow weighted average time until all of the cash flows of a bond are received.

small change in yield (Sundaresan, 2009). These concepts are central to bond theory, but not essential to our analysis.[15]

Liquidity Risk

Liquidity refers to how easy a reasonable amount of a security can be transacted in a market within short notice, without having an adverse effect on the price (Sundaresan, 2009). Aspects that determine the level of liquidity are:

1. Transaction costs (fees and commissions).
2. Bid-ask spreads and volume depth.
3. Market impact costs (price changes).

The liquidity premium is a very common risk factor analysed in academia. According Rakkestad, Skjeltorp and Ødegaard (2012), many bonds in the Norwegian market suffer from low transaction volume, which increases the bid-ask spread. Knappskog and Ytterdal (2015) found that illiquid bonds had a 110 basis points higher spread at issue, which shows that investors require a higher expected rate of return from illiquid bonds. [16]

According to Vegard Annweiler (2014), CEO of Nordic Bond Pricing (NBP), the Norwegian HY market is illiquid and non-transparent. In general, the liquidity of bond markets varies among countries. The corporate bond market in the US is considered liquid compared to the Norwegian bond market, nevertheless, only 15% of the outstanding corporate bonds were traded on a daily basis in June 2013 (Sedgwick, 2013). This research shows that trading is limited even in bond markets that are considered liquid. Because the liquidity is low, it is realistic to assume that certain investors buy bonds to hold them until maturity. A reason for doing so could be to match assets and liabilities.

2.4 IRR/Yield to Maturity

Due to the lack of and poor quality of data, we have used the internal rate of return (IRR) of cash flows between the issuer and investors as a measure of return. IRR is the annualised discount rate that makes the present value of the cash flows equal to the initial investment (Sundaresan, 2009).

[15] For a deeper discussion on convexity and duration, see Chp. 7, Sundaresan (2009).

[16] They measured liquidity by analysing how often the equity of the bond issuer was traded during a year.

$$I = \sum_{t=1}^{N} \frac{CF_t}{(1 + IRR)^t}$$

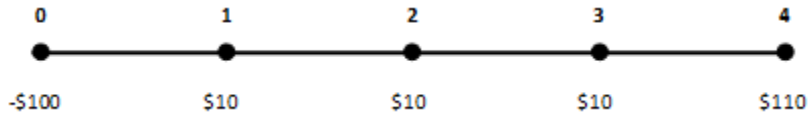
I = Initial Investment
CF_t = Cash Flow at time t
t = Time in Years
N = Total Number of Years
IRR = Internal Rate of Return

The common argument against IRR is that any intermediate cash flows must be reinvested at a rate equivalent to the IRR for the investment to earn the calculated yield to maturity. The reinvestment assumption is a "chronic and acute error found in the popular investment literature and many investment texts" (Forbes, Hatem and Paul, 2008, p. 48). Cheremushkin (2012) provides logical and mathematical proofs that there is no reinvestment assumption imbedded in the IRR formula. It is important to distinguish between IRR and Annualised Total Return. Annualised total return is the geometric average of the investor's total return over an investment period:

$$Annualised\ Total\ Return = \left(\left(\frac{Ending\ Wealth_N}{Investment} \right)^{\frac{1}{N}} \right) - 1$$

Total Return is based on all projects an investor undertakes during an investment period. IRR is the rate of return earned per USD invested in one project. Imagine a 4-year bond being issued at par with a FV of USD 100 and a 10% coupon. The cash flows will then be as shown in illustration 1.

Illustration 1: Cash Flows from Hypothetical Bond



Source: Own illustration

What is the return of this bond? The IRR of this bond is 10%.[17]

$$100 = \frac{10}{(1 + IRR)^1} + \frac{10}{(1 + IRR)^2} + \frac{10}{(1 + IRR)^3} + \frac{110}{(1 + IRR)^4}$$

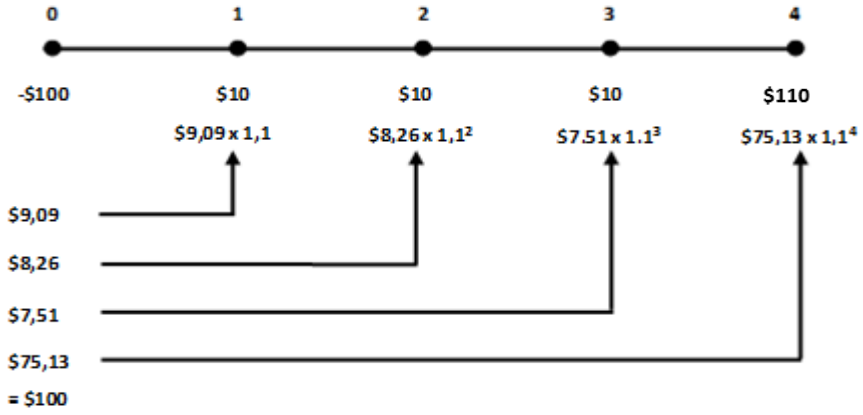
[17] Calculated using the IRR function in Excel.

However, if the investor does not reinvest the intermediate cash flows, the annualised total return will be 8,78%.

$$\left(\left(\frac{(CF_1 + CF_2 + CF_3 + CF_4)}{Investment}\right)^{\frac{1}{N}}\right) - 1 = \left(\left(\frac{140}{100}\right)^{\frac{1}{4}}\right) - 1 = 8{,}78\%$$

This is why many argue that the coupons need to be reinvested for the bond to earn the yield of 10%. Illustration 2 shows that the bond has earned 10% on the invested amount. Different portions of the initial investment of USD 100 earns 10% per year and becomes the cash flows of the bond.

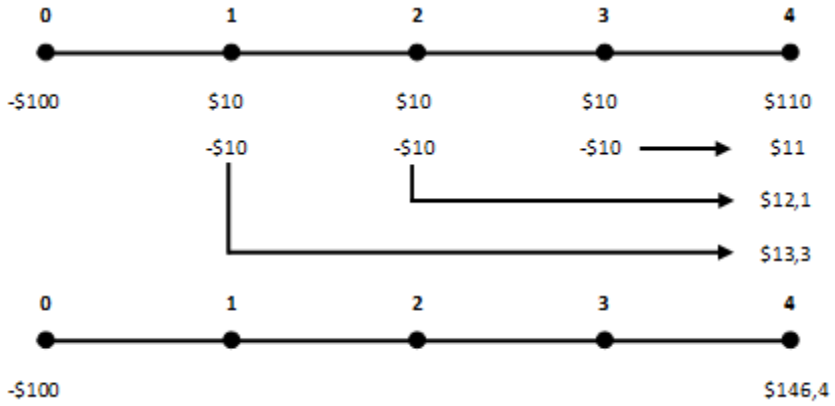
Illustration 2: Cash Flow Breakdown



Source: Own illustration and Forbes et al. (2008)

The investor has failed to maintain the time value of money, which is why the annualised total return is only 8,78%. In order for the investor to achieve an annualised total return of 10%, the intermediate cash flow would have to be reinvested at 10% per annum as shown in Illustration 3.

Illustration 3: Coupon Reinvestment



Source: Own illustration

However, these are not the actual cash flows of the bond, but derived from an assumption that the intermediated payments are reinvested. We are interested in what return the bond has given to the investor and not the total return of the investor, which is difficult to determine. In conclusion, if an investor buys a bond with a YTM of 10% he or she will not necessarily realise a 10% return during the bond's lifetime, but the bond will have returned 10%.

As shown above, IRR can in some sense “overstate” the return for an investor, but it does not overstate the return of the bond. Other issues with using IRR is that there are limitations to how often the cash flows can change from being positive to negative and that the measure is sensitive to the length of the bond.

3 The Norwegian Bond Market

Chapter Summary

In this chapter, we will introduce the Norwegian HY market, its history, participants, fundamentals and outlook.

3.1 Market Fundamentals

History

The HY market originally emerged during the 1970s and 1980s in the United States. Before the 1980s, the HY market mainly consisted of so-called "fallen angels", companies that were downgraded to HY from IG during the life of the bond due to increased probability of default. In the late 1970s, firms without IG rating started to issue bonds at an increasing pace (Yago, 2008). Michael R. Milken, an investment banker at Drexel Burnham Lambert, has received much of the credit for the development of the market for HY bonds in the US. Milken realised that a lot of investors were willing to take higher risk if compensated with a sufficient return. He began to function as an underwriter that would buy or sell bonds on demand, whereby Milken offered liquidity to the market (The Economist, 2010). During the 1980s, the issued HY volume grew from USD 10bn to USD 189bn. In 1989, the market collapsed after a massive campaign against HY issuance and Drexel[18], initiated by firms that were previously the primary source of credit (Yago, 2008). The HY market in the US remained closed for more than one year after this sudden collapse, however, the market recovered and grew sharply from 1991 to the beginning of 2000. The following Dot-Com crisis led to low returns and several defaults in the US HY market (Yago, 2008). Nevertheless, the US economy recovered from the Dot-Com crisis, as did the HY market, until the financial crisis of 2008 hit the economy severely. Figure 5 depicts the development in the US HY market prior to and following the financial crisis.

[18] Drexel went bankrupt after several legal battles (The Economist, 2010).

Figure 5: US High Yield Issuance Volume 2005-2015

Source: Cross (2015)

The bond market in Norway has existed for a long time, but it is only recently that the market has developed into its current form. As early as in 1920 private credit enterprises where issuing bonds in Norway, and in 1960 the first non-credit companies issued bonds (Klovland, 2004). The number of listed bonds on the Oslo Stock Exchange increased significantly in the 1980s as a result of increased activity in the second-hand bond market (Klovland, 2004). However, it was not until the mid-2000s that Norway saw an emergence of a HY market (Nordic Trustee, 2015). The HY market experienced rapid growth in 2006 and 2007 before it almost collapsed in 2008. Traditionally, Norwegian companies have turned to banks for financing, however this changed due to the financial crisis of 2008 as banks tightened their lending practices and companies were forced to turn to the bond market (Fossan-Waage et al., 2015). Since the financial crisis, the Norwegian market for HY bonds has become the third largest market for HY corporate bonds measured by issuance volume, trailing only the US- and the UK market (Lind, 2014). According to Fossan-Waage et al. (2015), HY bonds make up about half of the corporate bonds issued in Norway. Norway also accounts for a substantial part of the Nordic HY volume, with approximately two-thirds being issued in Norway (Forfang, 2015).

Participants

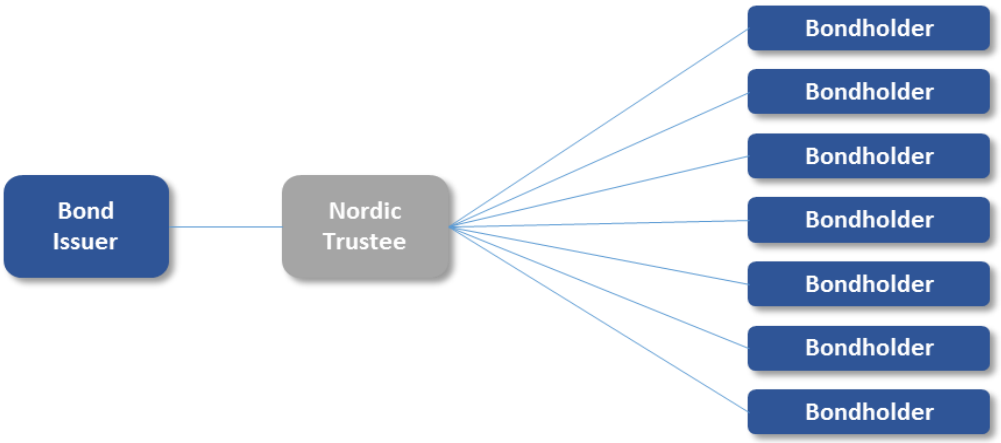
To increase our understanding of the Norwegian HY market we have met or discussed with several market participants: Nordic Trustee, credit analysts, investors and managers.

Nordic Trustee

Nordic Trustee is a company that acts as a intermediary between issuers and investors. Its primary function is to act as trustee for the investors in fixed income securities, i.e. enforce the contractual

rights of bondholders (Nordic Trustee, 2015). Approximately 95% of bonds issued in Norway go through Nordic Trustee (ABG Sundal Collier, 2014). The company plays an important role in the issuance process and monitors the issuer continuously after the bond has been issued (Pettersen, 2016).

Figure 6: The Role of Nordic Trustee



Source: Nordic Trustee (2015) and Fossan-Waage et al. (2015)

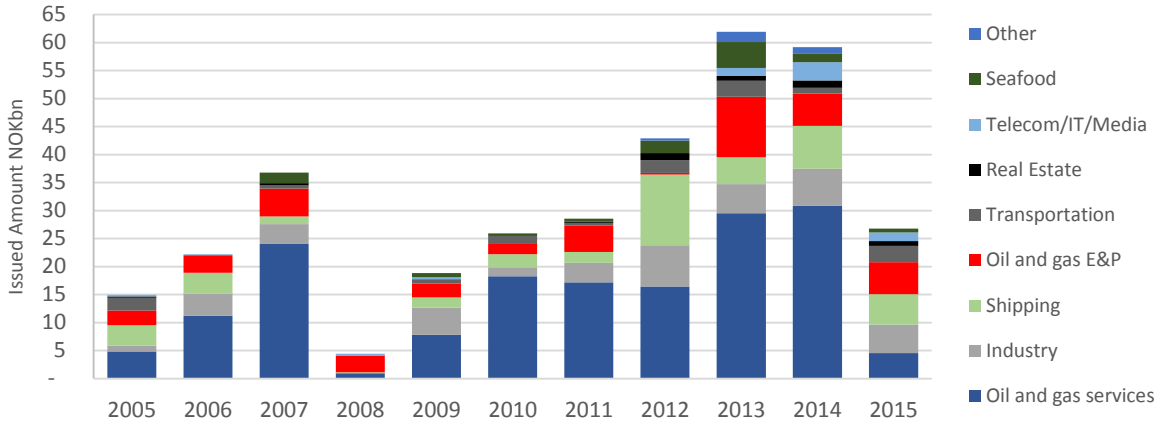
As shown in Figure 6, instead of dealing with many different bondholders, the issuing company can deal directly with the trustee. The opinions and desired actions of the bondholders are discussed and decided at bondholder meetings, and enforced by the trustee (Fossan-Waage et al., 2015). According to Nordic Trustee (2015), their system "protects and controls the investors' rights in an effective manner and creates more flexibility for the issuers".

Issuers

The HY market is dominated by cyclical companies, such as companies from the Norwegian offshore and Shipping sectors, which are capital-intensive sectors. However, over time the HY market has evolved into a more diversified market with issuers from other sectors. In addition, there is a growing amount of bonds issued by private equity companies to finance acquisitions of other companies (Eriksson, 2015).[19]

[19]Private equity companies raise money from investors to acquire businesses and later sell them for a profit. US private equity companies have used HY bonds to finance Leveraged Buyout (LBO) transactions for decades; however, the use of high yield bonds in buyouts in Norway is a relatively new phenomenon (Eriksson, 2015).

Figure 7: Issuance Volume Based on Sector



Source: Stamdata (Figure based on our final sample).

As can be seen in Figure 7, Oil and gas services companies strongly dominate HY bond issuance in Norway. The Oil and gas services sector can be split into four main segments: offshore vessels, rigs, seismic/surveying, subsea and operational services. The second most dominant sector is the oil and gas E&P sector. E&P or exploration and production companies are companies that focus on finding, producing and marketing oil and gas products. The Shipping sector consists of companies that transport different commodities or products, such as chemicals, oil and gas, dry bulk, containers and cars, by sea. The Transportation sector is mostly made up of airlines and ferry companies. The Seafood industry consists of companies that farm, catch, process and market different types of seafood or provide services or products to such companies. The Other post is a sector that we have created by grouping together smaller sectors, such as Healthcare, and Consumer Services and Goods. Lastly, the Industry sector is made up of companies that are involved in industrial production or manufacturing, mining and minerals, agriculture and renewables.

Investors/Bondholders

Unlike with stocks, there is no public bondholder register, which makes it difficult to know who owns the bonds issued in Norway (Dagslet, Dahl and Stensrud, 2013). Most market participants seem to believe that a lot of the bonds issued in NOK are held by HY mutual funds, insurance companies, pension funds and other institutional investors, and that a significant part of the bonds issued in USD are held by international hedge funds (Kirkeby, 2016).

Most pension funds and life insurance companies have target returns that they have guaranteed to their policyholders. Lower interest rates have made it difficult to achieve these targets. Consequently, in the search for higher yield many investors have increased their allocation to HY bonds (The Financial Supervisory Authority of Norway, 2016).

The minimum requirements to invest in HY are substantial; usually the FV of a single bond is in excess of NOK 0,5m. This has led to the establishment of HY mutual funds, which pool money from several investors to invest in HY bonds. The asset management branch of Pareto started the first Norwegian HY mutual fund in 2006.

According to Nordic Trustee, the Norwegian HY market has a significant amount of international investors. In connection with some bonds, it is not uncommon for 80% of the bondholders to be located outside the Nordic region. Predominantly, foreign investors are located in the US, the UK and Asia. (Nordic Trustee, 2015). Pareto Credit Research estimates that international investors own 75% of HY bonds issued in other currencies than NOK and only 5% of bonds issued by Nordic companies (Forfang, 2015).

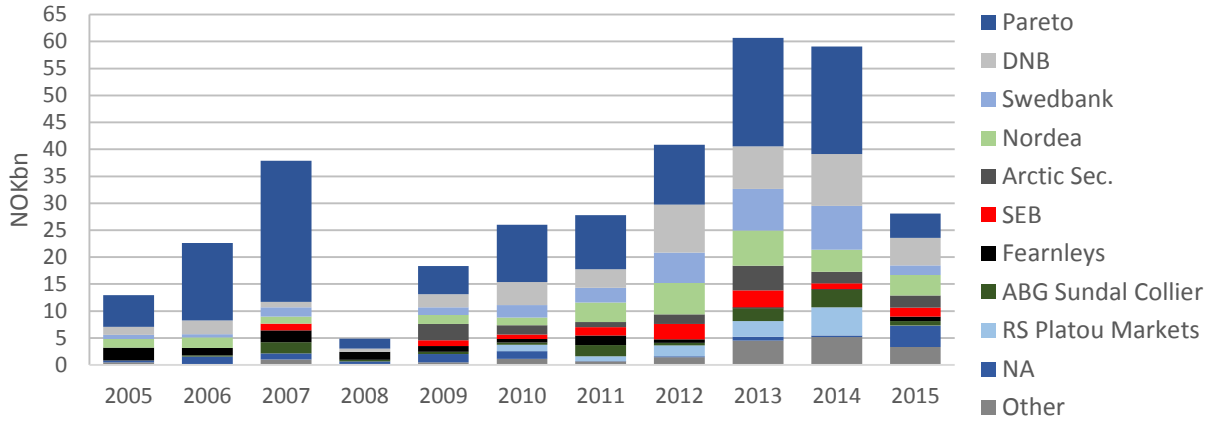
A potential reason for the difference in ownership could be that asset managers have different mandates. According to Nicolai Bratt, Director at Nordea Debt Capital Markets (DCM), some asset managers have mandates for the minimum size of bonds they can invest in. Asset managers often have a limit on how much of the bonds of a single company they can own. Conversely, there is a natural limit because it is costly to research and follow up the bonds. This means that the investor base could be different depending on the size of the bond.

Investment Banks/Managers

Investment banks perform two functions in an issuance process in the Norwegian HY market. The issuing company will hire one or several investment banks as managers, depending on the size of the issue, to advise, market and sell the bond issue (Mydske, 2015).[20] The leading managers are generally the well-known Nordic banks; however, Pareto's investment bank division is by far the most dominant manager as shown in Figure 8.

[20] Deals are rarely underwritten by Norwegian investment banks as many of them do not have the balance sheet to take on the risk of guaranteeing bond issues (Kirkeby, 2016).

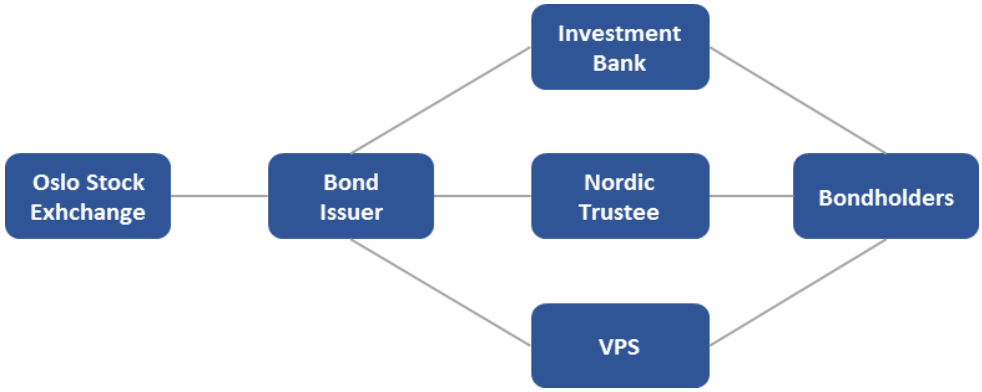
Figure 8: Investment Bank Market Share



Source: Stamdata

As explained in section 2.3, usually a credit rating agency rates a bond. Due to the high cost of attaining such rating and the fact that it is not required, very few HY bond issuers in Norway have public ratings (Bedwell, Eyerman and Frankfurth, 2014). Instead, the investment bank labelled as the lead manager will usually perform a credit analysis of the issuing company and give a shadow rating.

Figure 9: Participants in the Norwegian Bond Market



Source: Fossan-Waage et al. (2015)

As shown in Figure 9, there is no direct contact between the issuing company and the bondholders, or the investment bank and the bondholders. Even so, the investment bank will to some extent know who the bondholders are after acting as manager and then acting as an intermediary for bond trading (Fossan-Waage et al., 2015).

Nordic Bond Pricing (NBP)

NBP is a joint venture between Nordic Trustee and the Norwegian Fund and Asset Management Association (VFF) that was established in 2013. NBP provides daily independent pricing of bonds

and has a goal of developing supplemental services, such as bond indices. Their prices are based on proprietary models, analytical tools and data collected from the brokerage divisions at Norwegian investment banks (Annweiler, 2014).

Bond Agreements

Below is the standard outline of a typical Nordic Trustee bond agreement. This bond agreement template is, as already mentioned, standardised, but issuers and the Nordic Trustee will customise the terms for each bond issue. We present it because understanding the different chapters has been important for us in order to calculate returns.

Table 2: Typical Table of Contents for a Norwegian Loan Agreement

Typical Table of Contents for a Loan Agreement
1. Interpretation
2. The Bonds
3. Listing
4. Registration in a Securities Register
5. Purchase and transfer of Bonds
6. Conditions Precedent
7. Representations and Warranties
8. Status of the Bonds and Security
9. Interest
10. Maturity of the Bonds and Redemption
11. Payments
12. Issuer's acquisition of Bonds
13. Covenants
14. Fees and expenses
15. Events of Default
16. Bondholders' meeting
17. The Bond Trustee
18. Miscellaneous

Source: Stamdata

While each section of a bond agreement is important, the most important sections for this thesi are section 9, which outlines how interest is calculated and how often it is paid; section 8, which explains whether the bonds are secured and where they rank in the capital structure; and section 13, which explains what the issuer can and cannot do.

Compared to international type bond issues, Norwegian HY bond agreements are much shorter and much more simplified, which might seem to provide less protection for the bondholders.

Nevertheless, Nordic Trustee plays an active role to mitigate this issue (Fossan-Waage et al., 2015).

Exchanges

Bond investors are often mandated to invest only in listed bonds, which is why bonds are usually listed on either the Oslo Stock Exchange or the Nordic Alternative Bond Market (ABM). Listing the bond attracts more potential investors, which can lead to lower financing costs for an issuer (Fossan-Waage et al., 2015). Investors have been trading debt securities on the OSE since 1881, but the ABM was first established in 2005 as an alternative market place for fixed income securities. ABM is not regulated under the Stock Exchange Act, and according to MiFID[21], ABM is not considered an authorised market place (Rakkestad et al., 2012).

The requirements for listing on the Oslo Stock Exchange are fully consistent with EU rules and for this reason; the exchange is subject to stricter regulation than the ABM. Requirements for the issuers to list on the Oslo Stock Exchange are:

1) IFRS prepared financial statements.
2) Listing prospectus approved by the Financial Supervisory Authority of Norway.
3) An audit committee.
4) Quarterly financial reporting.

The IFRS requirement is the main obstacle for companies that want to issue bonds. The less regulated ABM exchange alleviates this problem, as it does not require financial statements prepared in accordance with IFRS or a listing prospectus and companies only have to report semi-annually (Fossan-Waage et al, 2015). While the ABM has more simplified reporting requirements and listing process than the traditional Oslo Stock Exchange, the exchanges have similar trading systems and rules (Rakkestad et al., 2012). Listed outstanding amount of fixed income securities was at the end of 2011 approximately three times higher on the Oslo Stock Exchange than on

[21] Markets in Financial Instruments Directive (MiFID). This directive was set into force in late 2007 and governs financial institutions' investment services connected to financial instruments. In addition, MiFID governs traditional stock exchanges. In the aftermath of the financial crisis MiFID proved to have shortcomings and MiFID 2 was introduced. MiFID 2 was introduced in 2011 to strengthen the protection of investors and make the financial markets more efficient and transparent (European Commission, 2016).

ABM, though the total number of issuers and issued bonds were higher on ABM, which indicates that smaller issuers take advantage of the less regulated ABM (Rakkestad et al., 2012).

Trading

A well-known concern with the Norwegian HY market is the lack of a correct and available source of transaction volume (Kirkeby, 2016). Much of the trade in the Norwegian debt market is done over-the-counter (OTC) (Rakkestad et al., 2012), which reduces the transparency of the market. Only trades intermediated by a broker registered with the Oslo Stock Exchange are recorded. These trades are required by law to be registered, but there is no such requirement for OTC trades (Oslo Stock Exchange, 2014). The result of this is that the price and volume of many trades never reach the public markets.

A study by Rakkestad et al. (2012), looked at the liquidity in the secondary market for debt securities in Norway. They found that between 1999 and 2011, approximately 65% of Norwegian corporate bonds were traded at least once each quarter, which is a negligible amount of trading. In addition, as they increased the frequency to monthly or weekly, the percentage dropped dramatically.

Norway vs. the United States

While there is a limited amount of research on the Norwegian HY market, there has been done extensive research on the US HY market. For instance, Andersen et al. (2009) found that in the US, HY bonds are much more correlated to equities than to other debt securities. In the US, firms rely heavily on funding from the bond market; the funding from bonds is almost twice as large as funding from banks (Forfang, 2015). On the other hand, in Norway and Europe, bank funding is almost twice as large as bond funding on an aggregated level (Nordic Trustee, 2015). The Norwegian debt capital market is characterised by standard documentation provided by Nordic Trustee. Nordic Trustee has contributed to growth by creating a well-functioning system for issuers. Issuers can raise capital in an efficient way, which is especially important for the capital-intensive sectors in Norway such as the oil and gas sector and the Shipping industry (Oslo Stock Exchange, 2015). There is no requirement for public rating or due diligence, which is among the reasons why the issuance process is so quick and cost effective. In a receptive market

environment, issuing bonds takes only a few weeks (Fossan-Waage et al., 2015). In Table 3, we have made a comparison of the characteristics for a typical Norwegian- and US HY bond.

Table 3: Characteristics of the HY market in Norway vs. US

	Norwegian HY Bonds	US HY Bonds
Minimum Size	NOK 100m	USD 150-200m
Tenor	3-7 years	5-10 years
Coupon Type	Fixed or FRN	Fixed
Amortisation	Bullet or amortising	Bullet
Public Rating	Not required (Unusual)	Required
Covenants	Maintenance and incurrence	Incurrence
Modifications	Waiver and consents not uncommon	Consents difficult
Liquidity	Low	High
Issuers	Oil and Gas dominated	Diversified

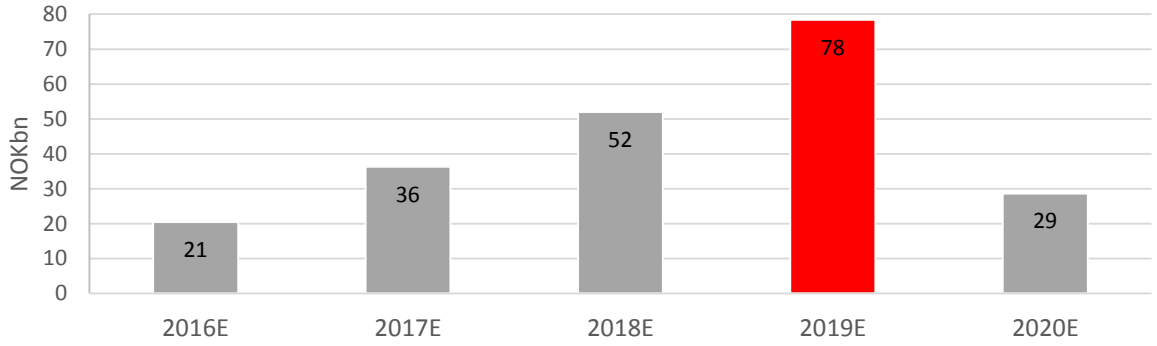
Source: ABG Sundal Collier (2014), Fossan-Waage et al. (2015) and Mydske (2015)

3.2 Market Outlook

So far in 2016 there has been very limited issuance activity. Ottar Ertzeid, Group executive vice president at DNB Markets, argues that the Norwegian HY market was closed for issuance of new bonds in 2015 except from the second quarter (Linderud, 2015). According to Holbergfondene (2015), the risk premiums in the HY market were at an all-time high towards the end of 2015.

Although there has been an insignificant number of new issues, Nordic Trustee still has a considerable workload. Ragnar Sjoner, CEO of Nordic Trustee, expressed in March 2016 that the trustee is involved in a substantial amount of restructurings on behalf of bondholders (Stolen, 2016). Haseeb Syed in Danske Bank Markets believes that the refinancing risk in the Oil and gas services sector is significant, which will potentially trigger defaults among the distressed issuers (Stolen, 2016). Kirkeby (2016) shares the refinancing risk concerns and argues that the following years will become even more challenging for the issuers. As Figure 10 shows, the expected amount of maturing bond debt will increase sharply, with 2019 as the most dramatic year.

Figure 10: Expected Maturing Norwegian HY bonds



Source: Stamdata and Kirkeby (2016)

Kirkeby (2016) argues that many of the issuers will initiate refinancing discussions with bondholders prior to actual maturity, as many of the issuers have secured bank debt that is maturing in addition to bonds. This situation is different than it was in 2007 and 2008, when many of the issuers were start-up companies entirely financed in the bond market. According to Pål Ringholm, Chief Analyst of Credit at Swedbank, the number of restructurings will increase over the next months (Trumpy, 2016). In addition, he expects that the banks will lose on some of their loans to distressed companies. Ringholm argues that debt that trades at prices between 60% and 80% of par is in distress (Flaaten, 2016). According to prices from NBP, the average market price of bonds that had not come due in our sample as of January 29th, 2016, was 75% of par value. The Norwegian HY market is dominated by companies within the oil and gas sectors and bond prices for these companies have been severely impacted by the large decline in the oil price. The price decline has been particularly severe for Oil and gas services companies, which are impacted by lower investments by Oil and gas E&P companies. Statistics Norway (SSB) expects that investment in the oil and gas industry will continue to fall in the following years (SSB, 2016).

Some market participants are positioning themselves for increased activity. ABG Sundal Collier announced in April 2016 that they were expanding their Debt Capital Market (DCM) division, as they expect refinancing activity in the HY segment to increase. The investment bank expects that banks will be more restrictive with their lending to firms, which will make the HY market more attractive (Trumpy, 2016). In addition, Nordic Trustee believes that the new EU regulations for credit institutions that require banks to hold more capital and liquid assets, will increase the

competitiveness of the Norwegian corporate bond market. This dimension is especially relevant for the issuers in the lower rating class (Nordic Trustee, 2015).

4 Data

Chapter Summary

In this chapter, we will present our data and sources, and discuss how we finalised our sample. We will also introduce the assumptions we have taken and provide examples of how we have calculated return.

4.1 Sample

Our bond data is from Nordic Trustee's database Stamdata. Stamdata was established in 2001 and is recognised as the most reliable source for data on bonds in the Nordic region. Access to Stamdata is a necessity for people that work with fixed income securities in Norway.

Selection Process

Our preliminary sample was extracted from issue-based statistics in Stamdata. The sample consisted of 20 864 bonds and it contained all bonds, IG and HY, issued in Norway between January 1st, 2000 and January 29th, 2016. We have eliminated bonds based on risk type, sector, issue type, tenor and size. All the tables in this chapter are based on the preliminary sample.

Risk Type

Between 2000 and 2015, HY was only a small fraction of the total debt market in Norway. In Table 4, the yearly issuance of HY and IG bonds in Norway is shown.

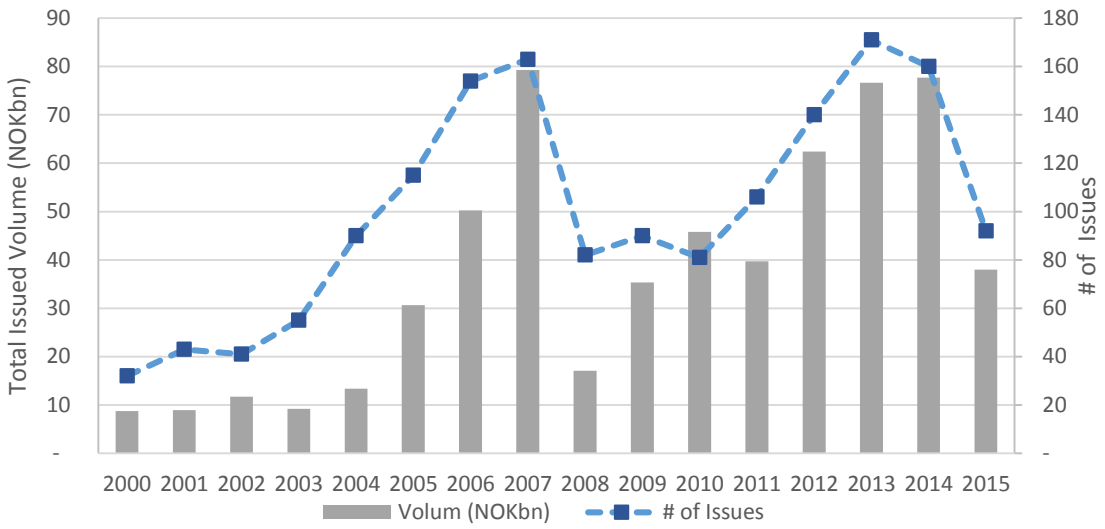
Table 4: Data Sample Risk Type per year

	Investment Grade			High Yield		
Year	Deals	Volum (NOKbn)	Avg. Volume (NOKbn)	Deals	Volum (NOKbn)	Avg. Volume (NOKbn)
2000	266	132	0,50	32	9	0,27
2001	298	82	0,27	43	9	0,21
2002	1 196	395	0,33	41	12	0,29
2003	1 548	380	0,25	55	9	0,17
2004	1 435	467	0,33	90	13	0,15
2005	1 353	419	0,31	115	31	0,27
2006	1 231	456	0,37	154	50	0,33
2007	1 270	372	0,29	163	79	0,49
2008	1 314	765	0,58	82	17	0,21
2009	1 166	1 093	0,94	90	35	0,39
2010	1 115	887	0,80	81	46	0,57
2011	1 208	722	0,60	106	40	0,37
2012	1 455	805	0,55	140	62	0,45
2013	1 504	607	0,40	171	77	0,45
2014	1 466	541	0,37	160	78	0,49
2015	1 424	525	0,37	92	38	0,41
Sum	**19 249**	**8 649**	**0,45**	**1 615**	**605**	**0,37**

Source: Stamdata

As previously explained, our analysis will only focus on the HY segment of corporate bonds, which is why we have eliminated all 19 249 IG bonds.

Figure 11: Total HY Issuance 2005-2015



Source: Stamdata

As shown in Figure 11, prior to 2005 the Norwegian HY market had low issuance volume. 2005 was the year that the Norwegian HY market started to become significant. Prior to that year, most non-finance corporate bonds were issued by utility companies in the electric power industry (Haugen, 2013). Due to limited issuance volume, we have eliminated all bonds issued prior to 2005.

Sector

Table 5: Data Sample per Sector

Sector	Deals	Volum (NOKm)	% of Total Volume	Avg. Volume (NOKm)
Government	176	3 447 769	37,3 %	19 590
Bank	7 758	2 057 470	22,2 %	265
Finance	948	1 098 080	11,9 %	1 158
Public Sector	6 552	967 822	10,5 %	148
Utilities	1 648	493 063	5,3 %	299
Real Estate	957	211 869	2,3 %	221
Transportation	633	152 391	1,6 %	241
Oil and gas services	433	250 675	2,7 %	579
Convenience Goods	461	115 029	1,2 %	250
Industry	366	121 390	1,3 %	332
Shipping	149	74 137	0,8 %	498
Telecom/IT	228	54 040	0,6 %	237
Consumer Services	219	46 385	0,5 %	212
Oil and gas E&P	141	82 149	0,9 %	583
Insurance	30	19 129	0,2 %	638
Seafood	48	27 412	0,3 %	571
Media	45	14 343	0,2 %	319
Pulp, paper and forestry	41	14 310	0,2 %	349
Auto	16	1 984	0,0 %	124
Health Care	6	1 598	0,0 %	266
Agriculture	6	1 578	0,0 %	263
Pharmaceuticals	3	745	0,0 %	248
Sum	**20 864**	**9 253 369**	**100%**	**444**

Source: Stamdata

All bonds issued by financial institutions (Finance, Insurance and Banking) were eliminated. Many of these bonds are Covered Bonds[22] issued by special purpose vehicles, or bonds issued by smaller savings banks. Since we are interested in corporate bonds, we have excluded all bonds issued by government or semi-government entities, such as The Norwegian Export Credit Agency (GIEK). These bonds have the backing of the Norwegian government and do not fit the risk profile we are looking for. In addition, we have excluded bonds issued by municipalities and utilities. All of these eliminations were done to get a more homogenous sample that has a more fitting risk profile and investor base.

[22] More commonly known in Norway as “Obligasjoner med fortrinn” (OMF).

Issue Type

Table 6: Data Sample per Issue Type

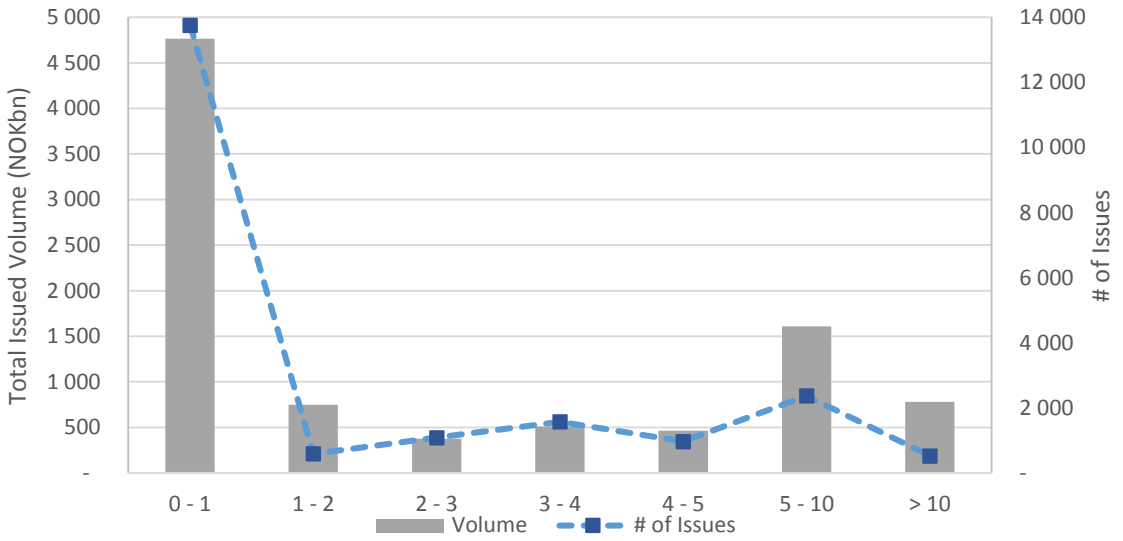
Issue Type	Deals	Volume (NOKm)	% of total
CDs	13 515	5 210 550	56,3 %
Bonds	5 802	3 787 494	40,9 %
Linked Notes	1 127	128 353	1,4 %
Convertibles	198	93 002	1,0 %
Capital Content Securities	191	27 808	0,3 %
Credit Linked Notes	28	6 107	0,1 %
Warrants	3	55	0,0 %
Sum	**20 864**	**9 253 369**	**100%**

Source: Stamdata

Certificates of deposits (CDs), linked notes, capital content securities and credit linked notes were eliminated because these financial instruments have a different risk profile than corporate HY bonds. In addition, we eliminated warrants and convertible bonds, because the return on these securities is dominated by the imbedded equity component (Kirkeby, 2016).

Tenor

Figure 12: Data Sample Based on Tenor



Source: Stamdata

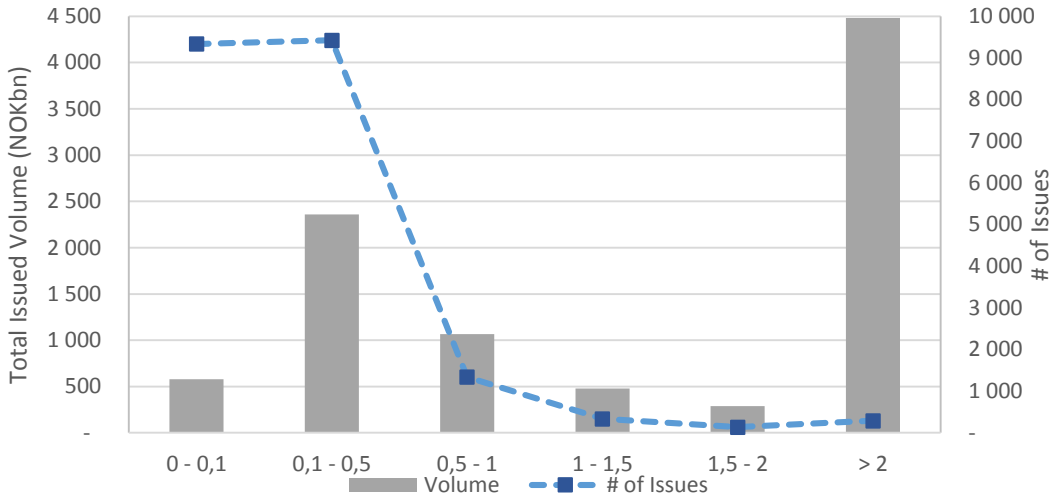
As seen in Figure 12, most of the bonds in the initial sample had a time-to-maturity of less than a year. We eliminated all bonds that were contracted to be shorter than a year; most of these are certificates of deposit, which do not pay coupons. However, we included bonds where the maturity was less than a year due to unexpected events, such as exercise of call options or credit events. In addition, we excluded bonds with a time-to-maturity of more than ten years. Only a

small fraction of companies in the HY segment, e.g. Aker ASA and Wilh. Wilhelmsen ASA, are able to issue debt with time-to-maturity of more than 10 years. Other than that, bonds with time-to-maturity of more than 10 years are perpetual bonds issued by savings banks.

Bond Size

As seen in Figure 13 most bonds are between NOK0-0,5bn, however most of the volume comes from bonds that are larger than NOK2bn.

Figure 13: Data Sample Based on Bond Size Prior to Eliminations



Source: Stamdata

Kristoffer Sletten and Nicolai Bratt at Nordea DCM, advised us to exclude bonds below a certain size. Some of the rationale for this elimination is that smaller bonds will not get sufficient interest from professional investors due to low liquidity in the secondary market and because some investors are restricted from investing in small bonds (Dagslet et al., 2013). We decided to set the limit at NOK 100m, which is also the stated minimum size in Fossan-Waage et al. (2015). An additional selection of bonds, which is shown in Appendix 4, was also removed due to insufficient information in Stamdata.

Description of Sample

After eliminations, our final sample consisted of 523 of the original 1 615 HY bonds issued during our time period. All bonds are plain vanilla[23] corporate coupon-bearing bonds and a list of the

[23] Refers to the most basic type of financial instrument. The opposite of exotic instruments, in which terms are altered to make the instrument more complex.

bonds in our sample is included in Appendix 3. The total volume issued in the period was NOK 342bn and the average bond size was about NOK 650m. The volume for each bond denominated in a different currency than NOK was converted by matching issue date and exchange rates from Norges Bank. In Table 7, we have outlined the issuance volume for each sector.

Table 7: Issuance Volume NOKm per Year by Sector

	Oil and gas services	Industry	Shipping	Oil and gas E&P	Transportation	Real Estate	TMT	Seafood	Other
2005	4 853	1 000	3 643	2 680	2 260	210	300	-	-
2006	11 226	3 970	3 694	3 020	212	-	100	-	-
2007	24 016	3 573	1 350	4 960	570	400	-	1 890	-
2008	948	-	200	2 866	-	-	443	-	-
2009	7 798	4 894	1 775	2 500	800	-	343	700	-
2010	18 278	1 593	2 325	1 842	1 400	-	-	500	-
2011	17 160	3 511	1 950	4 679	500	250	-	500	-
2012	16 417	7 367	12 634	300	2 300	1 275	-	2 200	380
2013	29 515	5 224	4 794	10 794	2 871	820	1 458	4 600	1 850
2014	30 821	6 669	7 627	5 770	1 050	1 285	3 287	1 475	1 175
2015	4 538	5 104	5 451	5 693	2 892	890	1 499	710	-
Sum	**165 570**	**42 904**	**45 443**	**45 104**	**14 855**	**5 130**	**7 431**	**12 575**	**3 405**

Source: Stamdata

4.2 Data Sources

To be able to calculate the return, we have collected data manually for each bond. Information such as issue date, maturity date, coupon rates and amount adjustments were extracted from Stamdata to calculate the cash flows to bondholders. After calculating the promised cash flows, we went through all communication between bondholders and the issuer to control the raw data and supplement where needed. This process has been excessively time consuming, but we have been very thorough and hope that our work can facilitate further research on the Norwegian HY market.

Vegard Annweiler provided us with indicative market prices of bonds that had not matured by January 29th, 2016, which allowed us to calculate return for those bonds. NBP did not have market prices for a few of the bonds in our sample, and for these bonds, we used Ligningskurser to calculate the return. Ligningskurser are prices set by the Norwegian Securities Dealers Association (VPFF) and used to determine the total wealth of Norwegian citizens.[24] To be able to calculate the return on especially complicated restructurings and credit events, we have relied on Nordic Trustee's Recovery Database. More than 20% of the bonds in our sample defaulted and in some

[24] Starting from 2015 Ligningskurser are set by NBP (VPFF, 2016).

of these instances the bondholders' claim was converted into common equity, and to calculate the return on these bonds we have relied on Macrobond and Børsprosjektet at NHH for stock prices.[25]

4.3 Bond Return

Ideally, we would want to use holding period return (HPR) to calculate returns as it is the ideal method to compare returns within periods.

$$Holding\ Period\ Return = \frac{(P_1 + Coupon) - P_0}{P_0}$$

However, an HPR analysis requires time series of prices on all the bonds in our sample. According to Sæbø (2015), uoted bid-ask spreads for Norwegian HY bonds are essentially non-existent which makes it difficult to quickly transact at a transparent price. Even the most liquid bond issues in our sample would not have sufficient and reliable price data. A majority of the bonds in our dataset are listed, however according to data from exchanges they are rarely traded (Oslo Børs, 2016). Many bonds are often traded over-the-counter (OTC), and the transaction data (volume and price) is never registered. There is only a requirement to report bond trades that are intermediated by brokers registered with the Oslo Stock Exchange (Oslo Stock Exchange, 2014). Some investment banks in Norway provide daily indicative bid-ask prices on bonds to their customers, but the bid-ask spread is usually significant and the investment banks are not obligated to buy or sell at the quoted prices (Sletten, 2016).

4.4 Assumptions

To calculate our return, we have made some necessary assumptions. Some are standard when calculating return on financial assets and some are due to lack of information. We have made the following assumptions:

I. All bonds are bought at the issue date and held until maturity:
    a. Bonds maturing after January 29th, 2016 are sold at the price given by NBP if that price is obtainable.

[25] Netfonds was used to calculate the value of common shares in the restructuring of Marine Accurate Well ASA's bond issued in 2007.

b. Bonds without a price from NBP are sold to Ligningskurs set January 1st, 2016.
c. Bond claims converted into stocks are sold at the market price one week after the delivery of the shares to take into account potential illiquidity of the shares.

II. Bond buybacks are assumed to be bought at par unless there is specific pricing information.
III. We assume all bonds are issued at par value (100%).
IV. We invest in all tap issues and bonds are "tapped" at par value.
V. We are calculating the return as if we owned the entire bond.
VI. There are no transaction costs or taxes.
VII. The return is calculated in nominal values, without taking inflation and/or exchange rates into account.
VIII. Interest has been calculated using the 30/360 day count convention.

4.5 Calculating Realised YTM

In this section, we will demonstrate how we have calculated return and some of the difficulties we have encountered. We will start by showing a basic calculation and then gradually increase the complexity. The basis for our calculation is the YTM equation, which is the same as the IRR equation presented in section 2.4.

$$I = \sum_{t=1}^{N} \frac{CF_t}{(1+YTM)^t}$$

I = Initial Investment
CF_t = Cash Flow at time t
t = Time in years
N = Total number of years
YTM = Yield to Maturity

Consider a 4-year bond with a 10% coupon, issued at par with a FV of 100. The bond paid the following cash flows:

$$100 = \frac{10}{(1+YTM)^1} + \frac{10}{(1+YTM)^2} + \frac{10}{(1+YTM)^3} + \frac{110}{(1+YTM)^4}$$

By solving the equation, we find that the return or realised YTM of this bond is 10%.

Examples from our sample

Table 8: Cash Flows for Aker ASA 05/10 FRN

Aker ASA 05/10 FRN:

Issue Date = 02.03.2005
Maturity Date = 02.03.2010
Coupon Rate = NIBOR 3M + 3,75%
Coupon Frequency = Quarterly
YTM = 7,7%

Date	Coupon	Amount Adjustments	Interest Days	Cash Flow
02.03.2005	-	(500)	-	(500,0)
02.06.2005	5,69	-	90	7,1
02.09.2005	5,88	-	90	7,4
02.12.2005	6,07	-	90	7,6
02.03.2006	6,31	-	90	7,9
02.06.2006	6,39	-	90	8,0
04.09.2006	6,76	-	92	8,6
04.12.2006	7,06	-	90	8,8
02.03.2007	7,44	-	88	9,1
04.06.2007	8,06	-	92	10,3
03.09.2007	8,44	-	89	10,4
03.12.2007	9,04	-	90	11,3
03.03.2008	9,56	-	90	12,0
02.06.2008	9,81	-	89	12,1
02.09.2008	10,11	-	90	12,6
02.12.2008	10,33	-	90	12,9
02.03.2009	9,86	-	90	12,3
02.06.2009	6,97	-	90	8,7
02.09.2009	6,01	-	90	7,5
02.12.2009	5,73	-	90	7,2
02.03.2010	5,79	500	90	507,2

Source: Stamdata (ISIN: NO0010254717)

Since all coupons were paid accordingly, the YTM is a time-weighted average of the coupons, but notice how much the coupons varied. The coupon variation is a result of fluctuations in the 3M NIBOR and the number of interest days during the life of the bond. 3M NIBOR fluctuated from a high of 6,53% to a low of 1,89% during the life of the Aker bond. In the first year, Aker's interest expense on this bond was NOK 30m, while in 2008 it was close to NOK 50m.

Table 9: Cash Flows for Solstad Offshore ASA 14/19 FRN

Solstad Offshore ASA 14/19 FRN:

Issue Date = 24.06.2014
Maturity Date = Sold 29.01.2016 at 66,05% of par (NBP)
Coupon Rate = NIBOR 3M + 3,50%
Coupon Frequency = Quarterly
YTM= -17,8%

Date	Coupon	Amount Adjustments	Interest Days	Cash Flow
24.06.2014	-	(1 000)	-	(1 000,0)
24.09.2014	5,30	-	90	13,3
29.12.2014	5,19	-	95	13,7
24.03.2015	5,00	-	85	11,8
24.06.2015	4,95	-	90	12,4
24.09.2015	4,82	-	90	12,1
28.12.2015	4,70	-	94	12,3
29.01.2016	4,73	661	31	664,6

Source: Stamdata (ISIN: NO0010713548)

Solstad Offshore is a company that owns Platform Supply Vessels (PSV), Anchor Handling Vessels (AHTS) and Construction Service Vessels (CSV), which are used in the oil and gas industry. Due to the decline in the oil price, and the drop in the activity level in the North Sea and other offshore oil basins, the market price of this bond has fallen significantly. It is important to note that this is the return achieved if the bond was sold January 29th, 2016. As of that date, the bondholders have received all coupons accordingly, and if the company manages to honour all its future obligations, then the investors who hold on to the bond will achieve a higher return.

Table 10: Cash Flows for Teodin Acquico AS 12/17 FRN

Teodin Acquico AS 12/17 FRN:

Issue Date = 02.10.2012
Maturity Date = Called 17.04.2015 at 102% of par (Stamdata)
Coupon Rate = NIBOR 3M + 6,00%
Coupon Frequency = Quarterly
YTM= 8,8%

Date	Coupon	Amount Adjustments	Interest Days	Cash Flow
02.10.2012	-	(380)	-	(380,0)
02.01.2013	7,97	-	90	7,6
02.04.2013	7,83	-	90	7,4
02.07.2013	7,88	-	90	7,5
02.10.2013	7,66	-	90	7,3
02.01.2014	7,70	-	90	7,3
02.04.2014	7,68	-	90	7,3
02.07.2014	7,73	-	90	7,3
21.07.2014	-	1	-	1,0
02.10.2014	7,75	-	90	7,3
02.01.2015	7,65	-	90	7,2
07.04.2015	7,47	-	95	7,5
17.04.2015	7,47	388	10	388,4

Source: Stamdata (ISIN: NO0010659899)

Teodin Acquico, a subsidiary of the Ontario Teacher's Pension Plan, is a holding company that owns Helly Hansen.[26] On July 7th, 2014, Nordic Trustee, on behalf of the issuer, summoned to a bondholders meeting. In the summons, the issuer asked for permission to amend certain covenants in the bond agreement to get a "more predictable covenant regime better suited to the inherent operations of the company". As compensation for the changes, the bondholders would get a waiver fee of 0,25% of the outstanding amount. In addition, the bonds would mature at 101% of par instead of 100% and the call option premiums were increased. On July 21st, 2014, the amendment proposal received close to 100% of the votes and was adopted, and the bondholders received a total payment of NOK 1m. On March 19th, 2015, Nordic trustee summoned to another bondholder meeting because the issuer had proposed to exercise its call option and buy back the bonds at 102% of par in accordance with the amended bond agreement. The proposal received sufficient amount of votes and was to be settled on April 10th, 2015 but due to a delay, the bonds were settled a week later on April 17th, 2015.

Table 11: Cash Flows for Stolt-Nielsen Limited 12/18 FRN

Stolt-Nielsen Limited 12/18 FRN:
Issue Date = 19.03.2012
Maturity Date = Sold 29.01.2016 at 100,44% of par (NBP)
Coupon Rate = NIBOR 3M + 4,75%
Coupon Frequency = Quarterly
YTM= 6,7%

Date	Coupon	Amount Adjustments	Interest Days	Cash Flow
19.03.2012	-	(600)	-	(600,0)
19.06.2012	7,08	-	90	10,6
04.09.2012	-	(200)	-	(200,0)
19.09.2012	7,08	-	90	11,2
19.12.2012	6,68	-	90	13,4
19.03.2013	6,62	-	90	13,2
19.06.2013	6,57	-	90	13,1
19.09.2013	6,50	-	90	13,0
19.12.2013	6,49	-	90	13,0
19.03.2014	6,39	-	90	12,8
19.06.2014	6,48	-	90	13,0
19.09.2014	6,58	-	90	13,2
19.12.2014	6,44	-	90	12,9
19.03.2015	6,25	-	90	12,5
19.06.2015	6,00	-	90	12,0
21.09.2015	6,10	-	92	12,5
21.12.2015	5,95	-	90	11,9
29.01.2016	5,92	803	38	808,5

Source: Stamdata (ISIN: NO0010640774)

[26] Teodin originally bought Helly Hansen from a fund controlled by Private Equity company Altor Equity Partners.

Six months after the original issue of NOK 600m, the company placed another NOK 200m under the same bond agreement. Note that between June 19th, 2012 and September 19th, 2012 there are 90 interest days. For 75 days, the bondholders are entitled to interest payment on an outstanding amount of NOK 600m and for 15 days they are entitled to interest payment on an outstanding amount of NOK 800m.

Table 12: Cash Flows for Eitzen Chemical ASA 13/16 FRN

Eitzen Chemical ASA:
Issue Date = 17.01.2013
Maturity Date = Partially converted on 06.03.2015
Coupon Rate = NIBOR 3M + 11%
Coupon Frequency = Quarterly
YTM= -45,2%

Date	Coupon	Amount Adjustments	Interest Days	Cash Flow
17.01.2013	-	(231,2)	-	(231,2)
06.06.2013	-	(11,6)	-	(11,6)
06.09.2013	-	(7,9)	-	(7,9)
06.12.2013	-	(8,1)	-	(8,1)
06.03.2014	-	(8,2)	-	(8,2)
06.06.2014	-	(8,7)	-	(8,7)
08.09.2014	-	(9,2)	-	(9,2)
08.12.2014	-	(9,2)	-	(9,2)
30.01.2015	-	63,4	-	63,4
06.03.2015	-	40,3	-	40,3

Source: Stamdata (ISIN: NO0010668601) and Macrobond

This bond was issued with a PIK provision, which meant that the interest payments were not paid out in cash, but were added to the outstanding amount. In 2014 Eitzen Chemical, a chemical tanker company, started restructuring talks with Nordic Trustee, banks and its bondholders. The result for the bondholders of this particular bond, which was secured, was that they on January 30th, 2015 received NOK 63,4m in cash. The remaining claim of approximately NOK 230m was partially repaid by conversion into 3,986 million shares of a newly formed company called Team Tankers International Ltd at a conversion price of NOK 13,02 per share. The conversion amounts to close to NOK 52m, the remaining amount of NOK 178m was written off. In our calculation we have sold the shares at a price of NOK 10,1, which was the share price the week after the delivery of the shares. This amounts to a payment of NOK 40,3m.

As previously mentioned, we have chosen to use the share price a week after delivery of shares to take into consideration the liquidity of the shares. We are looking at the bond as a whole and consequently we are selling close to 4 million shares, which is about 0,7% of the outstanding

shares. It is difficult to determine whether this would be possible without selling the shares at a discount considering that company was still distressed. In general, it is difficult to calculate a single return for bonds where there has been either a share conversion or bond buy-back. In reality the bond was owned by several bondholders; some may have sold the shares right away and some may have held on to the shares.

5 Methodology

Chapter Summary

In this section we will briefly explain the statistical methods we have applied to analyse our sample. Multiple regression analysis was used to identify and measure potential explanatory factors for differences in realised YTM. Our sample is not normally distributed[27], and because of non-normality, we have also applied two non-parametric tests, the Kruskal-Wallis test and the Levene's test.

5.1 Regression analysis

A regression analysis is a statistical method to estimate the relationship between the dependent variable *y* and the independent variables X_i. The dependent variable y is by expectation assumed to be related to *n* ($X_1, X_2, \ldots, X_n$) independent variables.

The linear regression can be described by the following equation:

$$y = \beta_o + \beta_1 X_1 + \beta_2 X_2 + .. + \beta_n X_n + \varepsilon$$

β_i is the unknown regression coefficient for variable X_i, where β_i is the expected change in y for one unit change in X_i when holding everything else constant. The error ε represents everything that cannot be explained by the model. For further explanation of regression analysis, see Appendix 2 and Doane and Seward (2013).

[27] See Appendix 2.

5.2 Kruskal-Wallis Test

Kruskal-Wallis Test is a rank based nonparametric test, meaning that it does not require that the sample is normally distributed; however it does require that the groups have close to similar distribution shape. The test is used to compare the medians for *k* independent groups. The groups can have different size, but have to consist of five or more observations (Doane and Seward, 2013).

The zero- and alternative hypothesis are defined:

H_0: All *k* group medians are the same

H_1: Not all the group medians are the same

For a randomised design with *k* groups, the Kruskal-Wallis test statistic is:

$$H = \frac{12}{n(n+1)} \sum_{i=1}^{k} \frac{T_i^2}{n_i} - 3(n+1)$$

Where:

H = the test result
k = the total number of groups
n = the total number of observations
n_i = the number of observations in group i
T_i = the sum of ranks for group i

H follows a chi-square distribution where d.f. = *k* – 1. The Kruskal-Wallis Test is a right-tailed test, reject H_0 that the samples have equal medians if H exceeds the critical value. The critical value is $x^2_{\alpha,k-1}$ where α is the significance level and x^2 is the chi-square distribution (Doane and Seward, 2013).

5.3 Levene's Test

Lim and Loh (1996) compared the robustness and power of seven different tests of equality of variances. They concluded that Levene's test has the highest robustness and power. With equal variances among the samples, there is homoscedasticity of variance. A common assumption in statistics is that there is equal variance across samples, Levene's test tests this assumption. The test fits well for data that is not normally distributed (Lim and Loh, 1996), which is true for our sample. With a p-value below the significance level α, then all the samples I do not have equal variance and the H_0 can be rejected.

H_0: $\sigma^2_1 = \sigma^2_2 = \ldots = \sigma^2_I$

H_1: $\sigma^2_i \neq \sigma^2_j$ for at least one of the pairs

Test Statistic:

$$L = \frac{\sum_{i=1}^{I} n_i(\bar{z}_i - \bar{z}_{..})^2/(I-N)}{\sum_{i=1}^{I}\sum_{j=1}^{n_i}(z_{ij} - \bar{z}_i)^2/(N-1)}$$

Where:

$$\bar{z}_i = \sum_{j=1}^{n_i} \frac{z_{ij}}{n_i} \text{ and } \bar{z}_{..} = \sum_{i=1}^{I}\sum_{j=1}^{n_i} \frac{z_{ij}}{N}$$

Where:

L = the test result

I = number of populations = $(i = 1,\ldots, I)$

N = the total sample = $\sum_{i=1}^{I} n_i$

$\bar{x}_i$ *= the group mean* = $\sum_{j=1}^{n_i} \frac{x_{ij}}{n_1}$

σ^2_i *= the group variance* = $\sum_{j=1}^{n_i}(x_{ij} - \bar{x}_i)^2/(n_i - 1)$

$z_{ij} = |x_{ij} - \tilde{x}_i|$, $\tilde{x}_i$ *is the median of* $(x_{ij}: j = 1,\ldots, n_i)$

If L > (100 –α)th percentile of the F-distribution with (N-1) and (I -n) degrees of freedom then H_0 is rejected and we can conclude that there is not equality of variance (Lim and Loh, 1996). Lim and Loh (1996) concluded that using absolute deviations of observations from group medians, rather than the means, is preferable.

6 Analysis and Findings

Chapter Summary

In this chapter, we will present and analyse our results. Our calculated return range from -97% to 34%, the breadth in the calculated return depicts the high variation among the bonds. We further test and discuss potential explanatory factors for the calculated return. Firstly, we analyse the HY market in connection with macroeconomic developments. Secondly, we analyse the returns by isolating bond characteristics. Lastly, we attempt to combine these analyses in a multiple regression model.

6.1 Analysis of Time Period

Figure 14 presents our calculated realised YTM distributed by the year of issue. We emphasise that when we talk about returns for a given year for our HY sample, we are talking about all bonds issued in that year and not the return in that year. For example, the worst performing bond in 2007 had a YTM of –97%, however that return was not realised in that year, it is simply the realised YTM of a bond issued that year.

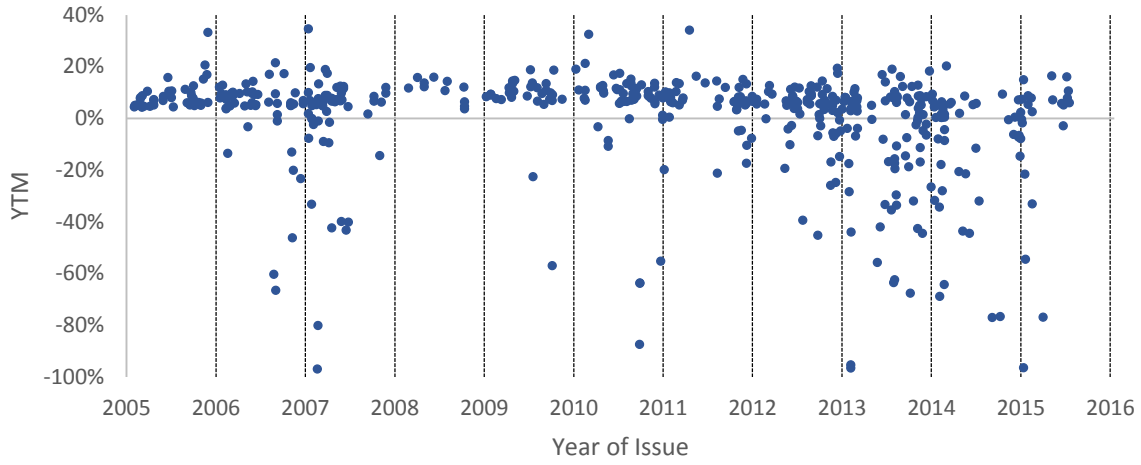
As demonstrated in Figure 14, the time period is more strongly dominated by extreme negative observations than positive observations. This is due to the nature of bonds; bonds should offer less risk and less expected return than equities, but the potential downside of bonds is large and the potential upside is not particularly large (Bodie et al., 2011). As expected, we have a negative skewed return distribution, with a median higher than the mean. In addition, we observe a high kurtosis, which means that our distribution is more peaked than a normal distribution (Doane and Seward, 2013).

Descriptive Statistics for the entire sample

Variable	Count	Mean	StDev	Median	Skewness	Kurtosis
YTM	523	0,00187	0,19887	0,06459	-2,55	7,22

Source: Calculated in Minitab

Figure 14: YTM per Year



Source: Calculated based on data from Stamdata

In Table 13, we have outlined the yearly statistics of our sample. For each year, we have looked at the mean, median and standard deviation of the return of bonds issued in the respective year, to measure performance and risk. To gauge the market development in a given year we have looked at the number of issues, issuance volume and average size of issues. To assess the distribution of the return we have also included the range, skewness and kurtosis.

Table 13: Descriptive Return and Issue Statistics

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
# of Issued Bonds	38	48	57	13	34	44	39	64	83	68	35
Total NOKbn Issued	15	22,2	37	4,5	18,8	25,9	28,6	42,9	62	59,2	26,8
Average NOKbn per Bond	0,39	0,46	0,65	0,35	0,55	0,59	0,73	0,67	0,75	0,87	0,77
# of Credit Events	1	17	31	5	6	10	7	6	14	11	2
Mean YTM	8,8 %	2,5 %	-1,5 %	11,0 %	7,5 %	4,3 %	6,1 %	4,4 %	-6,5 %	-7,4 %	-9,6 %
Median YTM	7,3 %	6,1 %	6,3 %	11,9 %	9,5 %	1,2 %	8,3 %	6,5 %	3,4 %	0,4 %	2,4 %
Standard Deviation	5,6 %	17,4 %	22,8 %	3,7 %	13,1 %	22,3 %	13,2 %	8,7 %	23,2 %	20,4 %	29,8 %
Range (Max - Min)	28,9 %	88,1 %	131,7 %	12,3 %	76,8 %	120,0 %	89,0 %	54,0 %	117,0 %	89,0 %	113,0 %
Skewness	2,7	-2,9	-2,4	-0,7	-4,2	-3,1	-2,9	-2,8	-2	-1,4	-1,8
Kurtosis	9,3	8,47	6,8	-0,4	19	9,6	12,6	10,1	4,4	1,5	2,3

Source: Calculated based on data from Stamdata

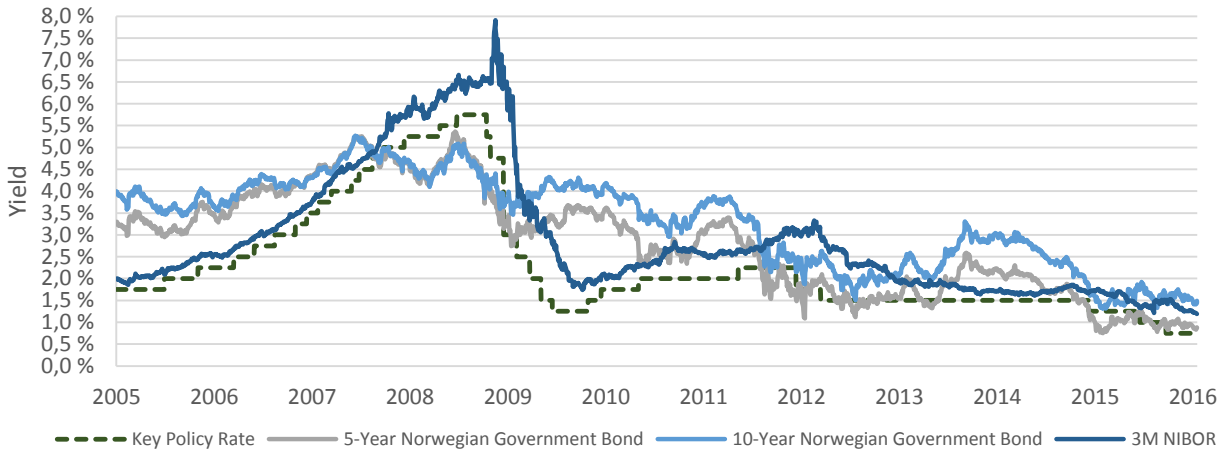
As shown in Table 13, bonds issued in 2008 achieved the highest mean and median YTM; however, this was a special year with few observations. We observe that the average bond size increased from NOK 390m in 2005 to NOK 870m in the record year 2014, and that 2013 was a record year for number of deals and issuance volume. The skewness is negative in all years except for the first year, and the kurtosis varies from year to year, but is generally high.

Market Analysis

Figure 15 depicts the period we have analysed and by looking at the interest rate markets, it is clear that the period has been highly turbulent. The financial crisis and the credit crunch crisis

influenced financial markets considerably, and forced central banks to engage in monetary easing (Bernhardsen, 2012). Monetary easing most likely increased the demand for HY as it lowered investors' risk aversion. According to Stensaker (2015), investors searching for higher yield were attracted into riskier asset classes such as HY.

Figure 15: Interest Rates and Yields 2005-2015



Source: Macrobond and Norges Bank

As previously explained, the Norwegian HY market experienced rapid growth up until 2008, but was severely impacted by the financial crisis. A significant amount of the defaults in our sample was from bonds issued during the credit boom between 2006 and 2007. Nevertheless, the Norwegian HY market recovered following the crisis in 2008. The credit crunch crisis that began to materialise in the years following the financial crisis had limited effect on the Norwegian HY market, evident by high returns for the HY mutual funds and growing issuance volume. Particularly 2012-2014 was a period of extreme growth in issuance volume, where the spread above NIBOR on FRN bonds declined. The high issuance volume was most likely driven by a sustained high oil price and declining interest rates. Between 2012-2014, the oil price averaged USD 110 per barrel, which most likely lowered the perceived credit risk of issuers, as the oil price has a strong positive effect on many HY companies. During 2012, Norges Bank lowered the key policy interest rate[28] to 1,5% and kept it there for two years. Interestingly enough, the following two years were record years in terms of issuance volume and average bond size. Just prior to the

[28] The folio rate, which is the rate that banks get on their deposits at the central bank. (Kloster, 2014)

summer of 2014, oil prices started to decline significantly, which strongly impacted the market prices of Norwegian HY bonds. Consequently, the issuance volume in 2015 fell more than 50%.

Table 14: Descriptive Issue Statistics

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Average Issued Tenor	5,3	5,3	4,6	3,7	3,4	4,2	4,7	4,5	4,7	4,3	4,2
# of Fixed Rate Bonds	14	17	13	7	10	20	17	11	27	27	13
# of FRN Bonds	24	31	44	6	24	24	22	53	56	41	22
Spread NIBOR 3M	1,9 %	3,2 %	3,9 %	6%	6,9 %	6,4 %	5,4 %	5,6 %	5,2 %	4,5 %	5,4 %
Spread US-LIBOR 3M	2,3 %	4,6 %	8,4 %	3,5 %	-	8%	7,5 %	11,3 %	7,3 %	11,5 %	5,5 %
# of Secured Bonds	5	19	29	5	10	18	15	8	33	42	16
# of Unsecured Bonds	33	29	28	7	24	26	23	56	49	26	17

Source: Stamdata

To give the reader an idea of the return on other asset classes, we have included the return of other fixed income securities (ST1X, ST5X) and equities (OSEBX) in the analysis. ST1X and ST5X are indices tracking the return of Norwegian 3M Treasury bills and 5-year Government bonds respectively.[29] Keep in mind that when we refer to the return on these assets we are referring to holding period returns, which is not directly comparable with the return on our HY sample. We use the ST1X as a risk-free rate and we use the ST5X because it is the government bond with the most equivalent time-to-maturity to our sample's average. The OSEBX is a volume-weighted index of 57 stocks on the Oslo Stock Exchange.

Table 15: Yearly Returns of Other Assets/Indices

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Annualised
OSEBX	39,7 %	32,4 %	11,5 %	-54,1 %	64,8%	18,3 %	-12,5 %	15,4 %	23,6 %	5,0 %	5,9 %	**8,8 %**
Brent Oil	44,4 %	5,5 %	56,1 %	-58,4 %	96,9%	20,1 %	15,1 %	2,8 %	0,9 %	-48,4 %	-34,7 %	**-0,5 %**
ST1X	2,0 %	2,7 %	4,4 %	5,9 %	2,1%	2,3 %	2,4 %	1,5 %	1,6 %	1,3 %	0,9 %	**2,4 %**
ST5X	3,9 %	-0,1 %	3,4 %	10,5 %	2,9%	6,5 %	9,5 %	4,0 %	-0,9 %	9,3 %	2,2 %	**4,5 %**
Return H0A0 (US HY Index)	2,6 %	11,7 %	2,2 %	-26,4 %	57,4%	14,9 %	4,4 %	16,0 %	7,3 %	2,6 %	-4,7 %	**6,3 %**
BDI (Baltic Dry Index)	-47,7 %	82,7 %	107,9 %	-91,5 %	288,2%	-41%	-2,0 %	-59,8 %	225,8 %	-65,7 %	-38,9 %	**-18,4 %**
Norwegian HY Mutual Funds	-	2,7 %	6,2 %	-15,4 %	18,5%	12,8 %	3,1 %	11,8 %	9,0 %	-1,0 %	-5,3 %	**3,9 %**

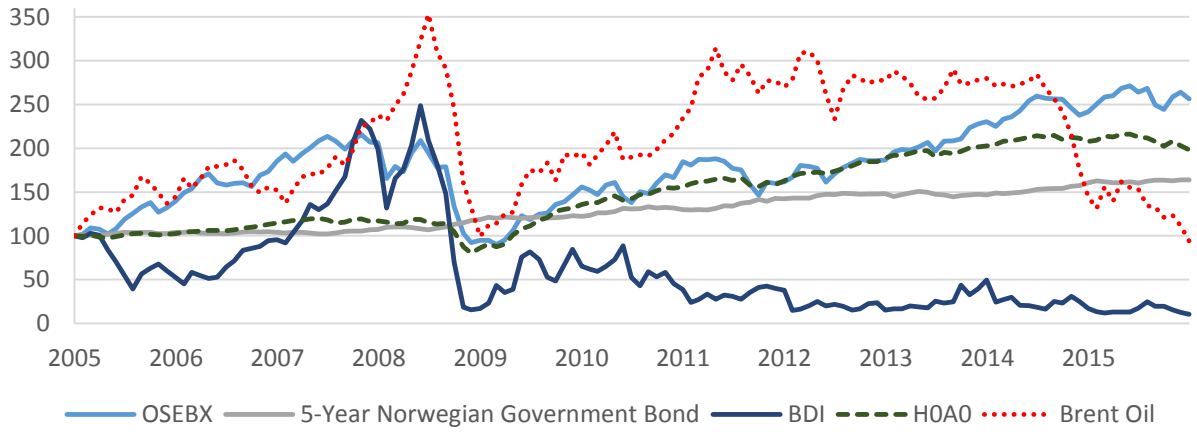
Source: Bloomberg, Federal Reserve Bank of St. Louis and Macrobond

For each year, we also consider the Brent Oil price because it is an important economic indicator for the Norwegian economy (Cappelen, Eika and Prestmo, 2014) and because a majority of the issuers in our sample are directly or indirectly affected by the oil price. A high oil price should roughly be positive for the Norwegian HY market. Higher activity will lead to increased investments, which will lead to an increase in issuance volume. In addition, the Baltic Dry index (BDI) is included to measure the strength of the world economy. The BDI is an index tracking freight rates for dry bulk commodities on major shipping lanes and therefore it is a meaningful

[29] The purpose of these indices is to represent a reference for portfolios at each point of the term structure. Accordingly, the indices are not meant to be an investment object). ST1X is also the benchmark most Norwegian HY funds use.

index for many of the participants in the Norwegian HY market. The index is especially relevant for those companies directly or indirectly affected by the cyclicality in the Shipping sector (Bildirici, Kayıkçı and Onat, 2015). As a comparison to other HY markets, we have included the return of the Merrill Lynch HY USD Total Return Index (H0A0). The H0A0 is an index of the majority of USD denominated HY bonds issued domestically in US (Federal Reserve Bank of St. Louis, 2016). Lastly, the return of Norwegian HY mutual funds is calculated in order to have a measure of the year to year return for Norwegian HY bonds. Keep in mind that the returns on the other assets we have presented are holding period total returns and not directly comparable with the return on our HY sample. [30]

Figure 16: Total Return Analysis of Other Assets



Source: Federal Reserve Bank of St. Louis, Macrobond and Norges Bank

6.2 Analysis of Years

In this section, we will analyse each year in our time period and focus on events and changes that are important to the Norwegian HY market. To analyse the interest rate environment, we will discuss the yield curve and key policy rate in Norway. We predominantly focus on the 3M NIBOR because it is the reference rate most commonly used in our sample. For each year we discuss the most notable credit events, keep in mind that this analysis, like our returns, is based on the year of issue and not the actual year the credit event occurred.

[30] Overall return on other assets can be compared to our HY sample, but year-to-year returns cannot be compared.

2005

The Norwegian economy was in a cyclical boom and the equity market had a return of 39,7% in 2005, and as already mentioned, the Norwegian HY market started to grow significantly (Haugen, 2013). During the year the term structure of interest rates flattened, i.e. the long-term bond yields fell and medium-term bond yields increased. The Norges Bank raised the key deposit rate 25 basis points during the summer and towards the end of the year. Similarly, the 3M NIBOR was up 50 basis points for the year.

Bonds issued in 2005 had a mean return of 8,8% and it was the only year in our sample with a positive skewness for the return. Norse Energy Corporation ASA was the only distressed issuer, its bond was restructured, but the bondholders still received a positive YTM according to our calculations. The insignificant number of defaults depicts low credit risk among the issuers, this can also be observed in the low spread over 3M NIBOR among FRN bonds. The spread was 1,9%, which is the lowest observed during our analysis period, the average for the rest of the period was 5,3%.

2006

The Norwegian economy continued the positive economic growth from the previous year and the equity market increased 32,4%. During the year, Norges Bank increased the key policy rate 125 basis points. Government yields increased steadily over the year and the yield curve experienced a parallel upwards shift, which resulted in an increase in spreads for FRN bonds.

Bonds issued in 2006 achieved a mean return of 2,5%. In total, nine of the bonds issued in 2006 were liquidated, five were restructured and three bonds missed scheduled payments. The bondholders in Thule Drilling AS and MPF Corp Ltd received a YTM of –67% and –60% respectively as a result of liquidations.[31] 2006 is the first year we observe issuers listing bonds on the ABM.[32] As mentioned, listing on ABM does not require financial reporting in accordance with IFRS or compliance with EU directives (MiFID). The establishment of ABM made listing more attractive for issuers that did not comply with IFRS, or did not want to convert to IFRS (Bedwell et al., 2014).

[31] The YTM of these bonds is calculated based on recovery data from Nordic Trustee.

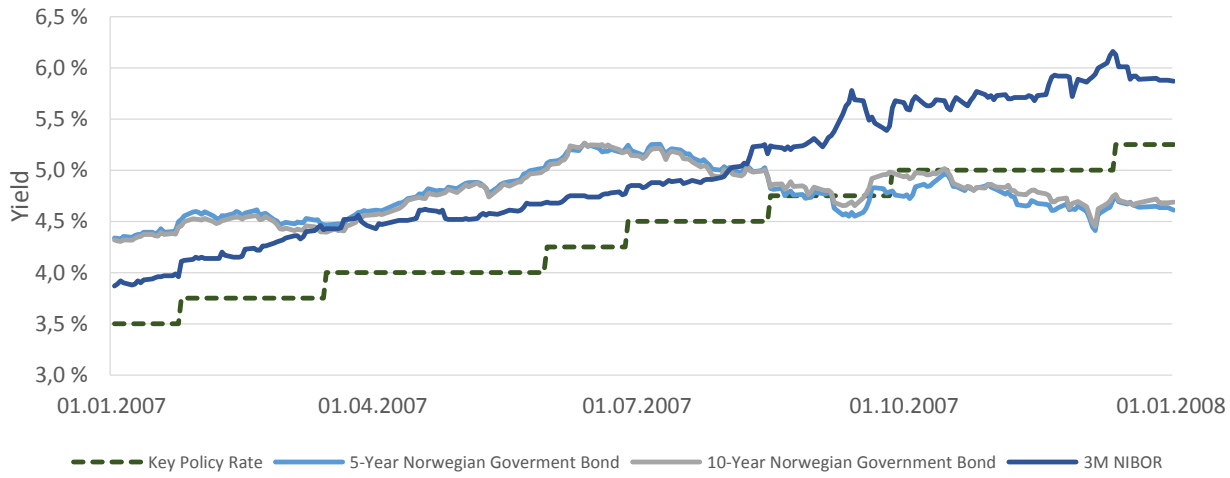
[32] Which was established in 2005 (Oslo Stock Exchange, 2015).

The first Norwegian HY corporate bond fund, Pareto Kreditt A, was established in mid-2006, and it got an annualised return of 2,7% for the year.

2007

For the first half of the year, economic indicators showed positive signs and we observe increased activity in the HY market. The spread over 3M NIBOR continued to increase, which could indicate that less credit worthy companies were able to issue bonds or increased risk aversion among investors. Norges Bank continued aggressive monetary tightening with an additional seven 25 basis point increases in the key policy rate. However, during the summer, the subprime crisis hit the US and the global financial crisis started to materialise (Mishkin, 2012). In early August, there was a significant increase in uncertainty. As shown in Figure 17, there were dramatic changes in the money markets as the yield on long-term government bonds and 3M NIBOR crossed. The key policy rate ended the year more than 50 basis points higher than the yield on long-term government bonds.

Figure 17: Interest Rates and Yields in 2007



Source: Macrobond and Norges Bank

The aggregated mean YTM for the bonds issued in 2007 was negative, which was most likely due to the subsequent financial crisis. Pareto Kreditt A was still the only HY mutual fund established, it returned 6,2% and was not affected by the uncertainty in the financial markets. Historically, this was a record year for listing on ABM as approximately 90% of the issuers listed their bonds on ABM. Considering that, this was towards the end of an economic boom it could indicate that the credit quality of issuing companies was getting lower and that these low quality firms were limited

to listing on the less regulated ABM. However, starting in 2007, companies listing on Oslo Stock Exchange were required to report according to IFRS. It is likely to believe that this made ABM a more attractive alternative.

2007 was a record year for number of defaults in our sample; more than 50% of the bonds issued were involved in a credit event. In total, 11 of the bonds issued were liquidated, 17 were restructured and three bonds defaulted on scheduled payments.[33] In light of the financial crisis that erupted in 2007, the significant amount of credit events is not surprising (Mishkin, 2012). Monitor Oil PLC was the worst performing bond; the bondholders lost almost their entire investment with a YTM of –97%.[34] Nonetheless, other bonds that also achieved very low returns. Bondholders in Thule Drilling AS, DP Producer AS, PetroProd AS, Wega Mining AS and Oceanlink Ltd all ended up with a realised YTM below –40%.

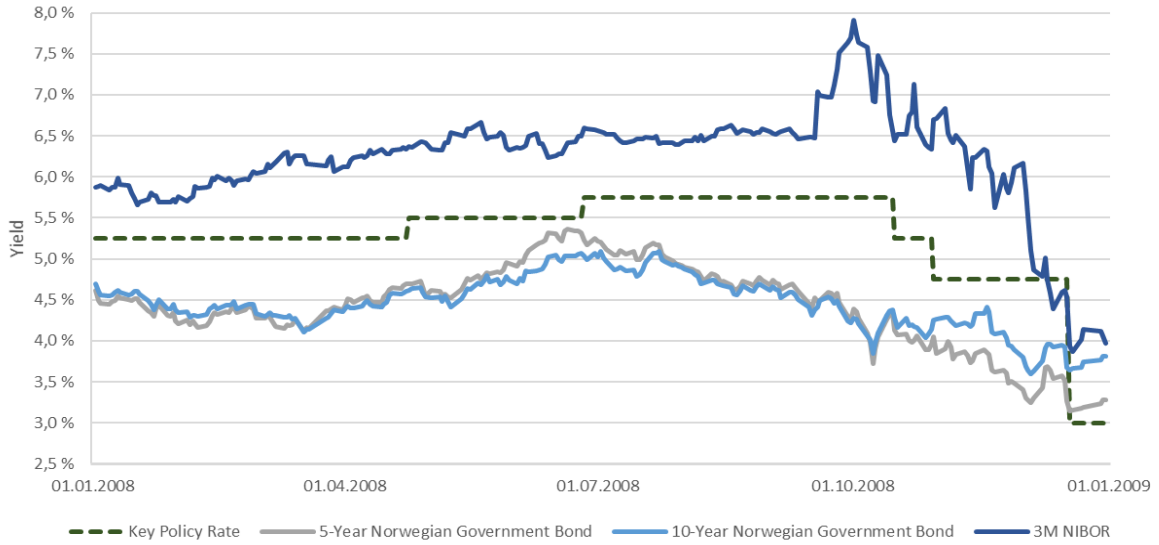
2008

The first half of the year was positive with a decent return in the equity market and slightly increasing yields on government bonds. However, a crisis in the world economy erupted in September 2008 when Lehman Brothers filed for Chapter 11 bankruptcy (Mishkin, 2012). Market participants lost trust in the market and the banks stopped lending to each other in the money market. Following the Lehman filing we observe a sudden 50 basis points increase in the 3M NIBOR.

[33] A majority of these bonds defaulted in 2009.

[34] It is not unlikely that some investors in the Monitor Oil Plc bond lost more than their entire investment due to legal fees and transaction fees.

Figure 18: Interest Rates and Yields in 2008



Source: Macrobond and Norges Bank

While Norges Bank initially increased the key policy rate with 25 basis points twice, it later lowered the rate from 5,75% to 3% as a response to the crisis. Majority of that decrease, 275 basis points came in the December meeting as shown in Figure 18.

During the year, the OSEBX lost 54,1% of its value, and the oil price fell from 145 USD per barrel to less than 40 USD. In addition to the sell-off in equity markets, the price of government bonds increased significantly, an indication of flight to safety, which led to a return of 10,5% for the year on 5-year government bonds.

All of these events significantly reduced the activity in the Norwegian HY market, as the issuance volume was only NOK 4,5bn compared to NOK 37bn the prior year. As expected, due to increased perceived credit risk and less capital available, the FRN spreads increased.

Norwegian HY bonds issued in 2008 had positive mean return, but it was a tough year for the HY mutual funds and the US HY market. Though the H0A0 was less severely hit by the global financial crisis than other assets, it still returned -26,4%. The Norwegian HY fund Alfred Berg Høyrente CI was established in 2008 and had a combined return of -15,45% with the already established Pareto Kreditt A.

Despite the drop in the oil price, Oil and gas E&P companies issued eight of the total 13 bonds issued in 2008. Five of those bonds were even issued after the Lehman filing and after oil prices had fallen significantly. Among the issuers were DNO ASA, which is an E&P company. The company managed to issue three bonds totalling close to NOK 1bn, which was more than 20% of the total issuance volume for the year.

According to Nordea's shadow ratings, the four bonds issued in 2008 that were later restructured were all rated CCC (Nordea DCM, 2016). CCC is, as shown in Table 1, one of the lowest ratings that can be achieved and indicates substantial default risk. The restructured bonds were all issued by companies in the oil and gas industry, and despite restructurings, Petrolia SE, Master Marine AS, Norse Energy Corp. ASA and Roxar AS all delivered positive returns.

2009

The Norwegian economy and the HY market recovered in 2009 after the dramatic events in 2008, however the spread over 3M NIBOR was 7%, the highest observed in our analysis period. We notice a significant effect where the coupon spread for HY bonds have increased significantly after 2008, most likely due to increased risk aversion. The OSEBX gained 65%, potentially due to the recovery in the oil price, but possibly also driven by monetary easing from Norges Bank, which lowered the key policy rate from 3% to 1,25%. Government bond yields fluctuated during the year, but ended slightly higher for the year despite the decrease in the key policy rate.

In 2009, the Ministry of Finance established a Government Bond Fund with the purpose of adding liquidity and increasing access to capital for Norwegian companies. The fund had NOK 50bn to invest and was mandated to invest up to 30% in HY bonds. The establishment of this fund most likely contributed to reduced losses in the Norwegian corporate bond market (Ministry of Finance, 2009).

According to our calculations, bonds issued in 2009 performed well with a mean return of 7,5%. HY mutual funds recovered after the abysmal 2008 with a return of 18%. At the end of the year, the HY mutual funds had NOK 1,4bn assets under management (AUM) (VFF, 2016).

Four bonds issued in 2009 went through restructuring. The restructured bond with the lowest return was issued by Marine Subsea, its investors achieved a realised YTM of –57%. Another bond,

issued by Blom ASA, had a return of –23% after a restructuring where the bondholders' claim was converted into common shares. We have assumed that the shares were sold for NOK 4,1 per share which was the share price a week after the conversion (Børsprosjektet NHH, 2016). Marine Subsea was not rated by Nordea DCM, but Blom ASA was rated CCC. The other two bonds that were restructured were issued by Norwegian Energy Company ASA and EMS Seven SEAS AS, and rated B at issuance.

2010

The Norwegian economy continued to recover in 2010 and the global financial markets regained some stability following bank bail-outs and monetary easing (Mishkin, 2012). Yields on government bonds fell during the first half of the year, which led to a flattening of the yield curve.

The HY market also continued to recover as issuance volume grew 40% to NOK 25,9bn, the margin over 3M NIBOR fell from 6,9% to 6,4%. More than 60% of the issuance volume was issued by the companies in the Oil and gas services sector, predominantly by offshore vessel- and drilling rig companies. The mean return for all bonds issued in 2010 was 4,3% and HY mutual funds returned 12,8% for the year.[35]

Ten bonds issued in 2010 were involved in a credit event, of which one was liquidated, eight were restructured and one did not pay interest on time. The bond that was liquidated was issued by Remedial Cayman Limited and achieved a realised YTM of –3%. Despite being liquidated, its investors almost recovered their investment. Of the bonds issued in 2010, the ones issued by Sevan Marine ASA were most notable. The company had five bonds, totalling close to NOK 4bn restructured in 2011, which led to substantial losses for the bondholders. The investors in Sevan Marine's unsecured fixed 14% coupon bond lost essentially their entire investment with a –87% realised YTM.

2011

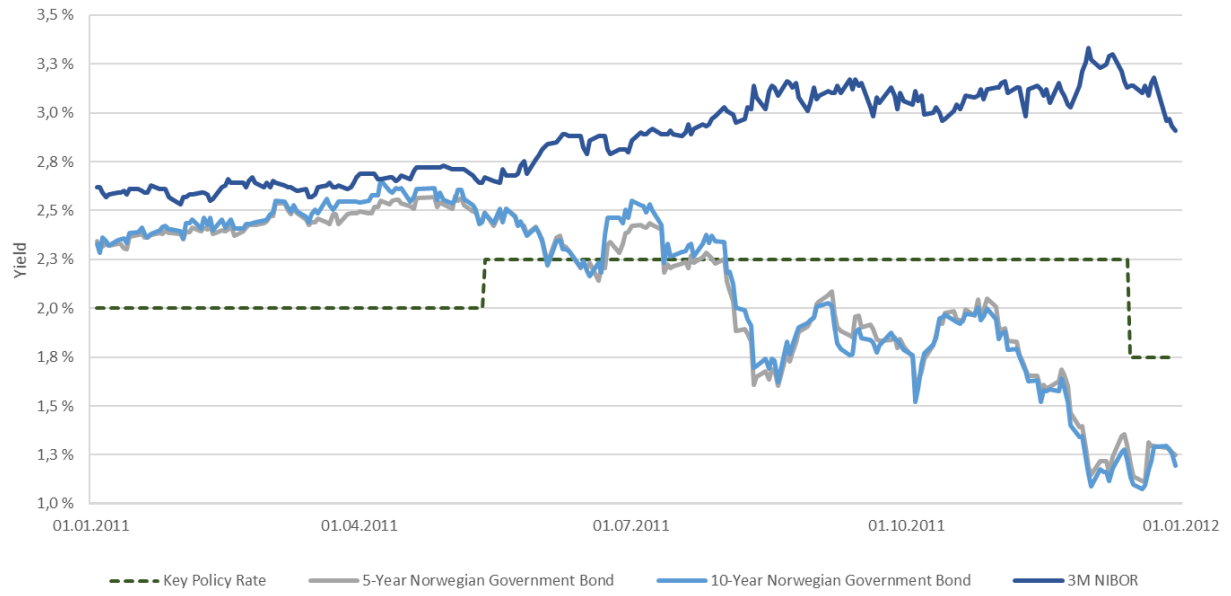
This was another year with significant turmoil in the financial markets and several dramatic events. Certain Eurozone members were not able to repay or refinance their public debt without the intervention of the European Central Bank (ECB) and the International Monetary Fund (IMF)

[35] During the year a third fund, Arctic High Return A, was established.

(Hagen, Penuel and Statler, 2013). This hugely impacted European banks, and the fear of contagion into the global financial markets led to S&P downgrading the US credit rating from AAA, which the US had held since 1941, to AA+ (Paletta, 2011). In addition, the stock market index of many large economies had negative moves of more than 5% in just one day (Bowley, 2011). As a result, European Securities and Market Authority, the European financial regulator, announced a ban against short selling of banks and financial institutions (European Securities and Market Authority, 2011).

The uncertainty most likely made investors pour money into relatively safe Norwegian government bonds. The yield on 5-year Norwegian government bonds fell from approximately 3% to 1,8%, which led to an abnormal high return of 9,5%.[36] In addition, problems in the global banking sector caused the 3M NIBOR to rise above government bond yields as it did in 2008.

Figure 19: Interest Rates and Yields in 2011



Source: Macrobond and Norges Bank

Our calculated mean return for HY bonds issued in 2011 is 6,1%. Norwegian HY mutual funds came through the European credit crisis fairly unharmed with a return of 3,1%. During 2011 both Swedbank Høyrente and Holberg Kreditt were established.

[36] When yields fall, the price of bonds increase. See section 2.3 for further explanation of this concept.

Despite the turmoil in the credit markets, issuance volume seems to have been supported by a relatively high oil price. There were large volumes issued by the Oil and gas services and E&P companies, and the average spread over 3M NIBOR fell to 5,4%. Fewer bonds were issued, but the total issuance volume increased NOK 2,7bn, or 10%, partly due to large volumes issued by drilling rig companies.

Few of the bonds issued in 2011 were involved in a credit event, probably due to the oil price and the fact that the credit crisis had limited impact on Norwegian HY issuers. Three of the bonds issued in 2011 were later liquidated and four were restructured. Dannemora Mineral, a Swedish iron ore mining company, was liquidated and the investors suffered substantial losses with a YTM of –55%. Chloe Marine Corporation, a Bermuda incorporated company that owned drilling ships, was also liquidated. The investors in its bond got a YTM of –21%. Dannemora Mineral and Chloe Marine Corporation were priced at 0,58% and 3,08% of par respectively on January 29th, 2016 (NBP, 2016). Nearly all of the liquidated and restructured bonds were rated CCC at issuance by Nordea DCM.

2012

The global economy recovered to some degree in 2012 evident by improving economic indicators and higher commodity prices, even so government bond yields continued to fall. HY issuance volume in 2012 was NOK 42,9bn, which was a 50% increase compared to the previous year. The growth was mainly driven by shipping companies, which issued an astonishing amount of NOK 12,6bn, compared to an average issuance volume for previous years of NOK 2bn.

During 2012, four new HY mutual funds were established, and at the end of 2012 the total AUM had grown to NOK 7,3bn (VFF, 2016).

Bonds issued in 2012 achieved a mean return of 4,4% and there were relatively few credit events compared to other years in our time period. Two of the bonds were liquidated, three were restructured and one bond missed scheduled payments. Investors in the bond issued by Dolphin Group, a Norwegian Oil and gas services company, achieved a YTM of -39% after the company filed for bankruptcy in December 2015. Dolphin's bond was rated B at issuance, but as of January 29th, 2016 the price was only 4,79% of par (NBP, 2016). Havila Shipping ASA, a Norwegian offshore

vessel company, has not filed for bankruptcy at present time, but the company is in financial distress and has not been able to pay their bondholders in accordance with the payment schedule. Havila's unsecured bond matures August 30th, 2016, however it was priced at only 22,83% of par as of January 29th, 2016 (NBP, 2016). These bond prices illustrate the impact of the recent oil price decline on companies in the HY segment.

2013

At the end of 2013, 5-year Norwegian government bond yields were below the key policy rate, however it was a year of optimism in Norway and investors' risk appetite increased. Safe Norwegian government bonds fell in value, while risky assets such as Norwegian equities and Norwegian HY mutual funds increased 23,6% and 9% respectively. At the end of the year, the total AUM for Norwegian HY mutual funds was NOK 13bn, which was almost 10 times the AUM in 2009 (VFF, 2016).

The extreme growth in issuance volume seen in 2012 continued in 2013 as it grew an additional 50%. An astonishing NOK 62bn worth of bonds were issued and the average bond size was NOK 750m. Issuance volume was mainly driven by the Oil and gas services and E&P companies. However, sectors like Transportation, TMT (Telecom, Media and Technology) and Seafood also issued record volumes.

Our calculated YTM is -6,5% for 2013, but the median YTM is 3,4%. It is also worth to mention that a significant portion of the bonds issued in 2013 have not fallen due, which means that a lot of the return for 2013 is based on indicative market prices as of January 29th, 2016 from NBP. Due to an increasingly negative environment, prices in the Norwegian HY market, particularly in the oil and gas sectors, have fallen significantly the past year. Based on our calculations, 34 of the 83 bonds issued in 2013 have returned a negative YTM.[37] In addition, the range of returns is particularly high for this year.

Two bonds issued by Northland Resources, a Swedish iron ore mining company that filed for bankruptcy in 2015, are set to be liquidated. The bondholders of this company have lost almost their entire investment with YTM of –97% and -95%. The bonds were priced at 1,5% and 1,55%

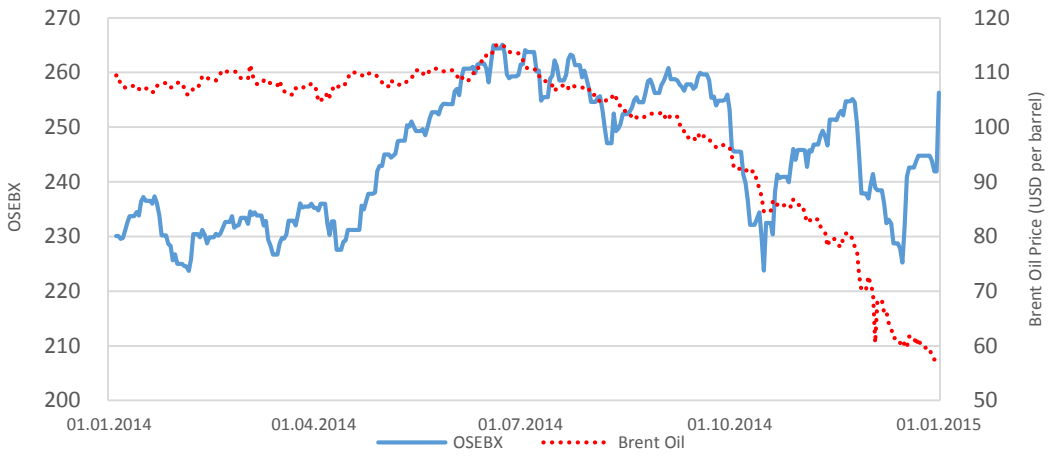
[37] It is important to note that these bonds could potentially recover and end up with a positive return.

of par as of January 29th, 2016 (NBP, 2016). These prices indicate that the investors believe that there is close to zero value left in the company.

2014

This year was dramatic for a majority of the Norwegian HY companies as the oil price declined 48,4%. The mean realised YTM was -7,4%, however the median YTM was 0,4%, which indicates that many bonds issued in 2014 had very low returns[38]. As shown in Figure 20, the OSEBX fluctuated significantly during the year, but ended 5% higher than it started. Government bond yields fell steadily through the year and Norges Bank lowered the key policy rate for the first time since early 2012 in December. The spread on FRN bonds fell to 4,5%, which was the lowest since 2007. During the year, the BDI fell 65,7%. The BDI is most closely linked to dry bulk shipping, but it is a broad indicator for the world economy.

Figure 20: OSEBX and Brent Oil Price 2014



Source: Macrobond

The issuance volume fell slightly in 2014 to NOK 59,2bn, but it was still high relative to that of previous years. There were many large bond issuances and the average bond size was NOK 870m. Issuance volume in the Oil and gas services sector peaked in 2014 at NOK 30bn. Both Genel Energy Limited, a UK registered E&P company, and Oro Negro Drilling, a Mexican drilling company, were able to issue bonds in excess of NOK 4bn. This was the most diversified year in regards to issuers' country of origin as 51% of the issuers were domiciled outside Norway. Sanjel Corporation, Metro

[38] We reiterate that the returns are strongly impacted by the indicative low market prices provided by NBP.

Exploration Holding Corp. and Polarcus Ltd, which are companies domiciled outside Norway, issued bonds that later inflicted significant losses to the bondholders with YTM below –60%.

In total 11 of the issued bonds were involved in a credit event, of which one was rated CCC and the rest were rated B.[39.] Two more HY mutual funds, Forte Kreditt and Fondsfinans High Yield, were established in early 2014. In July 2014, the AUM for the Norwegian HY funds peaked at more than NOK 20,2bn. Between 2009-2014, the AUM grew by 70% annually (VFF, 2016).

2015

After three years with issuance volume between NOK 40-60bn, the issuance volume fell to NOK 26,8bn. The oil price continued to decline and ended the year at USD 38 per barrel, which was more than 30% lower than at the start of the year. According to Ertzeid, this large drop significantly affected Norwegian companies' ability to issue debt, and towards the end of 2015, issuing bonds was virtually impossible (Linderud, 2015).

The mean return for bonds issued in 2015 was -9,6%. Almost all of the bond returns are calculated based on prices from NBP and many of these prices indicate that many issuers probably will default. A considerable amount of bonds in our sample trade at prices below 80% of par. As mentioned, this indicates that the firm is in financial distress.

The dataset is based on information prior to January 31st, 2016; at that point none of the issued bonds in 2015 had been restructured or liquidated[40], although two of the bonds have experienced trouble with settling their scheduled payments. Goliath Offshore Holdings Pte. Ltd. issued two bonds in 2015 with different seniority, one super senior secured and one senior secured, which had an enormous effect on the pricing. Since neither of the bonds have fallen due, the YTM is calculated based on prices from NBP. The super senior secured bond was priced at 99,5% and the senior secured bond was priced at 7,5% of par (NBP, 2016). It is difficult to assess how realistic the market prices are, but this price difference shows the importance of seniority.

[39] Two of the 11 defaulted bonds were not rated. Ratings provided by Nordea DCM.

[40] Some of the bonds have been involved in credit events after that date.

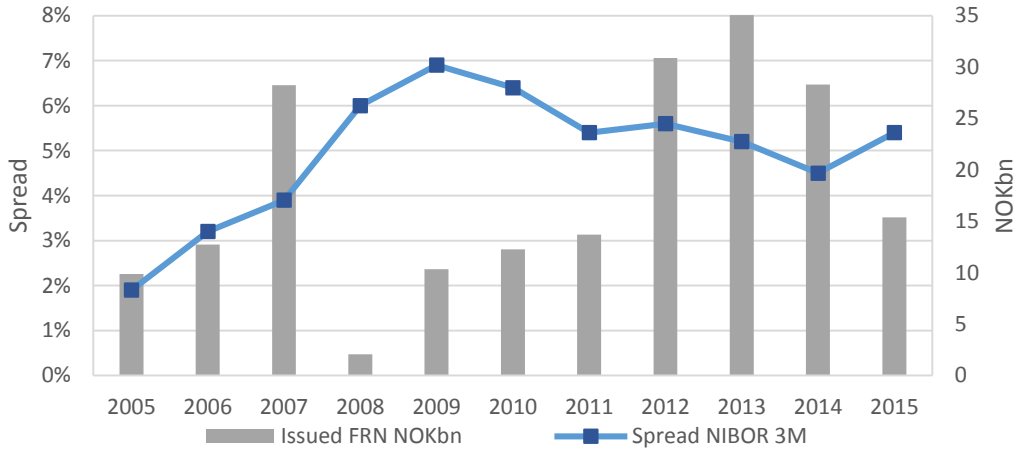
6.3 Analysis of Bond Characteristics

6.3.1 Return Type

FRN Bonds and Spread

As explained in section 2.3, investors will require a higher rate of return to buy bonds of riskier companies, i.e. riskier companies will have to pay a higher coupon rate to compensate investors for the higher credit risk (Sundaresan, 2009). The interpretation is that bonds with higher spread should have a higher expected return than bonds with lower spread. As previously explained, the size of the spread over 3M NIBOR depends on whether the bonds will be secured, the maturity of existing debt and where the new bond will rank in the capital structure of the company.

Figure 21: FRN Bond Issuance Volume and Average Spread[41]



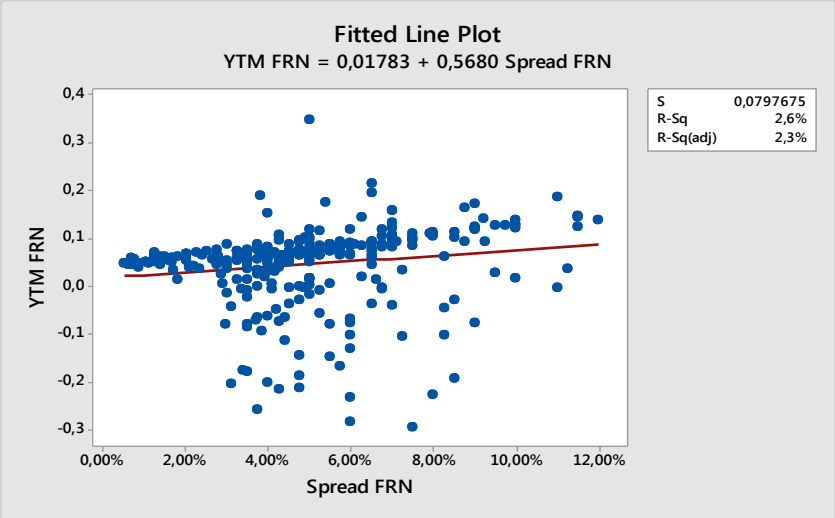
Source: Stamdata

The results of our analysis indicate that bonds with higher spread, regardless of reference rate, have performed worse than bonds with lower spreads. The linear relationship between spread and YTM should on expectation be upwards sloping, but our sample has a slightly downward sloping relationship. This result deviates from the general financial theory that higher risk should lead to higher reward (Markowitz, 1952).

To correct our findings, we omitted the 5% most extreme negative observations. The results after this correction are presented in Figure 22.

[41] Simple average spread and not volume weighted.

Figure 22: Simple regression YTM and FRN



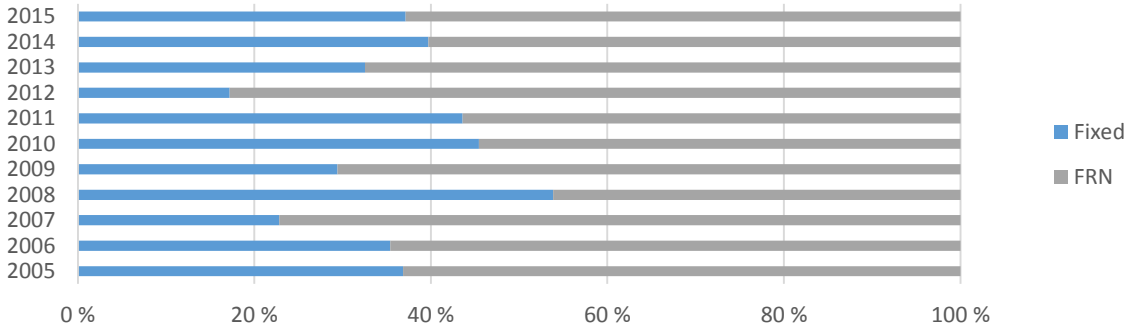
Source: Calculated in Minitab

The output after corrections is more in line with our expectations and the regression line is statically significant on a 5% level. Nevertheless, the regression line is only slightly upward sloping, and the linearity assumption can be questioned as the coefficient of determination R^2 is low. In addition, the sample is not normally distributed and we do not have homoscedasticity among the residuals. The results must therefore be interpreted carefully.

FRN Bonds and Fixed Bonds

As explained in section 2.3, fixed rate bonds are exposed to interest rate risk, while FRN bonds only have minimal interest rate risk. In our analysis period, interest rates have increased and decreased, and we have observed steep and flat yield curves, which should give us a foundation to analyse fixed bond return and FRN bond return. Specifically, we wanted to test whether investors have been compensated more by investing in fixed bonds than in FRN bonds. To test this, we have chosen to perform a Kruskal-Wallis test to see whether fixed bonds stochastically dominate FRN bonds. There is a difference in number of observations, however, as explained in section 5.2, a Kruskal-Wallis test still works as long as there are more than five observations.

Figure 23: Proportion of Fixed and FRN Bonds



Source: Stamdata

Except for 2008, FRN has been the most dominant return type for bonds issued in the Norwegian HY market. Since the proportion is fairly consistent, we can assume that business cycles will have limited effect on this analysis. We observe that bonds issued in other currencies than NOK are predominantly fixed rate bonds, while NOK denominated bonds are predominantly FRN bonds. This is in line with Table 3, which shows that in the US HY market, there is a preference for fixed rate, and that in Norway the return type can be either fixed or FRN. Nevertheless, for our sample, more than 80% of NOK denominated bonds are FRN.

Kruskal-Wallis Test: YTM versus FRN/Fixed

FRN/Fixed	N	Median	Ave Rank	Z
Fixed	176	0,07119	275,6	1,47
FRN	347	0,06308	255,1	-1,47
Overall	523		262,0	

H = 2,15 DF = 1 P = 0,143

Source: Calculated in Minitab

The test shows that the median return is 81 basis points higher for fixed bonds than for FRN bonds. This indicates that investors have been compensated more and received a higher realised YTM by investing in fixed bonds. However, the result is not statistically significant and we cannot reject H_0 that the medians are equal, since the p-value > 0,05. As a result, we cannot conclude that fixed bonds have been better investments than FRN bonds. To further analyse our results we run a Levene's test, which tests whether there is a difference in variances between the two groups.[42]

[42] We use variance in ex-post YTM as a measure of risk. Usually financial economists measure risk by calculating the variance of return based on time series of prices (Bodie et al., 2011).

Test for Equal Variances: YTM versus FRN/Fixed

Method

Null hypothesis	All variances are equal
Alternative hypothesis	At least one variance is different
Significance level	α = 0,05

Method	Test Statistic	P-Value
Multiple comparisons	—	0,711
Levene	0,38	0,538

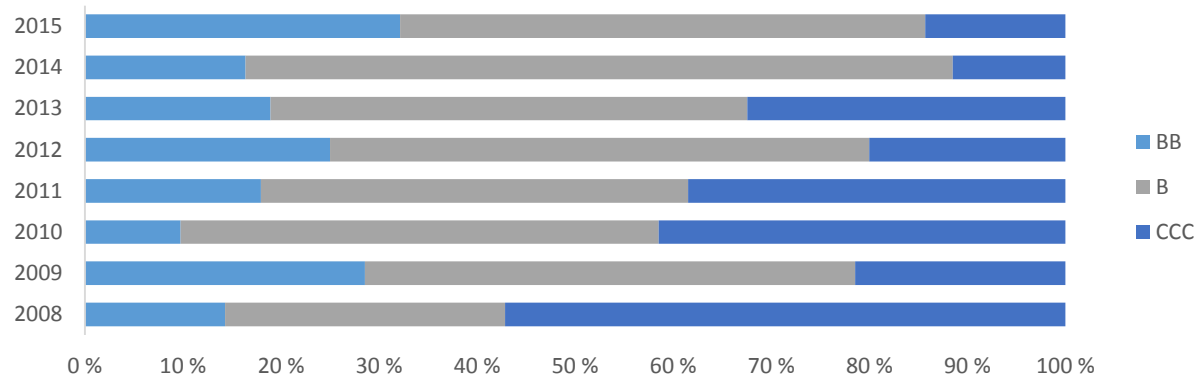
Source: Calculated in Minitab

We cannot reject H_0 that the variances are equal since the result of the Levene's test is not significant on a 5% significance level. We can therefore not determine whether there is a difference in risk between fixed bonds and FRN bonds.

6.3.2 Shadow Ratings

As discussed in section 2.3, bonds with higher perceived credit risk will be rated lower by the investment banks that set the ratings. However, sometimes there is a conflict of interest in the Norwegian issuance process because the investment bank that assigns the shadow rating is also often the manager that markets and sells the bonds. However, the functions should be performed by different divisions within the investment bank and there should be a Chinese wall[43] to protect investors. To analyse whether lower rated bonds have had a higher median return we perform a Kruskal-Wallis test on 338 bonds.[44]

Figure 24: Proportion of Ratings



Source: Stamdata and Nordea DCM

[43] A barrier within an organization to avoid information exchange that could create a conflict of interest.

[44] We only have shadow ratings on 338 of the 523 bonds in our sample and ratings on bonds issued after 2008.

As illustrated in Figure 24, most of the bonds in our sample were rated B. In addition, we observe that during our time period the proportion of the riskiest bonds, CCC rated bonds, has declined. This could be an indication of credit inflation, which was explained in section 2.3, or that less creditworthy companies have lost access to the Norwegian HY market.

Kruskal-Wallis Test: YTM versus Rating

Rating	N	Median	Ave Rank	Z
BB	68	0,05433	146,2	-2,20
B	181	0,06568	168,6	-0,18
CCC	89	0,09067	189,1	2,20
Overall	338		169,5	

H = 7,45 DF = 2 P = 0,024

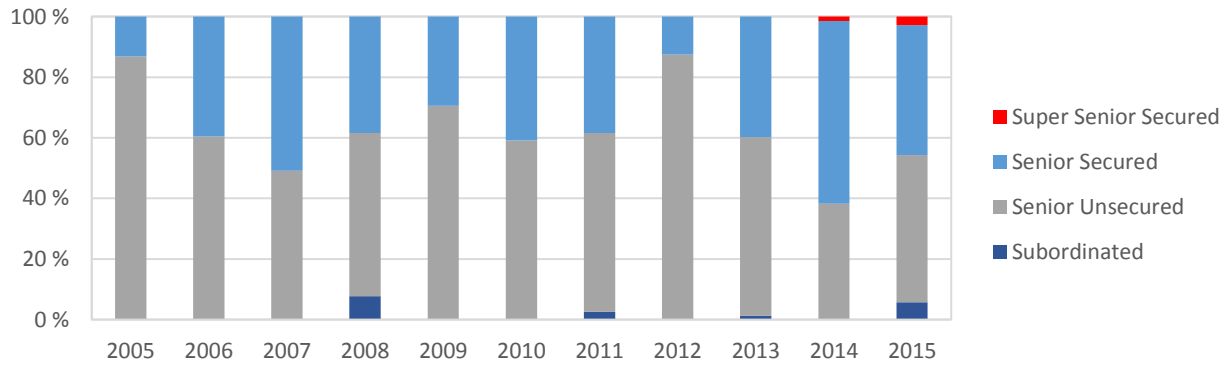
Source: Calculated in Minitab

As expected, the lowest rated bonds, CCC, achieved the highest median return and the subsequently "safer" B rated bonds had a slightly lower return, while the highest rating, BB, had the lowest return. These results are in line with financial theory, and by looking at the Kruskal-Wallis test, we can reject H_0 and conclude that there is a statistically significant difference in median realised YTM, for the different ratings, on a 5% significance level.

6.3.3 Security

In this section, we analyse the difference in return between secured and unsecured bonds. Isolated secured bonds have less credit risk than unsecured bonds because secured bondholders have higher priority in a bankruptcy. Therefore, investors will require a lower rate of return for secured bonds than for unsecured bonds, and accordingly the return should be higher for unsecured bonds than for secured bonds. To test this assumption, we use a Kruskal-Wallis test.

Figure 25: Proportion of Secured Bonds and Unsecured Bonds



Source: Stamdata

As illustrated in Figure 25, most bonds issued in the Norwegian HY market are senior unsecured bonds. A low proportion of bonds in our sample are super senior secured or subordinated. In our Kruskal-Wallis test, we included super senior secured bonds together with senior secured bonds, and Subordinated bonds with senior unsecured bonds.

Kruskal-Wallis Test: YTM versus Security

Security	N	Median	Ave Rank	Z
Secured	200	0,06702	268,4	0,76
Unsecured	323	0,06408	258,0	-0,76
Overall	523		262,0	

H = 0,58 DF = 1 P = 0,445

Source: Calculated in Minitab

The Kruskal-Wallis test shows that the median return is 30 basis points higher for secured bonds than for unsecured bonds. This result is surprising as it contradicts financial theory, however it is not statistically significant since the p-value is higher than 0,05. In general, secured bonds should have a lower return, however many of the companies in the Norwegian HY market are operating in cyclical sectors and the quality of companies varies, which could influence the outcome. Bakjord and Berg (2012) found a similar result when analysing Norwegian HY bonds issued between 2005 and 2011.

6.3.4 Sector

The table below breaks down our sample by sector and shows the statistics for each sector.

Descriptive Statistics: YTM

Variable	Sector	Total Count	Mean	StDev	Median	Skewness	Kurtosis
YTM	Industry	70	0,0296	0,1755	0,0687	-3,98	18,01
	Oil and gas E&P	62	0,0180	0,2056	0,0813	-2,56	5,98
	Oil and gas services	226	-0,0216	0,2168	0,0595	-2,03	4,70
	Other	8	-0,2170	0,3980	0,0200	-1,22	0,19
	Real Estate	17	0,0385	0,1865	0,0795	-3,94	16,00
	Seafood	20	0,0149	0,2185	0,0678	-3,18	10,97
	Shipping	76	0,0361	0,1168	0,0631	-2,51	10,80
	Telecom/IT/Media	15	0,0018	0,2238	0,0787	-2,35	5,65
	Transportation	29	0,0232	0,1135	0,0639	-2,74	9,42

Source: Calculated in Minitab

Different sectors are more heavily exposed to certain risks and impacted differently by market events. In addition, certain sectors are more cyclical than others, which implies that certain sectors should have a higher expected return due to higher variance in return. However, there should not be a difference in realised returns between sectors unless there are differences in

systematic risk (Sharpe, 1964). Altman and Kishore (1996), Brekke and Haugland (2010), Knappskog and Ytterdal (2015) and Sæbø (2015) identified that recovery rates differ among sectors, which indicates that there should be a risk premium for some sectors.

Kruskal-Wallis Test: YTM versus Sector

Sector	N	Median	Ave Rank	Z
Industry	70	0,06872	279,5	1,04
Oil and gas E&P	62	0,08127	303,8	2,32
Oil and gas services	226	0,05948	245,4	-2,20
Other	8	0,01966	139,1	-2,32
Real Estate	17	0,07950	310,6	1,35
Seafood	20	0,06777	291,6	0,89
Shipping	76	0,06313	259,3	-0,17
Telecom/IT/Media	15	0,07866	283,0	0,55
Transportation	29	0,06393	241,0	-0,77
Overall	523		262,0	

H = 17,11 DF = 8 P = 0,029

Source: Calculated in Minitab

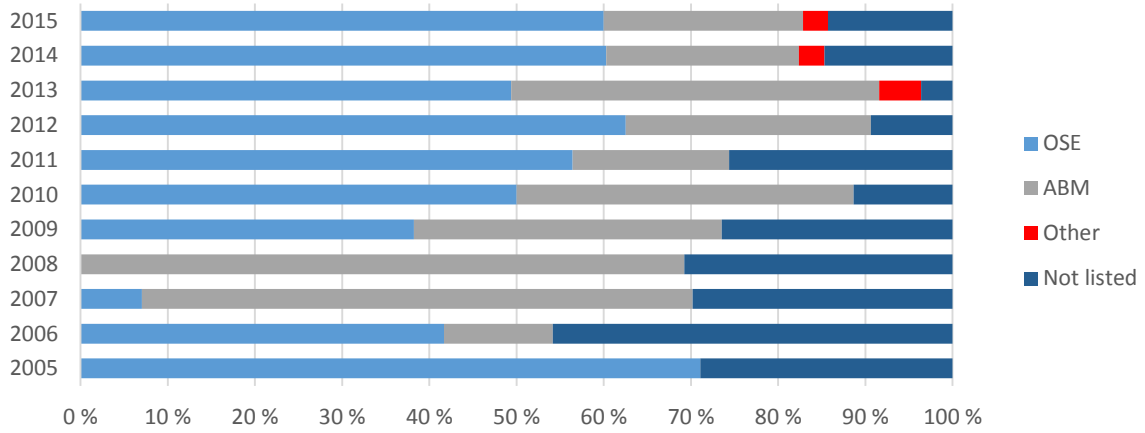
A Kruskal-Wallis test shows that we can reject H_0 that the median YTM is equal among all sectors. We can therefore conclude that certain sectors in the Norwegian HY market have achieved statistically significant different return than others with a p-value < 0,05. We observe that the Oil and gas services sector has returned lower median YTM than the other sectors, and that the Oil and gas E&P sector has higher median YTM than the other sectors.

6.3.5 Listing

In our fundamental analysis, we explained that some portfolio managers are mandated to only invest in listed bonds, i.e. unlisted and listed bonds will potentially attract different investors. While listing at least makes it possible to sell bonds, it is important to consider the degree of liquidity, which is difficult to determine. Literature usually analyse the degree of liquidity based on transaction volume, bid-ask spread and price impact. According to data from Oslo Stock Exchange, most of the bonds in our sample are rarely traded, which makes it difficult to measure degree of liquidity. We therefore disregard degree of liquidity and focus on whether the bond is listed or not as a proxy of liquidity. All bonds, no matter where they are listed, are grouped together and compared to bonds that were not listed.

Liquidity is a factor that should effect investors expected return. We expect that unlisted bonds will have a higher return than listed bonds because investors have the opportunity to sell the bonds on an exchange.

Figure 26: Listing



Source: Stamdata[45]

During our analysis period, most bonds have been listed on the Oslo Stock Exchange. As shown in Figure 26, the proportion of bonds listed on ABM increased dramatically in 2007. This was most likely because the Oslo Stock Exchange implemented a requirement to prepare financial statements in accordance with IFRS. As explained, different factors attract issuing companies to list on the various exchanges.

Kruskal-Wallis Test: YTM versus Listed/Not Listed

Listed/Not Listed	N	Median	Ave Rank	Z
Listed	421	0,06278	252,5	-2,92
Not Listed	102	0,08861	301,3	2,92
Overall	523		262,0	

H = 8,55 DF = 1 P = 0,003

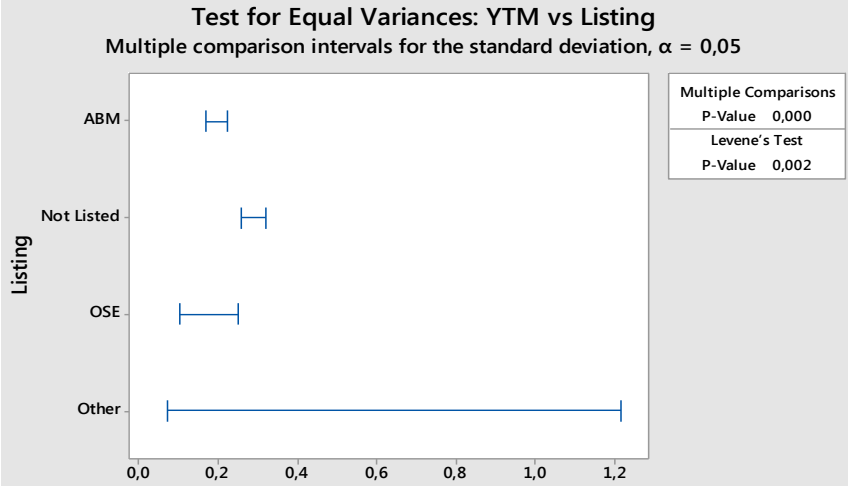
Source: Calculated in Minitab

Unlisted bonds had a 260 basis points higher median YTM than listed bonds, which could indicate that investors have been compensated for taking on more liquidity risk. A Kruskal-Wallis test shows that the result is statistically significant on a 5% significance level.

To further analyse our result, we ran a Levene's test to compare the variance of listed and unlisted bonds. Based the low p-value of the test, we can reject H_0 that the variances of the groups are equal, i.e. unlisted bonds have statistically significant higher variance than listed bonds. Figure 27, shows the range of variance for the different alternatives.

[45] Other: BDL, KFX and XFND.

Figure 27: Levene's Test on Listing



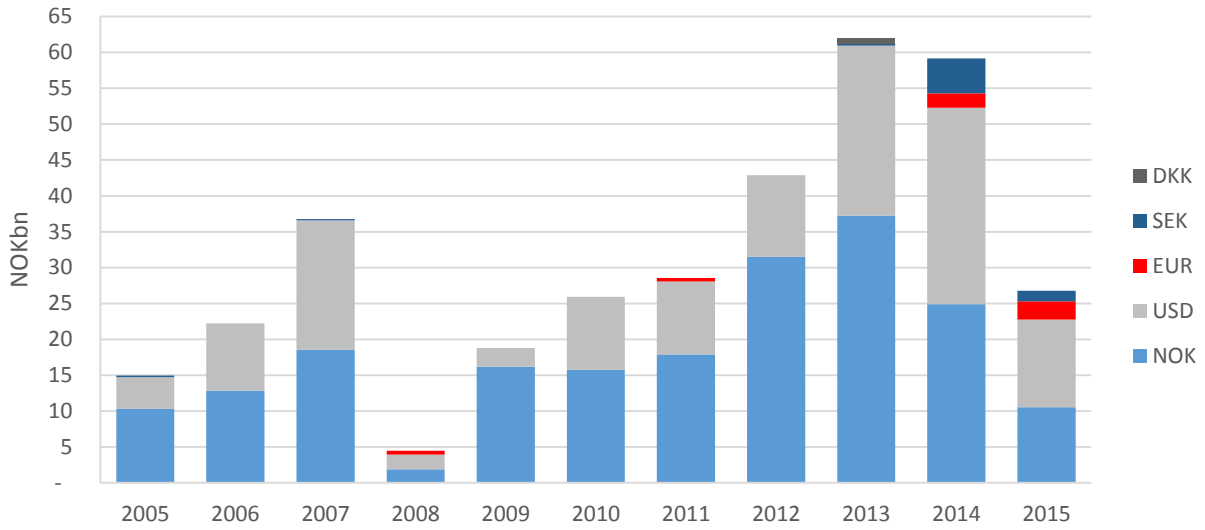
Source: Minitab

6.3.6 Currency

Up until the start of our analysis period, the Norwegian HY market was primarily for Norwegian companies and most of the issuance was in NOK. However, in the following years the issuance volume in foreign currency both by Norwegian companies and companies domiciled outside Norway increased (Haugen, 2013). In section 3.2, we discussed the difference in ownership of Norwegian HY bonds. Market participants believe that a lot of the bonds issued in USD and other currencies are held by foreigners (Forfang, 2015), while a majority of the NOK bonds are held by Norwegian insurance companies, pension funds, wealthy private individuals and HY mutual funds (Stensaker, 2015). An interesting analysis is to examine whether bonds issued in NOK have performed better than those issued in other currencies. Keep in mind that we are only looking at local return and disregard any currency effects.

An additional aspect is that there seems to be a difference in perception of liquidity among market participants. In a meeting with Gunnar Torgersen, portfolio manager of Holberg Kreditt, Torgersen argued that the liquidity is higher in USD denominated bonds than in NOK denominated bonds; Tronsgaard at Folketrygdfondet did not support this belief.

Figure 28: Currency of Issue/Denomination



Source: Stamdata

Figure 28 shows that in most years there has been more issuance in NOK than there has been in other currencies, however the last three years, issuance in USD has increased. This development could be linked with Figure 29, which shows that a larger portion of bonds are issued by foreign companies. This is a sign that the market is getting more international attention. Forfang (2015) illustrates that the Norwegian bond market has become twofold. Not only is it a market where Nordic companies issue bonds in Nordic currencies, it is also an international market where international investors and issuers interact.

Kruskal-Wallis Test: YTM versus NOK/Foreign Currency

NOK/Foreign Currency	N	Median	Ave Rank	Z
Foreign Currency	159	0,06442	265,3	0,33
NOK	364	0,06473	260,6	-0,33
Overall	523		262,0	

H = 0,11 DF = 1 P = 0,745

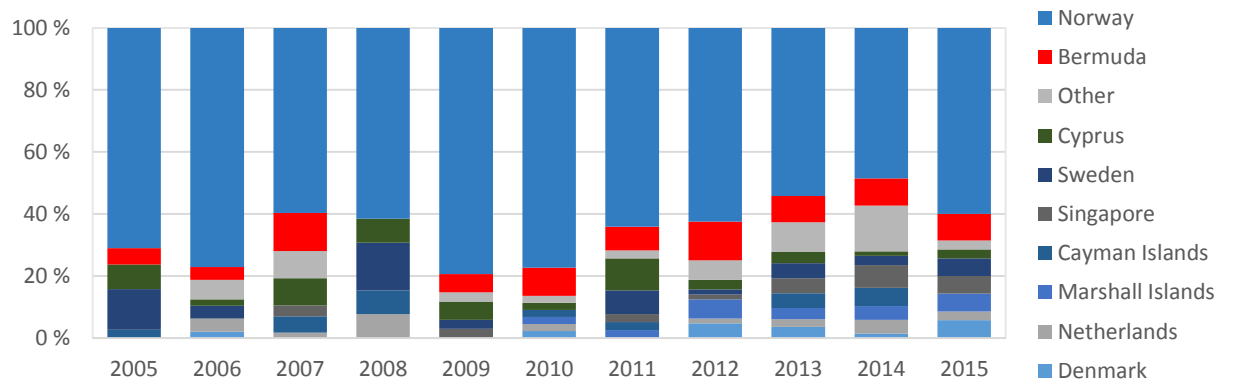
Source: Calculated in Minitab

Our analysis shows that there is only a minor difference in median YTM, although the result is not statistically significant. To further analyse we run a Levene's test, to test whether there is a difference in variance. The test shows that bonds issued in other currencies than NOK have slightly higher variance, however this result is neither significant on a 5% level.

6.3.7 Domicile

Some of the growth in issuance volume in the Norwegian HY market has come from issuers from other countries than Norway; some with and some without ties to Norway (Nordic Trustee, 2015). There are several possible explanations for this development. One explanation is that it makes sense for foreign companies with operations in Norway to issue bonds in Norway to match the currency of assets and liabilities. Another reason is that a lot of the issuance volume by foreigners are by companies that were previously domiciled in Norway (Haugen, 2013). The third reason is that many foreign companies in the oil and gas industry have issued bonds in Norway due to the expertise on the area in the Norwegian capital markets. However, the fourth and slightly more concerning reason for the increase in issuance from foreign companies, is the simplicity and low regulation of the issuance process in Norway (Bedwell et al., 2014). Certain market participants state that the low regulation and light issuance requirements of the Norwegian market is not positive, and that it could attract issuers of low creditworthiness to the Norwegian market (Nilsen, 2012).

Figure 29: Overview on Country of Origin



Source: Stamdata

The development discussed in the previous section is shown in Figure 29. Most issuers are from Norway, but since 2009, the proportion of foreign issuers has steadily increased.

With this in mind, we wanted to see whether bonds issued by companies domiciled in Norway had performed better than those issued by companies not domiciled in Norway.[46]

[46] Keep in mind that we rely on Stamdata's country designations, and that these not necessarily always give the rightdescription of where a company is from.

Kruskal-Wallis Test: YTM versus Norway/Foreign

Norway/Foreign	N	Median	Ave Rank	Z
Norway	331	0,06971	278,7	3,32
Foreign	192	0,05576	233,2	-3,32
Overall	523		262,0	

H = 11,01 DF = 1 P = 0,001

Source: Calculated in Minitab

A Kruskal-Wallis test shows that bonds issued by Norwegian domiciled companies have performed better than those issued by companies outside Norway, and it is a statistically significant result on a 5% level with a p-value of 0,001. We also run a Levene's test to see whether there is a difference in variance. The test shows that not only have bonds issued by Norwegian companies given a higher median YTM, they have also had lower variance in returns, though this result is not statistically significant as the p-value is 0,17.

This result is the one of the more significant results in our analysis and without a doubt of importance to investors and regulators. There may be other reasons for why Norwegian bonds have performed better than those issued by foreign companies, but based on our research and observations, we believe that many foreign companies with low creditworthiness have taken advantage of the light issuance requirements in Norway.

6.3.8 Credit Events

In our analysis of credit events, we have used Hamilton, Munves and Sun (2012) to define credit events.[47] Based on their definitions, we have used three different categories of credit events: 1) Non-payment, 2) Restructured and 3) Liquidation.

1. Non-payment is the least serious default and signifies an issuer making a late or delayed payment of interest, instalment or principal.
2. Restructured is when a company has offered/given bondholders a new security or package of securities with a principal write-off or with diminished terms[48].
3. Liquidation is when the assets of the company are auctioned off and the proceeds are paid out to the bondholders.

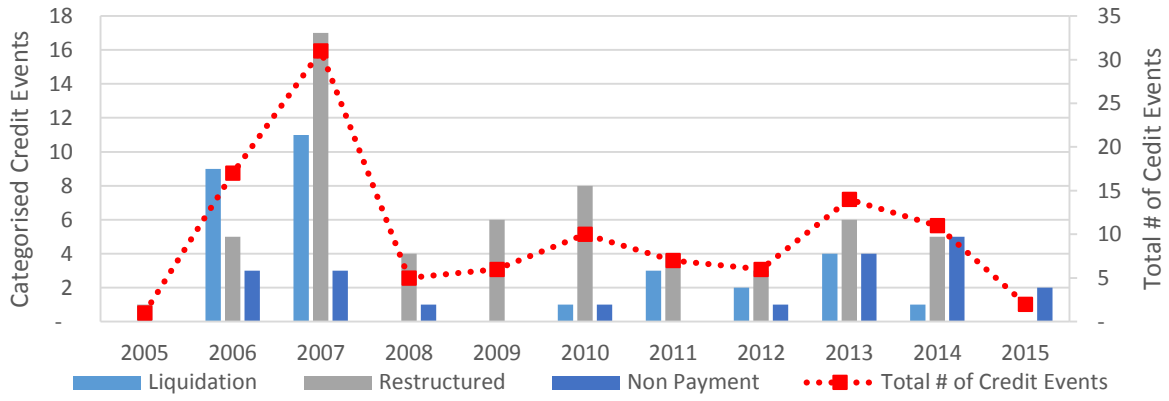
[47] Their classifications are based on Moody's methodology, which we discussed in section 2.2.

[48] In our selection, a number of companies have done full and partial exchanges into new bonds, with potential write-down of debt or conversion into equity.

Companies that are unable to meet their financial obligations have several options; choosing the best and making it work is often difficult. A fair amount of our time was spent reading restructuring documents, and we often observed that bondholders accepted significant changes to keep the company as going concern. These changes included amendment of covenants, i.e. weakening the bondholders' rights, postponement of interest or instalments. A lot of these processes were complex and in some cases Stamdata's database was incomplete or lacked sufficient data to calculate the return. Twenty-two of the bonds in our sample were particularly comprehensive and complex; in these situations we used Nordic Trustee's Recovery Database[49] to calculate return. In a few of these cases, even the Recovery Database did not include sufficient information to calculate the return; these bonds were excluded from our sample.[50]

A working paper from OECD (2015) emphasises that a restructuring often is a new start for the issuer-bondholder relationship and not the end of the relationship. A common argument for restructuring rather than liquidating is that there is a higher chance of investors getting their investment back if the company continues as a going concern rather than if the bondholders take control of the company, or if the company is liquidated (Thomas, 2014). Liquidation is usually the very last alternative and an analysis by Gilson, John and Lang (1990) found that it is less costly to resolve default outside of court.

Figure 30: Credit Events per Year



Source: Stamdata

[49] The Stamdata Default and Recovery Rates database was first released as a service towards the end of 2015

[50] See Appendix 4

As shown in Figure 30, many of the bonds issued in 2007 were involved in credit events. This stands out as the most dramatic year in our analysis period; however as mentioned these bonds were issued in 2007, but did not necessarily default in that year. A significant amount of the bonds issued in the credit boom between 2006-2007 defaulted in the wake of the financial crisis of 2008. Many of these bonds were issued by companies in the Oil and gas services sector and were project-financing bonds (Thomas, 2014).

Descriptive Statistics: YTM (Credit Event)

Credit Event	N	Mean	StDev	Median	Range	Skewness	Kurtosis
Liquidation	31	-0,3196	0,3324	-0,2118	1,1080	-0,54	-0,69
Non Payment	20	-0,1454	0,3261	0,0423	1,1237	-1,21	0,70
Restructured	59	-0,0787	0,2675	0,0181	1,2005	-1,21	0,55

Source: Calculated in Minitab

Descriptive statistics show that the majority of bonds involved in credit events were restructured. This could indicate that restructuring is the most desired alternative, when the issuer is in financial distress, and it seems to confirm the OECD (2015) statement that restructuring is a viable solution. The positive median YTM for restructurings illustrates that in 50% of the events, restructuring was beneficial, as the investors at least recovered their investment. However, the much lower mean demonstrates that when restructurings do not go accordingly, investors often lose a considerable amount of their investment. We observe a somewhat surprising low return for non-payment defaults. The reason for the negative return on these bonds, is the low current market prices from NBP, which makes it difficult to interpret the result. Nevertheless, many of the non-payment defaults are from companies that most likely will eventually be restructured or liquidated, due to the oil price decline.

Kruskal-Wallis Test: YTM (Credit Event) versus Type of Credit Event

Credit Event	N	Median	Ave Rank	Z
Liquidation	31	-0,21178	38,4	-3,52
Non Payment	20	0,04228	57,8	0,35
Restructured	59	0,01814	63,7	2,91
Overall	110		55,5	

H = 12,95 DF = 2 P = 0,002

Source: Calculated in Minitab

Our analysis shows that of the bonds that were involved in credit events, restructured bonds performed significantly better than bonds that were liquidated. The result is not surprising as

bankruptcy costs significantly limit the amount that can be recovered in a liquidation. In a liquidation, assets are often sold at highly discounted prices below the prices that would be achieved in a normal sales process (Kinserdal, 2015). If the assets of defaulting firms are industry-specific, then most likely the firms that could use the assets might also be in distress, and will not be able to acquire the assets. This will lead to further discounted prices for the assets, and accordingly low recovery values (Shleifer and Vishny, 1992).

Kruskal-Wallis Test: YTM (Credit Event) versus Sector (Credit Event)

Sector	N	Median	Ave Rank	Z
Industry	14	0,04178	51,2	-0,54
Oil and gas E&P	23	0,10240	74,8	3,27
Oil and gas services	59	-0,13022	49,7	-2,04
Other	7	-0,03291	57,7	0,19
Shipping	7	-0,01046	47,0	-0,73
Overall	110		55,5	

H = 11,16 DF = 4 P = 0,025

Source: Calculated in Minitab

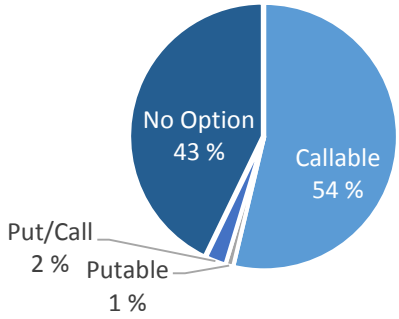
To further analyse our results we run a Kruskal-Wallis test based on sector and credit event.[51] The test finds that sector seems to matter in credit events as the outcome differs among sectors. Oil and gas services companies have achieved lower median YTM in occurrence of credit events. Interestingly enough, Oil and gas E&P companies perform better than companies in other sectors in a credit event. Our analysis of credit events in regards to sectors gives similar results as Thomas (2014). He found that recovery rates are higher for E&P issuers than for Oil and gas services issuers. The Oil and gas services sector is highly cyclical and it is often in recessions that the firms get into financial distress. This is when assets have the lowest market values and little recovery can be achieved even if bondholders are secured.

6.3.9 Imbedded Options

As explained in the section on imbedded options, bonds with call options should compensate the investors more than bonds without call options due to reinvestment risk and limited price appreciation potential.

[51] It is important to mention that the type of credit events can vary among sectors.

Figure 31: Imbedded Options



Source: Stamdata

Figure 31, shows that approximately 57% of the bonds in our sample have imbedded options, most are only callable, but a few are both putable and callable or simply putable.

Kruskal-Wallis Test: YTM versus Callable/Not Callable

Callable/Not Callable	N	Median	Ave Rank	Z
Callable	294	0,06608	267,3	0,91
Not Callable	229	0,06327	255,2	-0,91
Overall	523		262,0	

H = 0,83 DF = 1 P = 0,363

Source: Calculated in Minitab

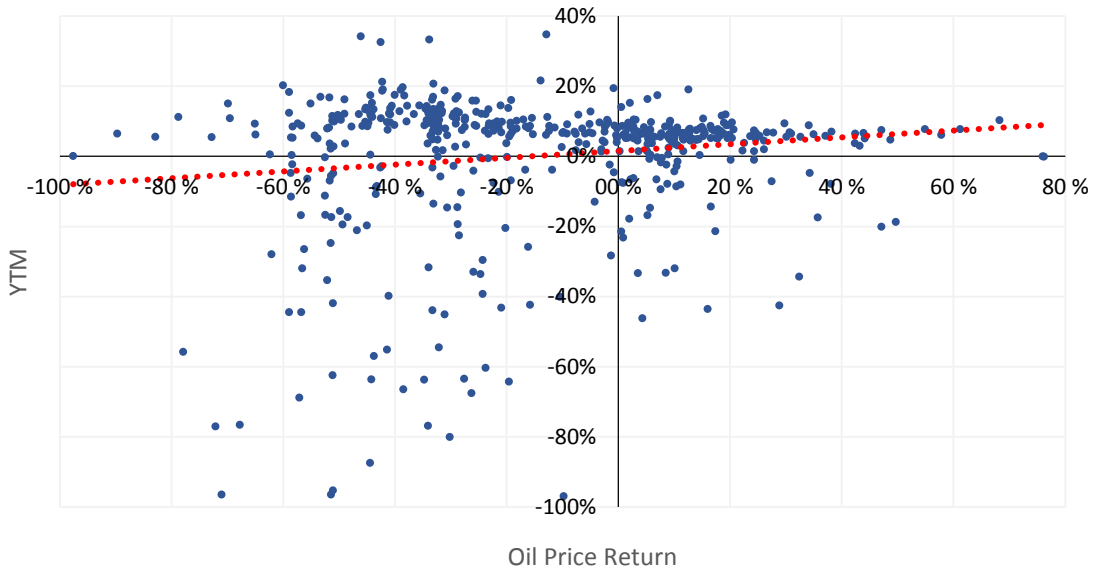
Our analysis indicates that investors in bonds with call options in the Norwegian market have been compensated with a higher return, which is in line with financial theory. However, the difference in median YTM is only 28 basis points and the result is not statistically significant as the p-value > 0,05.

6.3.10 Brent Oil Price

Since the majority of issuers in our sample are in a sector, or part of an economy, that is highly sensitive to the oil price, we have conducted an analysis on bond returns and the Brent oil price. In Figure 32 we have graphed a scatterplot where the X-axis value is the oil price return during the bond's lifetime and the bond's realised YTM is on the Y-axis. The trend line of this scatterplot should be upwards sloping since most of the issuers in our sample are positively affected by a higher oil price. Consequently, bonds that experienced an increase in the oil price during the life

of the bond should have a higher realised YTM.[52]

Figure 32: Bond Returns and Brent Oil Price Return



Source: Stamdata and Macrobond

The trendline in Figure 32 is upward sloping, however the correlation is only 0,14. Based on our previous results, we would expect a stronger correlation between the oil price and realised YTM. We observe that a majority of the bonds that achieved very low returns experienced sharp declines in the oil price during the life of the bond. Due to time limitations, we did not further analyse the findings. Nevertheless, we note that Sæbø (2015) tested the significance of the oil price on the Norwegian bond market and Næs, Skjeltorp and Ødegaard (2009) tested the significance on the Norwegian stock market. Sæbø's results were inconclusive, but Næs et al. (2009) found that the oil price was not a relevant risk factor for the Norwegian stock market.

6.4 Regression Analysis

In this section, we will discuss potential explanatory factors for realised YTM. We have attempted to develop a multiple regression model that can explain the differences in realised YTM**.** Several potential factors were tested; however, few factors were statistically significant. The final regression model consists of 10 potential explanatory factors. When interpreting our results, it is

[52] There are limitations to this test, however the same analysis was performed using average oil price during the life of the bond. Although, we found similar results, the analysis using oil price return was more statistically significant.

important to note that our data is not normally distributed, has negative skewness and high positive kurtosis. In addition, our residuals are not homoscedastic.[53] We believe that this regression model can explain some of the realised YTM, but we acknowledge that the R^2 is low and that the explanatory strength is limited. The regression analysis is outlined in the table below; furthermore, we will interpret and discuss our findings.

Regression Analysis: YTM vs Bond and HY Factors

S = 0,184874 R^2 = 10,02% R^2(adjusted)= 8,23%

Term	Coef	SE Coef	T-Value	P-Value
Constant	0,0534	0,0400	1,34	0,182
Tenor at Issue	-0,0092	0,0053	-1,73	0,083
Size (NOK100m)	-0,0007	0,0013	-0,49	0,627
FRN	-0,0113	0,0193	-0,58	0,561
Not Listed	-0,0626	0,0217	-2,88	0,004
Unsecured	-0,0112	0,0186	-0,60	0,547
Foreign	-0,0284	0,0184	-1,54	0,123
Oil and Gas Services	-0,0559	0,0170	-3,28	0,001
Oil Price Return (%)	0,0967	0,0306	3,16	0,002
Before 15.09.2008	0,0013	0,0211	0,06	0,951
Before 01.06.2014	0,0826	0,0280	2,95	0,003

Source: Calculated in Minitab

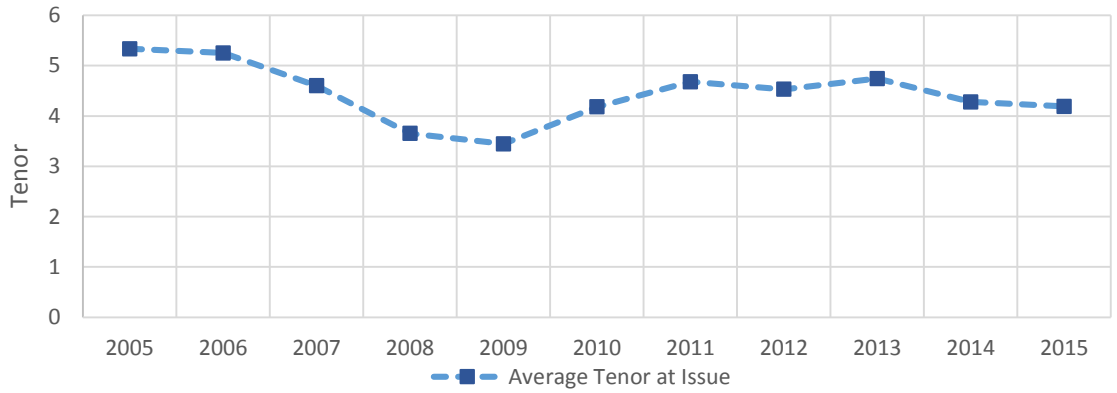
Tenor at Issue

Research finds that longer-term bonds have achieved excess returns compared to shorter-term bonds, and that there exists a term premium for bonds, but the economic rationale and qualitative explanation for this result is unclear (Norges Bank Investment Management, 2011). It is generally riskier to lend money over longer periods than shorter periods due to increased credit risk (Sæbø, 2015). However, a paper by Campbell and Shiller (1991) finds that the term premium varies over time. This research indicates that investors should be compensated for holding bonds with longer time-to-maturity, which is why we include time-to-maturity or tenor at issue as a variable in our multiple regression. The variable should capture the risk that interest rates change in an unfavourable way and that it is more likely that the issuer will default. There have been two periods of significant global financial unrest, the financial crisis of 2008 and the credit crisis of 2011, that have impacted returns. In addition, the sharp oil price decline that started mid-2014 and continued up until the end of the analysis period, severely

[53] See Appendix 3 for graphical interpretations of the breached regression model assumptions.

affected the Norwegian HY market negatively. The average bond in our sample, had a time-to-maturity of 4,5 years[54] and will therefore have gone through one or several of these periods.

Figure 33: Graph of Average Tenor at Issue



Source: Stamdata

It is less likely that bonds with short time-to-maturity have gone through any of these periods of turmoil. Because of this, we expect the coefficient to be negative, despite that theory and research indicate the opposite.

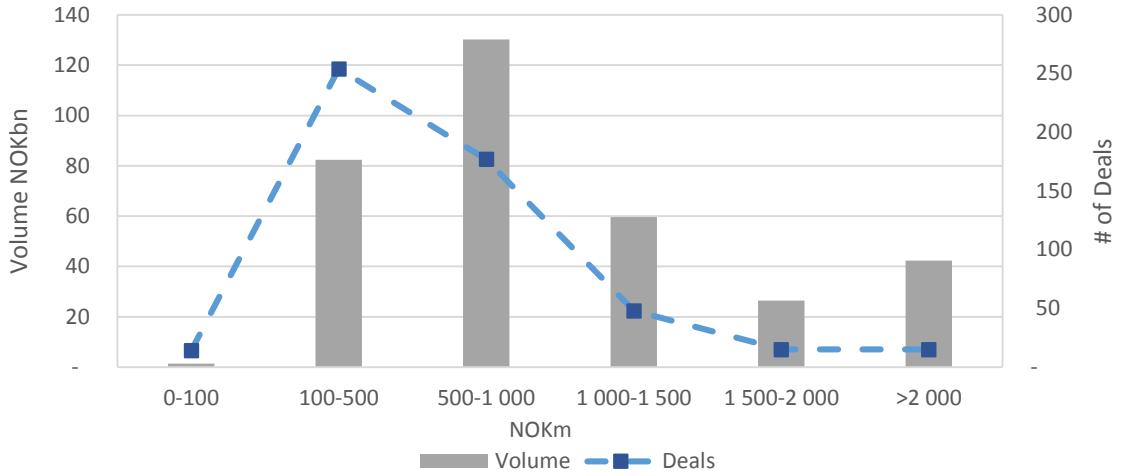
The tenor at issue coefficient is statistically significant on a 10% significance level, but with a low coefficient of -0,0092. Most likely, these findings are strongly time dependent due to the turbulence in our time period. Another potential explanation that we have observed is that generally more solid companies, which have lower credit risk, issue bonds with longer time-to-maturity. This would negatively affect the coefficient.

Size (NOK 100m)

Literature often argue that bonds of larger companies are more liquid (Sæbø, 2015). Academics base this argument on the fact that the stock of larger companies is more liquid than the stock of smaller companies (Fama and French, 1993). Bratt (2016) expects there to be a diversification effect in regards to the size of the bonds. Since larger companies generally issue larger bonds, we expect that larger bonds have lower return due to less risk from the higher liquidity. Therefore, we expect that size will have a negative coefficient in our regression.

[54] Average time-to-maturity at issue is calculated manually as Stamdata only provide information about realised time-to-maturity. The manual calculation may be subject to error.

Figure 34: Histogram of Volume and Number of Deals in regards to Bond size (NOKm)



Source: Stamdata

As shown in Table 13, the average bond size per issue has increased over our analysis period. A majority of the bonds issued towards the end of our period have achieved particularly low returns due to dramatic bond price declines. This development has probably affected the coefficient negatively. The difference could also be because of market segmentation, i.e. different supply and demand dynamics depending on the size of the bond. For instance, some asset managers are restricted from investing in smaller bonds. As the size of the bond increases, the amount of potential investors might increase, which would increase the demand for the bond and potentially lower the coupon.

The result of our regression model is that size is a negative factor for realised YTM. The coefficient for this factor is only -0,0007 per NOK 100m and the result is not statistically significant. We can therefore not draw any further conclusions.

Return Type

As explained in section 6.3 and section 2.3, fixed bonds are exposed to interest rate risk, while FRN bonds are exposed to minimal interest rate risk. In our analysis period, fixed bonds achieved a higher median YTM than FRN bonds, potentially due to interest rate risk. This result is not statistically significant, however, interest rate risk is a standard risk factor and we therefore include it in our regression model. In our model, the dummy coefficient FRN is –0,0113. Nevertheless, similarly to the results in our Kruskal-Wallis and Levene's Test, the result is not statistically significant.

Country of Origin

As previously discussed, bonds issued by companies domiciled outside of Norway achieved a statistically significant lower median YTM than bonds issued by Norwegian companies. A Levene's test also shows that foreign bonds had a higher variance in YTM as well. In this case, higher risk has led to lower returns. We are not aware of any empirical research that supports our test results. However, several valuation models, e.g. the McKinsey model**,** incorporate a country risk premium (Goedhart, Koller and Wessels, 2010).

Market participants claim that as the market matured, companies of questionable creditworthiness were allowed to issue bonds, and many of these were foreign companies. In the regression model, we use a dummy, i.e. bonds are either characterised as issued by Norwegian companies or foreign companies.

In our regression model, foreign domicile has a negative coefficient of –0,02384, but the result is not statistically significant with a p-value of 0,123. While this result is not statistical significant on a 5% significance level, the coefficient is negative.

Listing

In section 6.3.5, we concluded that unlisted bonds achieved a higher median YTM and that the result was statistically significant. Listing provides liquidity to investors, which should lead to lower expected returns as it gives investors the opportunity to exit investments. We therefore include whether bonds are listed or unlisted as a dummy variable in our regression as a proxy for liquidity. Sæbø (2015) argues that including both size of the bond and firm size of the issuer might create multicollinearity in a regression model as the factors strongly correlate. In our regression model, there could be strong correlation between the listing factor and the size of the bond factor, though we do not find any indications of multicollinearity.

In our regression model we find that the dummy variable for not listing has a negative coefficient of –0,0626 and the result is statistically significant on a 1% significance level, i.e. not being listed is negative for realised YTM. This result is difficult to interpret; however, it could be due to the liquidity premium. As explained in section 3.1, there are requirements for listing bonds on ABM and the OSE. Some of the unlisted bonds might have been issued by companies that did not meet

these requirements, i.e. the credit quality of the companies that list bonds could be higher than that of companies that do not list bonds. Nevertheless, investors should be able to account for differences in credit quality when they price risk, which is why we argue that some of the difference in return is due to liquidity, evident by the negative coefficient.

Security

As explained in section 6.3.3**,** secured bonds have less credit risk because in the case of a bankruptcy, the secured bondholders have the right to receive all of the proceeds from the sale of the collateralised asset. Based on the theory presented, we expect that the dummy coefficient for unsecured is positive as unsecured bonds should offer a higher expected return.

The result of our regression model is slightly surprising as the coefficient for the unsecured dummy factor is –0,0112, however the result is not statistically significant. As previously mentioned, we observe that a majority of the secured bonds are issued by companies without well-established operations. There is generally a higher level of uncertainty with these types of companies and investors will require a higher expected rate of return, despite having a secured creditor position, which could explain some of the irregularities of our results. On the other hand, a majority of the unsecured bonds in our sample are issued from solid companies with diversified and well-established operations. In general, the required rate of return for these companies is lower and investors are more likely to be comfortable with owning unsecured bonds of such companies

Sector

As explained in section 6.3.4, we have identified significant differences in realised YTM among sectors. Sæbø (2015) found that sector was the most prevalent explanatory factor for difference in credit spread at issue in the Norwegian bond market for the years 2008-2009. Initially we tested several regression models with the different sectors as dummy variables, however, Oil and gas services sector was the only statistically significant sector. In section 6.3.4, we concluded that bonds within the Oil and gas services sector performed worse, measured by the median return, compared to the other sectors. On average the YTM for bonds issued within the Oil and gas services sector returned -2,2% in the period. Considering these results, it is not surprising that the dummy coefficient for the Oil and gas service sector is –0,056 and statistically significant on a 1%

level. The high volatility in the oil price for the analysis period has probably strongly affected our findings, as the firms within the Oil and gas services sectors are directly affected by changes in the oil price. Nevertheless, the results are probably highly time dependent and should be interpreted carefully without strong conclusions.

Oil Price Return (%)

A majority of the bonds in our sample are either directly or indirectly affected by the oil price. The coupon, or coupon spread, of a bond is determined at issuance and it depends on the perceived credit risk of the bond. The perceived credit risk of many companies in our sample is based on the future expectations of oil prices, and in our analysis period, the oil price has fluctuated significantly. We therefore test the Brent oil price return during the life of the bond, as a potential explanatory factor for the realised YTM. This factor is measured ex-post by looking at the oil price at issue and maturity, and it is used as a correction to the regression model, and not a source of risk premium.

Our regression model indicates that the direction of oil prices during the life of the bond has a statistically significant effect on realised YTM. The coefficient of this variable is 0,0967 and statistically significant on a 1% significance level. The interpretation of the coefficient is that a 10% increase in the oil price during the life of the bond increases the expected realised YTM by 9,67 basis points.

Financial Crisis

Our analysis shows that bonds issued before the financial crisis had significantly lower coupons than bonds issued after the financial crisis due to lower perceived credit risk; Sæbø (2015) also found this result. To account for this development, we include a time dummy set September 15th, 2008**,** which is when Lehman Brothers filed for Chapter 11 bankruptcy. This time dummy indicates whether a bond was issued prior or after the financial crisis of 2008. As explained in previous sections, there was an increased amount of risk aversion and general uncertainty in the financial markets following the Lehman bankruptcy. This time dummy was also used by Sæbø (2015), and we incorporate it in our regression model as a correction and not a source of risk premium.

The dummy coefficient is 0,0013 with a high p-value of 0,951. While the coefficient is low, it still indicates that bonds issued before the financial crisis have performed slightly better than those

issued after. Nevertheless, the size of the coefficient is only 1,3 basis points and considering the high p-value, this factor is negligible.

Oil Price Decline

As discussed in section 3.2, the market for HY bond issuance has been declining since 2015 as a consequence of the dramatic decline in the oil price that started in mid-2014. The median YTM is substantially higher for bonds issued prior to the decline than for those issued after. Most of the bonds issued after mid-2014 are sold at prices obtained by NBP, which reflect the drop in the oil price. To correct for the price decline, we include a time dummy set at June 1st, 2014. Similarly to the financial crisis factor, we use a time dummy for the oil price as a correction to the regression model and not a source of risk premium.

Our regression model finds that the coefficient of this factor is 0,0826. This result is statistically significant on a 1% significance level with a p-value of 0,002. The high coefficient and low p-value demonstrate the importance of the oil price decline on the realised YTM for bonds in our sample. We note that there could be multicollinearity between this factor and the oil price return factor; however, we have not found any clear indication of such an issue.

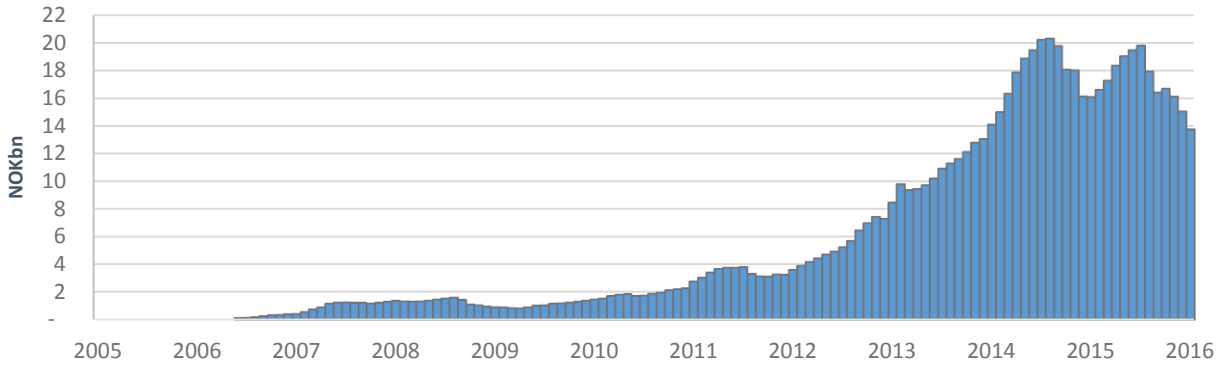
6.5 Analysis of HY Mutual Funds

In this section, we include an analysis of Norwegian HY mutual funds. The HY mutual funds are priced daily and this gives us a better overview of the year-to-year return in the Norwegian HY market. It is important to keep in mind that the funds described have different strategies and restrictions on their portfolio allocation, which might make it difficult to compare them (Drucker, Levine and Rosenthal, 2010). Some of the mutual funds invest solely in Norway and some invest in all of the Nordic countries, which is important to consider (Torgersen, 2016).

Unfortunately, time limitations and insufficient data have restricted our ability to investigate the detailed differences among the mutual funds. However, we believe a comparison of our returns to the return on Norwegian HY mutual funds strengthens our thesis. Another reason for analysing HY mutual funds is that our return calculations are not based on periodical price movements. In financial economics, it is common to use the standard deviation of returns as a measure of risk to risk-adjust returns, but without a time series of prices we cannot do this adjustment. However, HY funds provide daily prices of their holdings and therefore we have used the volatility of the

return of HY mutual funds as proxy for risk. This is our best estimate of the volatility in prices on Norwegian HY bonds; Folketrygdfondet agreed that this could be a good approach (Tronsgaard, 2016).

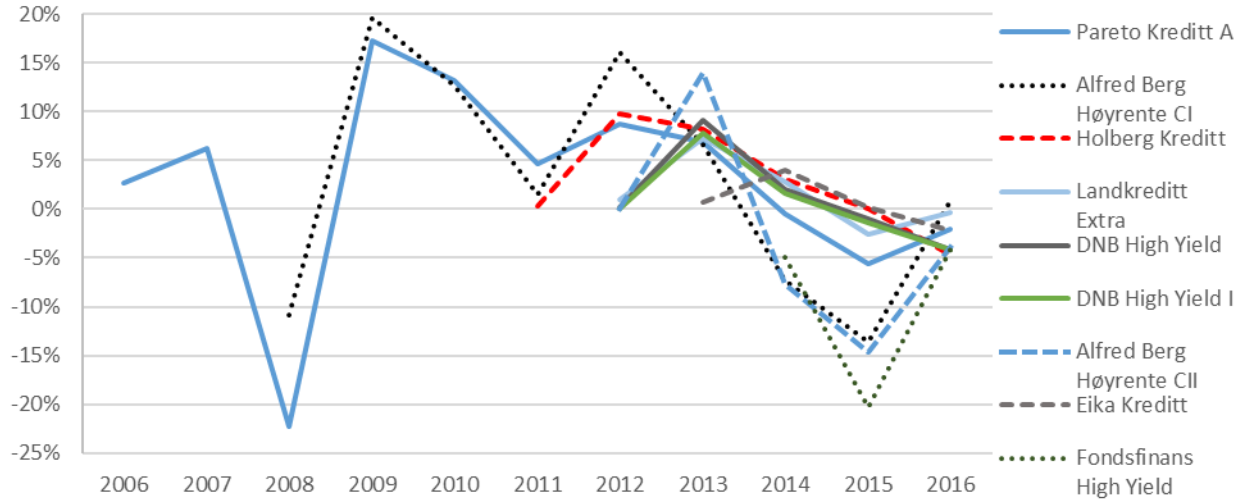
Figure 35: Assets Under Management (AUM) for Norwegian HY Mutual Funds



Source: VFF[55]

We have previously discussed the market environment in 2011-2014. During this time period, interest rates were low, the oil price was high and the activity in the Norwegian HY market was at its highest level. We believe that investors searching for higher yield were pushed further out on the risk scale. We observe a strong connection between the issuance activity in the Norwegian HY market and the establishment of several HY mutual funds, Figure 37 depicts this trend.

Figure 36: Norwegian HY Fund Total Returns

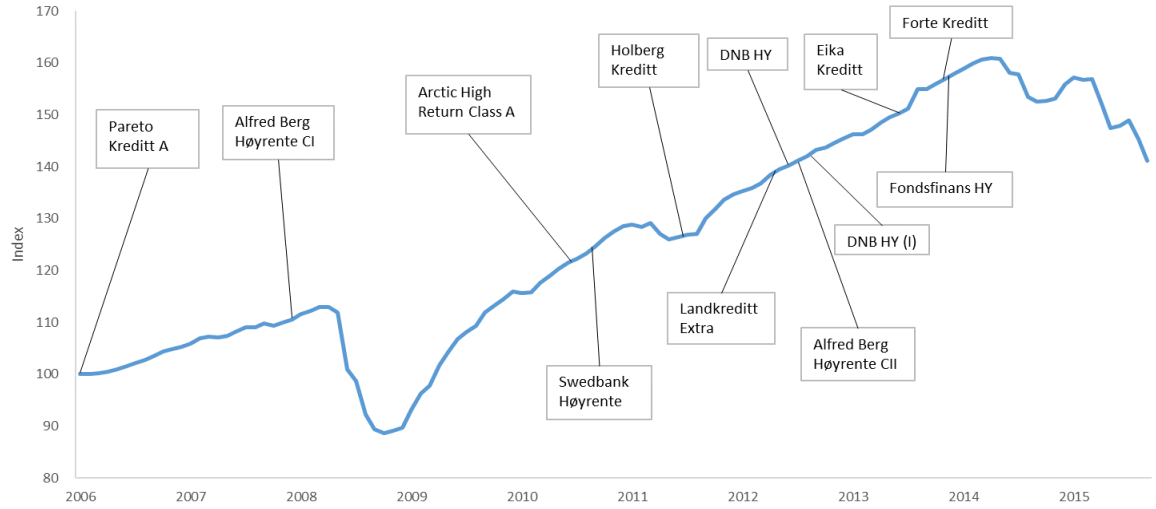


Source: Bloomberg.

[55] This is AUM, provided privately by VFF, for the following Norwegian HY mutual funds: Pareto Kreditt A, Alfred Berg CI, Alfred Berg CII, Holberg Kreditt, Landkreditt Extra, DNB HY, DNB HY (I), Eika Kreditt, Forte Kreditt and Fondsfinans HY. Funds were selected based on classification by Morningstar (Furuseth, 2015).

Figure 36, shows yearly returns for each of the mutual funds. The annual return of the HY mutual funds market has fluctuated considerably. The development in returns seems to have followed the cyclical up- and downturns in the economy. Pareto Kreditt A, the only operative mutual fund before the financial crisis, was negatively impacted by the financial crisis of 2008 and fell more than 20%. However, after the financial crisis and until the dramatic fall in the oil prices starting mid-2014, the return was moderately positive, but declining. As mentioned before, the Norwegian HY market is highly exposed towards the oil and gas sectors, and the turmoil in the oil market has affected the HY mutual funds return. The majority of the mutual funds have mandates that restrict their portfolio allocation to the riskiest end of HY bonds. Despite, the restrictive mandates and the knowledge of the asset managers, funds have not been able to avoid negative returns, though some of the funds have been less severely impacted by the turmoil than others.

Figure 37: Norwegian HY Mutual Fund Index (June 2006 = 100)



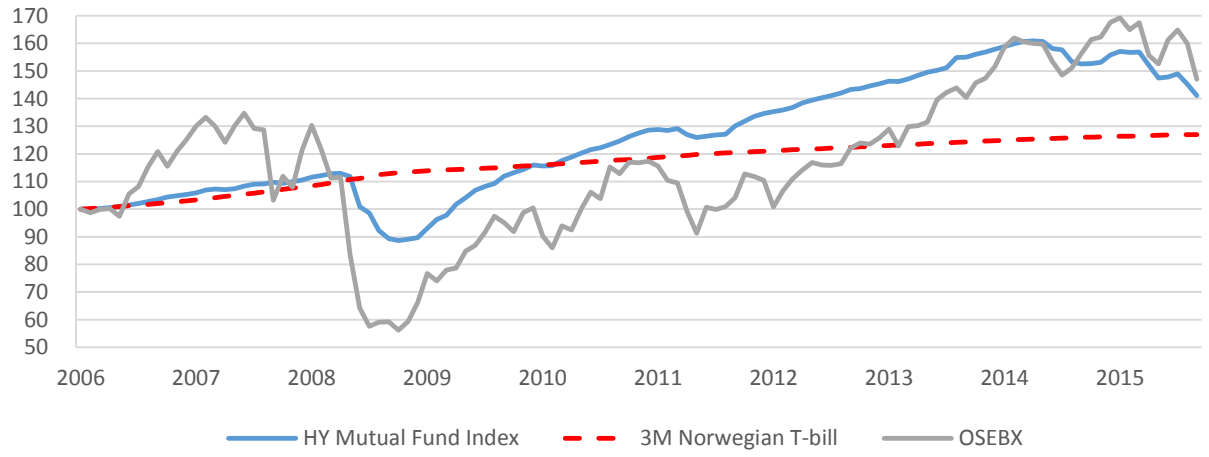
Source: Bloomberg[56]

Figure 37, illustrates the aggregate return of Norwegian HY mutual funds between 2006 and 2015. The index is calculated based on data from Bloomberg, but the index is proprietary and cannot be found in any financial database. The figure is indexed to when the first HY mutual fund was established and was created by equally weighting the monthly returns of the mutual funds. From the bottom in 2009 until 2011, Pareto Kreditt and Alfred Berg CI had an aggregate annual return of approximately 20% per year. Between 2011 and 2014, 10 more funds were established, and in

[56] The index is an average based on equal weighted monthly total returns. Illustration shows when the various funds started to contribute to the index.

this period, the funds had positive non-volatile returns until the summer of 2014 when the oil price started to decline dramatically. Although the funds recovered briefly in 2015, prices continued to fall. As explained in section 3.2, an enormous amount of debt in the Norwegian HY bond market is maturing in the next years, especially in 2019, which will affect the HY mutual funds. Based on the prices we received from NBP, there is a significant amount of default priced in as of January 29th, 2016.

Figure 38: Norwegian HY Mutual Funds compared to Other Assets (June 2006 = 100)



Source: Bloomberg, Macrobond and Norges Bank

In Figure 38, we have compared the return of the Norwegian HY mutual fund index to the return on the OSEBX and that of 3M Norwegian Treasury bills. Between 2006 and 2015, HY mutual funds have only slightly underperformed the OSEBX, but had a significantly lower volatility measured by standard deviation. Although the return of the individual funds has fluctuated, overall the funds have achieved decent risk-adjusted returns.

6.6 Analysis of Other Assets

To fully analyse the returns of HY bonds, it is important to compare the returns with the return on riskier and less risky assets. We have analysed the return an investor would have received if he or she had invested in the common stock rather than the HY bond of an issuing company.

We have also done the same analysis for the following financial assets:

- 3M Norwegian Government Treasury bills (ST1X)
- 5-year Norwegian Government bonds (ST5X)
- Bank of America Merrill Lynch Total Return High Yield index (H0A0)
- OSEBX

We consider each period that a bond was alive as a separate investment period. According to financial theory, the return on government securities should increase with time-to-maturity and be lower than HY bonds due to lower risk. Stocks should yield a higher return than HY because debt is senior to equity in the capital structure. Firstly, we present an example of the comparison of the return for other assets versus the return on a specific bond.

On November 23rd, 2010, Aker ASA issued a bond that matured on November 23rd 2015. What return would an investor have obtained if he or she had invested in the alternative assets instead of the Aker bond?

Table 16: Aker ASA Bond Compared to Other Assets

Company	HY Bond	Equity	ST1X	ST5X	H0A0	OSEBX	Brent Oil
Aker ASA	8,0%	18,9%	2,5%	3,3%	4,6%	5,3%	5%

Source: Stamdata and Macrobond (All returns, other than the HY bond return, are total holding period returns)

As shown in Table 16, the Aker HY bond returned 8%, which was higher than the government securities. If the investor had instead held the Aker stock in that time period, the investors would have received an annualised return of 18,9%. This result demonstrates the nature of bonds and equity. Equity holders take part in the upside of the company, while bonds receive fixed cash flows despite that the value of the company increases significantly. The longer maturity government securities had higher returns than the ones with shorter maturity, and government securities had lower returns than the stock index. For this specific investment period, the risk-reward trade-off holds as expected by financial theory.

This analysis was repeated for all the bonds issued during our time period.[57] The first row in Table 17 shows that the average return on Norwegian HY bonds was 2,4% and that the return on 5-year government bond was 5,1%[58], i.e. the risk-reward expectation does not hold. The HY bond returns were slightly higher than the return on 3M Government Treasury bills.

Table 17: HY Bond Returns Compared to other Assets

Total	HY Bonds	Equity	ST1X	ST5X	H0A0	OSEBX	Brent Oil
Average	2,4%	-7,1%	2,0%	5,1%	4,4%	7,4%	-11,3%
Median	6,0%	-21,3%	1,5%	4,6%	3,9%	8,6%	-15,4%
STD	11,9%	82,0%	1,3%	2,9%	11,2%	14,5%	30,0%

Source: Stamdata, Børsprosjektet at NHH, Macrobond, Oslo Stock Exchange and Netfonds

An interesting observation is that the strategy of buying the stock of the HY issuer instead of the bond, on the day of issue and selling on the day the bond matured, would have returned –7,1% on average. Had the investor instead bought the OSEBX on each issue date and sold on each maturity date, he or she would have achieved a 7,4% return. We have previously indicated that HY bonds have achieved low returns in the analysis period, but this analysis indicates that the equity returns for HY issuing companies have been much lower than the bond returns. These results are likely highly time dependent, as the equity market has been turbulent during our analysis period.

[57] This analysis is only based on 187 of the bonds in our sample because it requires that the equity of a HY bond issuer was listed during the entire life of the bond.

[58] It is natural to compare our bond sample with 5-year government bonds as our average and median tenor at issue was 4,54 and 5 years respectively. ST1X is used as a measure for the risk-free rate.

7 Criticism

Chapter Summary

In this chapter, we will discuss the limitations to our results and provide insight to future research ideas.

7.1 Limitations

The main challenge of writing this thesis has been limitation of time. Other key challenges were the existence and availability of data.[59] Collecting data and calculating the YTM of the 523 bonds in our sample have been the most time consuming aspects of this thesis. Our calculations are based on information from thousands of documents pertaining to the bonds. In general, our analysis has consisted of aligning considerable amounts of data from various sources, which could lead to measurement error. However, the analysis has been carried out to the best of our ability.

In addition, we acknowledge that there are limitations to using YTM as a return measure. It is important to emphasise that YTM is sensitive to when cash flows are paid and whether the bond has long time periods between cash flows. We observe that a couple of the bonds were extremely sensitive to when cash flows were paid. Therefore, it is important for our results that the cash flows structures are identified and calculated correctly.

We believe that most of the cash flow structures we have identified are correct. However, due to the complexity of some credit events, as well as potential errors in Stamdata, we acknowledge that the cash flow structures might be incorrect. Calculating the bond returns in our sample individually would have taken an enormous amount of time, which is why we created a comprehensive Excel-model to reduce the time consumption. Nevertheless, creating the model and aligning the data still required a considerable amount of our time. It is important to clarify that the cash flow structure of some bonds are complicated. To ensure that the model could in fact calculate such complicated cash flows we tested several of the bond calculations manually.

In our Excel model, we have used the 30/360 day count convention. As explained in section 2.1, the Norwegian Society of Financial Analysts (2015) suggests using the day count conventions

[59] The difficulty of obtaining data might be the reason why there have only been performed a handful of analyses on the Norwegian HY market.

ACT/360 for FRN bonds and 30/360 for fixed bonds, whereas we have used the 30/360 day count convention. Implementing two different day count conventions in our model would have made the calculations even more complex and prone to errors. In addition, FRN and fixed bonds use different methods for accrued interest; the Norwegian Society of Financial Analysts (2015) suggests using ACT/360 for FRN bonds and ACT/365 for fixed bonds. While using the day count convention 30/360 has not affected the bonds that have matured, it has affected the bonds that were sold, though with a minimal effect on return.

Another source of error is that we have assumed that tap issues are "tapped" at 100% of par; however, we know that this is not necessarily correct. Tap issues are issued at the market price, i.e. the tap issue price depends on whether the initially issued bonds are trading above or below par (Sletten, 2016), however this data is difficult to obtain. The importance of the assumption that bonds are bought back at 100% of par is also difficult to assess.[60] We do not know the precise number of bonds that were actually bought back or at what price they were bought back[61] to, which gives our returns an upward bias.

For bonds that have not matured as of January 29th, 2016, we have relied on market prices from NBP and The Norwegian Fund and Asset Management Association. As we have pointed out, many of the HY bonds are trading at distressed prices and it is difficult to determine whether it would actually be possible to transact at the observed market prices. Prices are indicative and the intermediary is not obligated to transact at those prices, which gives our returns an upward bias.

In situations where the bondholder's claim was converted into equity of the issuer, we have used the share price one week following the delivery of the shares. If there was insufficient liquidity for the shares, then we would not have been able to sell the shares at the quoted price, which again gives our returns a potential upward bias.

As pointed out by Dagslet et al. (2013), there is a conflict of interest in regards to shadow rating when a bond is issued, which could weaken our rating analysis. The investment bank acts as an advisor and manager for the issuing company, and as an advisor to investors when it comes to

[60] We only have specific buy-back terms on some of the bonds in our sample where bonds were bought back.

[61] Buy-back data is at times inconsistently presented or inconsistent with documentation in Stamdata.

credit assessment of the bonds. This could potentially lead to an inflation in shadow-ratings from Norwegian arrangers because they have incentives to be positive (Kirkeby, 2016).

We have concluded that bonds issued by companies domiciled outside Norway have performed worse than those issued by companies domiciled in Norway. For this analysis we have relied on Stamdata's characterisations, however designating a country of origin is not always a straightforward task. For example, Eitzen Chemical ASA, a Shipping company with several bonds in our sample, was a Norwegian registered holding company, and thus designated as a Norwegian company. However, the ship-owning and operating companies of Eitzen Chemical were registered in Singapore prior to their bankruptcy.

Due to the cyclicality of the Norwegian economy, Norwegian HY bonds are more strongly affected by business cycles than those of other HY markets, which could limit our ability to compare returns. For instance, the performance in the Norwegian HY market is more time and business cycle dependent than the US market, as the latter is more diversified (Kirkeby, 2016).

Due to the complexity of some bonds, we have relied on Nordic Trustee's recovery rates to calculate the return. However, the length and complexity of processes make it difficult to calculate recovery rates, which could impair these calculations. In many of the defaults, it is difficult to point to a specific date for the default and many of the processes last for several years, as the bondholders and issuers often consider several solutions before final settlement. In addition, the credit events analysed in the thesis is not based on which year the default occurred, but rather in which year the bonds were issued.

7.2 Future Research

In our analysis, we have used bond characteristics at time of issue as sources of risk. A more comprehensive analysis should look at factors over time, such as ratings and yield changes, which is becoming easier as the transparency of the Norwegian HY market continuously develops.

In this thesis, we have performed many analyses, and we suggest further research on equity returns vs. HY returns and a deeper analysis of ratings. Particularly the finding that stocks of HY issuing companies have achieved an average return of -7,1% is something that should be further researched. We also wanted to analyse bond performance and connect it to which investment

bank acted as manager, to explore whether some investment banks have advised on more “junk bonds” than others. We were advised not to pursue such an analysis due to potential measuring error; however, we observe that a few specific investment banks have been the manager of many of the poor performing bonds.

Another interesting finding is that Norwegian HY mutual funds have performed better than the overall market for HY bonds. This indicates that Norwegian HY could be an asset class where active portfolio management benefits the investor. We recommend a deeper analysis of the portfolio holdings of HY mutual funds over time.

8 Conclusion

The primary objective of this thesis was to analyse the return on bonds issued in the Norwegian HY market. According to our calculations, bonds issued between 2005 and 2015 achieved a 0,2%[62] annual return with a standard deviation of 20%.

Furthermore, we wanted to analyse whether the risk-reward trade-off holds for Norwegian HY bonds. HY bonds are considered riskier than Norwegian government securities and should yield higher returns. In our analysis period, the OSEBX had an annual return of 8,8% with a standard deviation of 21%.[63] Even though our HY sample had a similar standard deviation as the OSEBX, the OSEBX still had a much higher return. On the opposite side of the risk scale, 5-year Norwegian Government bonds achieved an annual return of 4,5% with a standard deviation of 3,5%. Even the 3M Norwegian Treasury bill, which is considered the least risky debt instrument in Norway, outperformed our HY sample.

Although these findings indicate that HY investors have not been compensated for higher risk, it is important to note that the median return of our sample is 6,5%. More than 65% of the bonds in our sample achieved a higher return than 5-year Norwegian Government bonds. In fact, 30% of the bonds even outperformed the OSEBX. Nevertheless, the well-performing bonds did not sufficiently compensate bondholders because 25% of the sample, namely 130 bonds, caused investors massive losses. The average return on these bonds was -26% and therefore worthy of the description “junk”.

The risk of significant capital loss for Norwegian HY bonds is indisputable as more than 20% of the bonds in our sample defaulted. Avoiding all of these defaults would be difficult for an investor; however, according to our calculations, the Norwegian HY mutual funds achieved an annualised return of 3,9%. The outperformance indicates that the HY mutual funds have been able to avoid the worst performing bonds.[64] This is most likely because the mutual funds are generally

[62] Nominal unweighted average realised YTM.

[63] Differences in how standard deviation are measured for OSEBX and our HY sample.

[64] It could also be because some funds have invested outside Norway and because some funds were established towards the end of our analysis period.

restricted from buying the lowest rated bonds. Nevertheless, the result indicates that HY could be an asset class where there are benefits to active portfolio management.

Through research and discussions with market participants, we have learned that over the years Norwegian pension funds and life insurance companies have become large investors in HY bonds (Eriksson, 2015).[65] Pension funds and life insurance companies have return targets that they need to achieve and low interest rates have pushed them into HY bonds in search of higher yield. A concerning thought is that, considering the current HY bond prices, many of these funds may be about to lose a significant amount of money, which will effect Norwegian pensioners. This concern was also pointed out in the Financial Supervisory Authority of Norway's 2016 Risk Outlook report, which was published in June, 2016.

Based on our calculated returns we attempted to identify and measure explanatory factors for the surprisingly low returns. We analysed several bond characteristics, individually and in a multiple regression, as potential explanatory factors based on financial theory. Some of the bond characteristics were found to be statistically significant. For instance, we found that listed bonds have achieved statistically significant lower median returns than unlisted bonds. This result could be an indication of a liquidity premium for unlisted bonds in the Norwegian HY market. Furthermore, we found that companies in the Oil and gas services sector have delivered statistically significant lower returns than companies in other sectors. In our analysis period, the oil price has been high, except for certain periods. This may have caused investors to incorrectly price risk, which allowed companies within the Oil and gas services sector to issue more debt than what is sustainable.

The results from the time dummies, which we used to account for the financial crisis and the drop in the oil price starting mid-2014, are statistically significant. Our analysis shows that bonds issued in peak volume years[66] have provided the worst returns. In these years, the HY market was particularly euphoric. This allowed traditionally solid companies to issue more debt than they should have, at rates not equivalent to the credit risk. Many HY issuers should have issued equity,

[65] We do not have specific data on how much HY pension funds and life insurance companies own, however the market participants we have spoken with state that they are among the most prevalent investors.
[66] 2007, 2013-2015. See Table 13.

but due to favourable financing terms, they used the HY market instead. We also believe that the exuberant markets allowed companies with questionable credit quality to issue debt and many of these companies were not domiciled in Norway. According to our calculations, bonds issued by Norwegian companies have statistically provided significantly higher returns than bonds issued by companies domiciled outside of Norway.

Overall, our findings suggest that bond characteristics have low explanatory power for differences in realised YTM. The factors analysed should capture risk premiums that explain returns, however the R^2 of our regression model is low. The low coefficient of determination may be due to the fact that our sample contains a high amount of unexplainable variability or because our results are affected by macroeconomic events. As a result, our model has limited prediction power for bond performance. Our overall conclusion is that Norwegian HY bonds seem to have insufficiently compensated investors for the higher credit risk.

References

Book

Berk, J., and DeMarzo P. M. (2011). *Corporate Finance* (2nd ed.). Boston: Pearson Addison Wesley

Bodie, Z., Kane A., and Marcus, A. (2011). *Investments and Portfolio Management* (9th ed.). New York: McGraw-Hill-Irwin.

Cornett, M. M., and Saunders, A. (2014). Financial Institutions Management: A Risk Management Approach (8th ed.). New-York: McGraw-Hill Education.

Doane, D. P., and Seward, L. E. (2013). *Applied Statistics in Business and Economics* (4th ed.). New York: McGraw-Hill Irwin.

Gilson, S. C. (2010). *Creating value through corporate restructuring: Case studies in bankruptcies, buyouts, and breakups.* New Jersey: Wiley.

Goedhart, M., Koller, T., and Wessels, D. (2010). *Valuation, McKinsey* (5th ed.) New Jersey: John Wiley and Sons, Inc.

Hagen, R., Penuel, K. B., and Statler, M. (2013). *Encyclopedia of crisis management*. Thousand Oaks: SAGE Publications.

Sundaresan, S. M. (2009). *Fixed Income Markets and Their Derivatives* (3rd ed.). Cincinnati: South-Western College Pub.

Scientific articles

Altman, E., and Kishore, V. M. (1996). Almost Everything You Wanted to Know about Recoveries on Defaulted Bonds. *Financial Analysts Journal, 52*(6), 57-64.

Bildirici, M. E., Kayıkçı, F., and Onat, I. Ş. (2015). Baltic Dry Index as a Major Economic Policy Indicator: The Relationship with Economic Growth. *Procedia - Social and Behavioral Sciences, 210,* 416-424.

Campbell, J.Y., and Shiller R. J. (1991). Yield Spreads and Interest Rate Movements: A Bird's Eye View. *Review of Economic Studies, 58*, 495-514.

Cheremushkin, S. V. (2012). There is No Hidden Reinvestment Assumption in Discounting Formula and IRR: Logical and Mathematical Argument. *SSRN Electronic Journal.*

Drucker, E., Levine, R., and Rosenthal, S. (2010). The Problems and Challenges of High-Yield Bond Benchmarking. *The Journal of Portfolio Management, 36(4),* 93-98.

Fama, E. F., and French, K. R. (1993). Common risk factors in the returns on stocks and bonds. *Journal of Financial Economics, 33(1)*, 3-56.

Forbes, S. M., Hatem, J. J., and Paul, C. (2008). Yield-to-Maturity and the Reinvestment of Coupons. *Journal of Economics and Finance Education*, *7(1)*, 48-51.

Gilson, S. C., John, K., and Lang, L. H. (1990). Troubled debt restructurings. *Journal of Financial Economics, 27(2),* 315-353.

Goldstein, I., and Huang, C. (2015). Credit Rating Inflation and Firms' Investment Behavior.

Klovland, J. T. (2004). Chp. 4 Bond markets and bond yields in Norway 1820 – 2003. *Norges Banks Occasional Papers, 35,* 99-180.

Lim, T., and Loh, W. (1996). A comparison of tests of equality of variances. Computational Statistics & Data Analysis, 22(3), 287-301

Markowitz, H. (1952). Portfolio Selection. *The Journal of Finance, 7(1),* 77-91.

Merton, R. C. (1974). On the Pricing of Corporate Debt: The Risk Structure of Interest Rates. *The Journal of Finance, 29(2)*, 449-470.

Modigliani, F., and Miller, M. H. (1958). The Cost of Capital, Corporation Finance and the Theory of Investment. *The American Economic Review, 48(3),* 261-97.

Rakkestad, K. J., Skjeltorp, J. A., and Ødegaard, B. A. (2012). The Liquidity of the Secondary Market for Debt Securities in Norway. *SSRN Electronic Journal*.

Sharpe, W. F. (1966). Mutual Fund Performance. *The Journal of Business J BUS, 39(S1*), 119.

Shleifer, A., & Vishny, R. (1992). Liquidation Values and Debt Capacity: A Market Equilibrium Approach. *The Journal of Finance, 47(4),* 1343-1366.

Smith, C. W., and Warner, J. B. (1979). On financial contracting: An analysis of bond covenants. *Journal of Financial Economics*, *7(2)*, 117-161.

Databases

Bloomberg Terminal. (January 1st, 2016 – May 31st, 2016). Retrieved from: Terminal at NHH

Børsprosjektet at NHH. (January 1st, 2016 – May 31st, 2016). Retrieved from: http://mora.rente.nhh.no/borsprosjektet/

Federal Reserve Bank of St. Louis. (January 1st, 2016 – April 30th, 2016). Retrieved from: https://fred-redesign.stlouisfed.org/series/BAMLHYH0A0HYM2TRIV

Macrobond. (January 1st, 2016 – May 31st, 2016). Retrieved from: Computer located at NHH through ad-in in Excel.

Nordea Debt Capital Markets. Received on email March 17th, 2016.

Nordic Bond Pricing. Received on email February 25th, 2016 from: Vegard Annweiler

Nordic Trustee - Stamdata. (January 1st, 2016 – May 31st, 2016). Retrieved from: http://www.stamdata.no

Norges Bank. (January 1st, 2016 – May 31st, 2016). Statistics: http://www.norges-bank.no/en/Statistics/

Norwegian Fund and Asset Management Association (VVF). Received on mail February 26th, 2016 from: Ida Aamodt-Hansen

Norwegian Securities Dealers Association (VPFF). (February 1st, 2016). Retrieved from: http://www.vpff.no/For-investor/Ligningskurser

Reports

Altman, E. I. (1998). The anatomy of the high yield bond market: After two decades of activity-implications for Europe. *New York: NYU Center for Law and Business.* Retrieved from: http://pages.stern.nyu.edu/~ealtman/anatomy.pdf

Bernhardsen, T. (2012). Sammenhengen mellom styringsrenten og pengmarkdsrentene: 2007-2012. *Aktuell kommentar (2)*. Retrieved from Norges Bank: http://www.norges-bank.no/Upload/Publikasjoner/Aktuell%20kommentar/2012/Aktuell_kommentar_2_2012_rev.pdf

Bedwell, B., Eyerman, E., and Frankfurth, K. (2014). Nordic High Yield Tests its Limits. *FitchRatings.* Retrieved from Nordic Trustee: http://nordictrustee.com/fitch-ratings-report-nordic-high-yield-tests-its-limits3

Cappelen, Å., Eika, T., and Prestmo, J. B. (2014). Virkinger på norsk økonomi av et kraftig fall i oljeprisen. *Økonomiske analyser (3)*. Retrieved from SSB: https://www.ssb.no/nasjonalregnskap-og-konjunkturer/artikler-og-publikasjoner/_attachment/180823?_ts=14662dc53a8

Dagslet, P. A., Dahl, H., and Stensrud, A. (2013). Foretaksobligasjoner i Norge. Retrieved from Arntzen de Besche: http://www.adeb.no/Global/Nyheter/Artikler/Artikkel_Foretaksobligasjoner_i_Norge.pdf

Doulai, A., and Wells, C. (2013). Till default do us part: facility agreements and acceleration. *Butterworths Journal of International Banking and Financial Law.* Retrieved from Skadden: https://www.skadden.com/sites/default/files/publications/Journal.pdf

Fossan-Waage, P., Holseter, S., and Lewis, O. (2015). Issuing Corporate Bonds in The Nordic Capital Markets. *PwC Capital Markets and Accounting Advisory Services*. Retrieved (January 1st, 2016) from: https://www.pwc.no/no/publikasjoner/boers/issuing-corporate-bonds-in-the-nordic-capital-markets.pdf

Graebner, R., and McDonald, J. (2014). High-Yield bonds: an introduction to material covenants and terms. *Butterworths Journal of International Banking and Financial Law*. Retrieved from Skadden: https://www.skadden.com/sites/default/files/publications/McDonaldGraebner-HYBCovenants(2).pdf

Hamilton, D. T., Munves, D., and Sun, Z. (2012). Public Firm Expected Default Frequency (EDF™) Credit Measured: Methodology, Performance, and Model Extensions.

Haugen, C. H. (2013). Issuance of corporate bonds in the Norwegian market. *Economic commentaries (2).* Retrieved from Norges Bank: http://www.norges-bank.no/pages/95836/economic_commentaries_2013_2.pd

Kirkeby, L. (2016). NOK bond market, Nordea Credit Research. Retrieved from: https://nexus.nordea.com/api/research/attachment/38686

Norges Bank Investment Management (NBIM) (2011). The term premium, *Discussion Note (4)*. Retrieved from NBIM: https://www.nbim.no/globalassets/documents/dicussion-paper/2011/discussionnote4.pdf

Næs, R., Skjeltorp, J. A., and Ødegaard, B. A. (2009). What factors affect the Oslo Stock Exchange? *Working paper, 24 (9)*. Retrieved from Norges Bank: http://static.norges-bank.no/Upload/English/Publications/Working%20Papers/2009/Norges_Bank_Working_Paper_2009_24.pdf?v=4/3/201131145PM&ft=.pdf

Sæbø, J. K. (2015). Risikopremier i norsk kreditt. Retrieved from Folketrygdfondet: http://www.folketrygdfondet.no/getfile.php/131261/Dokumenter/Temaartikler/Risikopremier_i_norsk_kreditt.pdf

The Financial Supervisory Authority of Norway (2016). Finansielt utsyn: 2016. Retrieved 8th, June 2016 from the Financial Supervisory Authority of Norway: http://www.finanstilsynet.no/Global/Venstremeny/Rapport/2016/Finansielt_utsyn_2016.pdf?epslanguage=no

Thomas, M. S. (2014). Default and Recovery Stamdata. Retrieved from Nordic Trustee: http://www.stamdata.no/documents/982946743_MD_20141211.pdf

Valset, S. (2002). Renteforventninger og betydningen av løpetidspremier. *Penger og Kreditt (1)*. Retrieved from Norges Bank: http://www.norges-bank.no/Upload/import/publikasjoner/penger_og_kreditt/2003-01/valseth.pdf

Newspaper Articles

Bowley, G. (August 7th, 2011). Stocks Suffer Sharpest Drop Since 2008. *The New York Times*. Retrieved from: http://www.nytimes.com/2011/08/09/business/global/daily-stock-market-activity.html?_r=0

Bakken, J. B., and Linderud E. (March 4th, 2016). Total kapitaltørke. *DN*. Retrieved from: https://www.dn.no/nyheter/finans/2016/03/04/2145/Uro-i-markedene/total-kapitaltrke

Ekeseth, F. C. (March 5th, 2012). Brennhett obligasjonsmarked. *DN*. Retrieved from: http://www.dn.no/nyheter/2012/03/05/brennhett-obligasjonsmarked

Flaaten, G. (March 2nd, 2016). – Nå handles offshore-gjelden til misligholdspriser. *SYSLA.* Retrieved from: http://sysla.no/2016/03/02/oljeenergi/na-handles-offshore-gjelden-til-misligholdspriser_79617/

Linderud, E. (October 8th, 2015). - Har vært en perfekt storm. *DN*. Retrieved from: http://www.dn.no/nyheter/finans/2015/10/08/2134/Obligasjoner/-har-vrt-en-perfekt-storm

Lorentzen, M. (November 22nd, 2012). Vil ha slutt på den skjulte obligasjonshandelen. *E24*. Retrieved from: http://e24.no/boers-og-finans/boersen-krever-mer-aapenhet-i-den-skjulte-obligasjonshandelen/20303022

Nilsen, S. R. (November 14th, 2012). Forvaltere slakter populære fond. *E24*. Retrieved from: http://e24.no/boers-og-finans/forvaltere-slakter-populaere-fond/20299073

Paletta, D. (August 5th, 2011). More S&P Downgrades Expected. *The Wall Street Journal.* Retrieved from: http://blogs.wsj.com/marketbeat/2011/08/05/more-sp-downgrades-expected/

Sedgwick, A. (June 26th, 2013), "How (in)frequently do bonds trade?". *MarketAxcess*. Retrieved from: http://www.marketaxess.com/research/blog/single.php?permalink=How-(in)frequently-do-bonds-trade-2013-06-26

Stolen, H. (March 14th, 2016). RPT-Frozen Norwegian high-yield market triggers more debt restructuring. *Reuters*. Retrieved from: http://www.reuters.com/article/norway-debtrenegotiation-idUSL5N16J3OV

The Economist. (October 21st, 2010). The Stars of the junkyard. *The Economist*. Retrieved from: http://www.economist.com/node/17306419

Trumpy, J. (April 22th, 2016). Ruster opp før gjeldsbølge. *DN*. Retrieved from: http://www.dn.no/nyheter/finans/2016/04/22/2148/ABG-Sundal-Collier/ruster-opp-fr-gjeldsblge

Trumpy, J. (April 26th, 2016). Tar første gjeldsbølge. *DN*. Retrieved from: https://www.dn.no/nyheter/finans/2016/04/26/2144/Bank/tar-frste-gjeldsblge

Presentations

ABG Sundal Collier (2014). Opportunities in the Norwegian bond market, CFO Agenda - EY. Retrieved from: http://www.ey.com/Publication/vwLUAssets/CFO-agenda-abg/$FILE/2014-05-13%20EY%20CFO%20agenda%20-%20opportunities%20in%20the%20Norwegian%20bond%20market.pdf

Annweiler, V. (2014). Evaluating Pricing for Norwegian Bonds, Nordic Capital Markets Forum. Retrieved from: http://nordiccapitalmarketsforum.org/wp-content/uploads/2014/10/Vegard-Annweiler-Managing-Director-Nordic-Bond-Pricing.pdf

Eriksson, M. (2015). Bonds as an attractive funding source, SEB. Retrieved from: http://lfmi.lt/uploads/docs/2015%2005%2014%20konferencijos%20pranesimai/Martin%20Eriksson_Bonds%20as%20an%20attractive%20funding%20source.pdf

Forfang, J. (2015). The Norwegian HY market in a nutshell, EFTA WG FS. Retrieved from: http://static.norges-bank.no/pages/103595/FSWG_EFTA_Forfang_Jo.pdf?v=7/9/201522938PM&ft=.pdf

Holbergfondene. (2016). Holberggrafene, April 2016. Retrieved June 1st, 2016 from: http://holbergfondene.no/assets/Holberggrafene/Holberggrafene-160429.pdf?utm_medium=email&utm_campaign=Holberggrafene&utm_content=Holberggrafene+CID_b7f881006b8a60c2b3ea0cb7aaf36264&utm_source=Headlines%20Newsletters

Holbergfondene. (2015). Månedsrapport Holberg Kreditt, December 2015. Retrieved from: http://holbergfondene.no/assets/Fondsfiler/Manedsrapport/Manedsrapport-Holberg-Kreditt-Desember-2015.pdf

Mydske, T. (2015). The ”Norwegian” High Yield bond market and potential impact on CMU, EFTA WG FS. Retrieved from: http://static.norges-bank.no/pages/103595/FSWG_EFTA_Mydske.pdf?v=7/9/201522938PM&ft=.pdf

Websites

European Commission. (2016). Investment Services and regulated markets (MiFID 1 and MiFID 2), Banking and Finance. Retrieved May 1st, 2016 from: http://ec.europa.eu/finance/securities/isd/index_en.htm

European Securities and Market Authority (ESMA). (2012). Short Selling. Retrieved May 1st, 2016 from: https://www.esma.europa.eu/regulation/trading/short-selling

Yago, G. (2008). Junk Bonds. The Concise Encyclopedia of Economics. Library of Economics and Liberty. Retrieved June 1st, 2016 from: http://www.econlib.org/library/Enc/JunkBonds.html

Ministry of Finance. (2009). Regulations relating to Management of the Government Bond Fund. Retrieved February 4th, 2016 from: https://www.regjeringen.no/en/aktuelt/regulations-relating-to-management-of-th/id549847/

Statistics Norway (SSB). (2016). Investeringer i olje og gass, industri, bergverk og kraftforsyning, 2. Kvartal 2016. Retrieved May 26th, 2016 from: http://www.ssb.no/kis/

Master Thesis

Bakjord, M. S., and Berg, S. O. (2012). *Analyse av avkastningen for high-yield obligasjoner: En emipirisk studie av det norske markedet 2005-2011* (Master Thesis). NHH, Bergen.

Brekke, O., and Haugland, A. G. (2010). *Recovery Rates in the Norwegian High Yield Bond Market: A study of default and recovery from 01.01.2005 to 30.06.2010* (Master Thesis). NHH, Bergen.

Grøstad, K. N. (2013). *Predicting default in the Norwegian High Yield Bond market: A study of defaults in the years 2006-2013* (Master Thesis). NHH, Bergen.

Knappskog, B. H., and Ytterdal, A. G. (2015). *Predicating Spreads in the Nordic High Yield bond market: A study of credit pricing in the years 2000-2012* (Master Thesis). NHH, Bergen.

Other

Andersen, B. N., Dimson, E., Helliesen, I., Johnsen, T., Liljeblom E., and Steigum, E. (2009). The Fixed Income Benchmark of the Government Pension Fund – Global, The Ministry of Finance's Investment Strategy Council. Retrieved from: https://www.regjeringen.no/globalassets/upload/fin/statens-pensjonsfond/eksterne-rapporter-og-brev/2009/20-03-09-letter-advisory-council-fixed-income-benchmark.pdf

Brittenham, D. A., and Selinger, S. B. (2014). Everything old is new again, 14 (1), Debevoise and Plimpton. Retrieved 1st, June 2016 from: http://www.debevoise.com/insights/publications/2014/03/everything-old-is-new-again-pik-notes

Furuseth, T. (2015). Endelig høy rente i høyrentefond? Generell analyse, Morningstar. Retrieved January 1st, 2016 from: http://www.morningstar.no/no/news/143066/endelig-høy-rente-i-høyrente.aspx

Lind, E. (2014). A glance at the "Norwegian" HY market is and why its's such an efficient platform for raising flexible debt for foreign companies, Steenstrup Stordrange Retrieved May 1st, 2016 from: http://steenstrupnews.com/private-equity-banking-insurance-and-financial-sector/norwegian-hy-market/

Moody's. (2007). Corporate Default Risk Service, Frequently Asked Questions. Retrieved April 1st, 2016 from: https://www.moodys.com/sites/products/ProductAttachments/FAQs%20Default%20Risk%20Service.pdf

Oslo Stock Exchange. (2014). Member and Trading Rules version 1.3. Retrieved February 1st 2016 from: http://www.oslobors.no/ob_eng/Oslo-Boers/Regulations/Member-and-trading-rules

Oslo Stock Exchange. (2015). Det norske obligasjonsmarkedet – effektivt fleksibelt marked for innhenting av kapital. Retrieved February 1st 2016.

Cross, T. (2015). U.S. High Yield Bond Issuance at 4-year Low as Market Licks Wounds, Eyes 2016. Retrieved from S&P Capital IQ: http://www.spcapitaliq.com/blog/u-s-high-yield-bond-issuance-at-4-year-low-as-market-licks-wounds-eyes-2016

Sigmundstad, A., and Weidel, O. (2015). Anbefaling til Konvensjoner for det norske sertifikat- og obligasjonsmarkedet (3), The Norwegian Society of Financial Analysts (NFF). Retrieved from: http://www.finansanalytiker.no/innhold/publikasjoner/NFF_Rentekonvensjon_mai_2015.pdf

Stamdata. (2015). Feed Specification V3.2. Retrieved from: http://www.stamdata.no/API/StamdataXMLSpec_EN_32.pdf

Lecture

Cederlof, H., and Liedgren, G. (2015). Understand Credit Ratings. S&P guest lecture, FIE444

Kinserdal, F. (2015). Substandsverdimetoden (10a), BUS425

Kloster, A. (2014). Hvordan styrer sentralbanken renten? Norges Bank guest lecture, FIE420

Annual Reports

Nordic Trustee. (2015). Annual report 2015. Retrieved from: http://nordictrustee.com/finansielle-rapporter

Meeting

Kirkeby, L., April 11th, 2016. Chief Analyst Credit Research at Nordea Markets.

Pettersen, P. M. February 18th, 2016. Analyst at Nordic Trustee.

Stensaker, T. January 19th, 2016. Head of Fixed Income Norway at Nordea Investment Management.

Torgersen, G. January 29th, 2016. Partner and Portfolio Manager Holbergfondene.

Tronsgaard. L., February 10th, 2016. Deputy Director at Folketrygdfondet.

Appendix 1

HY Mutual Fund Performance

	Pareto Kreditt A	Alfred Berg Høyrent I	Arctic High Return Class A	Swedbank Høyrente	Holberg Kreditt	Landkreditt Extra	DNB HY	DNB HY (I)	Alfred Berg Høyrente CII	Eika Kreditt	Forte Kreditt	Fondsfinans HY	ST1X	HY Index
Yearly return	2,64%	2,84%	2,86%	4,43%	3,85%	2,42%	1,86%	1,23%	-4,37%	1,26%	-2,71%	-17,73%	2,48%	3,74%
Yearly STD	6,72%	6,56%	4,20%	5,71%	3,76%	2,60%	4,41%	4,44%	8,69%	3,19%	6,28%	8,95%	0,47%	5,69%
Total Return	28,76%	20,96%	16,89%	26,26%	22,86%	8,43%	10,31%	8,04%	-10,16%	5,09%	0,87%	-24,24%	27,00%	41,16%
Sharpe Ratio	0,02	0,05	0,09	0,34	0,37	-0,02	-0,14	-0,28	-0,79	-0,38	-0,83	-2,26		0,22

	Pareto Kreditt A	Alfred Berg Høyrent I	Arctic High Return Class A	Swedbank Høyrente	Holberg Kreditt	Landkreditt Extra	DNB HY	DNB HY (I)	Alfred Berg Høyrente CII	Eika Kreditt	Forte Kreditt	Fondsfinans HY	ST1X	HY Index
2006	2,72%												1,78%	2,72%
2007	6,22%												4,42%	6,22%
2008	-22,26%	-10,80%											5,90%	-15,45%
2009	17,30%	19,62%											2,13%	18,48%
2010	13,18%	12,62%	0,75%										2,26%	12,84%
2011	4,68%	1,54%	3,81%	-0,31%	0,26%								2,45%	3,05%
2012	8,72%	16,11%	13,09%	12,45%	9,78%	0,93%	0,12%	0,00%	0,00%				1,50%	11,80%
2013	6,94%	6,58%	6,30%	17,50%	8,18%	7,24%	9,10%	7,83%	14,00%	0,76%			1,62%	9,02%
2014	-0,49%	-7,31%	-2,60%	-6,49%	3,08%	2,80%	2,02%	1,61%	-7,64%	4,05%	0,76%	-4,96%	1,33%	-1,00%
2015	-5,59%	-13,57%	-4,55%	2,52%	0,09%	-2,56%	-1,01%	-1,39%	-14,67%	0,24%	0,11%	-20,28%	0,88%	-5,27%
2016	-2,01%	0,83%	-1,32%	-2,32%	-4,74%	-0,34%	-4,14%	-4,15%	-3,82%	-2,21%	-5,78%	-4,12%	0,02%	-2,84%

Appendix 2

Five assumptions for multiple regression:

$$y = \beta_o + \beta_1 X_1 + \beta_2 X_2 + .. + \beta_n X_n + \varepsilon$$

1. X_i are random variables and independent of the ε.
2. The value of the dependent y is a linear model of the independent variable X_i.
3. ε are normally distributed with a mean = 0 and equal variance σ^2, i.e. homoscedastic.
4. No perfect collinearity among the ε.
5. The ε are independent and there are no autocorrelation.

R^2 or the Coefficient of Determination is one of the most popular used measures of the models overall fit.

$$R^2 = 1 - \frac{Error\ sum\ of\ squares}{Regression\ sum\ of\ squares}$$

A high R^2 indicates a good fit, but it does not explain all of the variation (Doane and Seward, 2013). When adding more X_i independent variables, the R^2 will never decrease. Risk of overfitting the regression model can be adjusted with $R^2_{adjusted.}$ A large gap between R^2 and $R^2_{adjusted}$ can indicate that the model would be more precise if some of the X_i independent variables were left out. S_e or the standard error of the regression is another measure of the fit.

$$S_e = \frac{Error\ sum\ of\ squares}{n - i - 1}$$

S_e is measured in same units as the dependent variable *y.* A small S_e is an indication that the regression has a god fit.

Appendix 3

ISIN	Issuer	YTM	Sector	Size (MNOK)	Issue Date	Country	Return	Seniority	Credit Event	Rating
NO0010252844	Wilh. Wilhelmsen ASA	4,4%	Shipping	320	04-02-05	Norway	FRN	Sr Unsec.		
NO0010253081	Farstad Shipping ASA	5,0%	Oil and gas services	300	07-02-05	Norway	FRN	Sr Unsec.		
NO0010254444	Seadrill Ltd	5,2%	Oil and gas services	195	14-02-05	Bermuda	FRN	Sr Unsec.		
NO0010254725	Aker ASA	8,0%	Industry	500	02-03-05	Norway	Fixed	Sr Unsec.		
NO0010254717	Aker ASA	7,7%	Industry	500	02-03-05	Norway	FRN	Sr Unsec.		
NO0010257561	Prosafe SE	4,4%	Oil and gas services	306	09-03-05	Cyprus	FRN	Sr Unsec.		
NO0010255763	Prosafe SE	5,0%	Oil and gas services	411	09-03-05	Cyprus	FRN	Sr Unsec.		
NO0010256829	PA Resources AB	8,7%	Oil and gas E&P	300	10-03-05	Sweden	Fixed	Sr Unsec.		
NO0010255896	Odfjell SE	4,7%	Shipping	300	17-03-05	Norway	FRN	Sr Unsec.		
NO0010263445	Sevan Marine ASA	10,4%	Oil and gas services	670	31-03-05	Norway	Fixed	Sr Unsec.		
NO0010255490	Wilh. Wilhelmsen ASA	4,7%	Shipping	300	11-04-05	Norway	FRN	Sr Unsec.		
NO0010265507	Color Group AS	5,1%	Transportation	460	28-04-05	Norway	FRN	Sr Unsec.		
NO0010266042	SAS AB	7,0%	Transportation	333	28-04-05	Sweden	Fixed	Sr Unsec.		
NO0010266059	SAS AB	7,3%	Transportation	667	28-04-05	Sweden	FRN	Sr Unsec.		
NO0010270523	DNO ASA	6,9%	Oil and gas E&P	545	06-06-05	Norway	FRN	Sr Unsec.		
NO0010272883	Noreco Norway AS	8,5%	Oil and gas E&P	100	07-06-05	Norway	Fixed	Sr Unsec.		
NO0010272644	KCA DEUTAG Offshore AS	15,8%	Oil and gas services	131	27-06-05	Norway	FRN	Sr Sec.		
NO0010274574	Hotelleiendom i Sverige AB	10,5%	Real Estate	210	30-06-05	Sweden	Fixed	Sr Unsec.		
NO0010274376	Jason Shipping AS	8,0%	Shipping	300	12-07-05	Norway	FRN	Sr Unsec.		
NO0010275944	Norse Energy Corp. ASA	10,6%	Oil and gas E&P	300	13-07-05	Norway	Fixed	Sr Unsec.	Restructured	
NO0010275753	Wilh. Wilhelmsen ASA	4,4%	Shipping	500	20-07-05	Norway	FRN	Sr Unsec.		
NO0010282809	Songa Offshore SE	11,3%	Oil and gas services	690	08-09-05	Cyprus	Fixed	Sr Sec.		
NO0010283559	Dof Subsea AS	6,0%	Oil and gas services	300	16-09-05	Norway	FRN	Sr Unsec.		
NO0010283799	Seadrill Ltd	5,2%	Oil and gas services	500	28-09-05	Bermuda	FRN	Sr Unsec.		
NO0010285281	KCA DEUTAG Offshore AS	10,0%	Oil and gas services	264	03-10-05	Norway	Fixed	Sr Sec.		
NO0010283591	Blom ASA	8,8%	Telecom/IT/Media	300	05-10-05	Norway	FRN	Sr Unsec.		
NO0010283724	DNO ASA	7,7%	Oil and gas E&P	580	12-10-05	Norway	FRN	Sr Unsec.		
NO0010283732	DNO ASA	7,2%	Oil and gas E&P	620	12-10-05	Norway	Fixed	Sr Unsec.		
NO0010287568	Mosvold Drilling Ltd	12,6%	Oil and gas services	522	13-10-05	Cayman Islands	Fixed	Sr Unsec.		
NO0010286107	Color Group AS	4,9%	Transportation	300	17-10-05	Norway	FRN	Sr Unsec.		
NO0010287857	Broström AB (publ)	6,2%	Shipping	261	04-11-05	Sweden	FRN	Sr Unsec.		
NO0010290505	Color Group AS	5,0%	Transportation	500	14-11-05	Norway	FRN	Sr Unsec.		
NO0010290513	Wilh. Wilhelmsen ASA	5,9%	Shipping	1 000	15-11-05	Norway	FRN	Sr Unsec.		
NO0010292113	Bayerngas Produksjon Norge AS	15,1%	Oil and gas E&P	235	25-11-05	Norway	FRN	Sr Sec.		
NO0010285273	KCA DEUTAG Offshore AS	20,7%	Oil and gas services	165	01-12-05	Norway	Fixed	Sr Unsec.		
NO0010295017	Venture Drilling AS	16,9%	Oil and gas services	269	09-12-05	Norway	Fixed	Sr Unsec.		
NO0010291370	Lotus Marine AS	33,3%	Oil and gas services	130	13-12-05	Norway	Fixed	Sr Sec.		
NO0010294358	I. M. Skaugen SE	6,2%	Shipping	661	14-12-05	Norway	FRN	Sr Unsec.		
NO0010299241	Sevan Marine ASA	12,1%	Oil and gas services	334	31-01-06	Norway	Fixed	Sr Sec.		
NO0010300288	Norwegian Car Carriers AS	7,8%	Shipping	100	03-02-06	Norway	FRN	Sr Unsec.		
NO0010301278	Noreco Norway AS	9,5%	Oil and gas E&P	300	09-02-06	Norway	Fixed	Sr Sec.		
NO0010301997	Petrolia SE	12,9%	Oil and gas E&P	500	14-02-06	Norway	Fixed	Sr Unsec.		
NO0010301799	Wintershall Norge AS	8,1%	Oil and gas E&P	300	15-02-06	Norway	FRN	Sr Unsec.		
NO0010302797	COSL Holding AS	9,2%	Oil and gas services	676	28-02-06	Norway	Fixed	Sr Unsec.		

NO0010301344	Wilh. Wilhelmsen ASA	4,0%	Shipping	700	01-03-06	Norway	FRN	Sr Unsec.	
NO0010301070	Wilh. Wilhelmsen ASA	3,6%	Shipping	300	01-03-06	Norway	Fixed	Sr Unsec.	
NO0010302649	DNO ASA	7,2%	Oil and gas E&P	300	02-03-06	Norway	FRN	Sr Unsec.	
NO0010304686	Club Cruise Entertainment & Travelling Services	-13,6%	Transportation	112	08-03-06	Netherlands	Fixed	Sr Sec.	Liquidation
NO0010302557	Odfjell SE	4,8%	Shipping	400	17-03-06	Norway	FRN	Sr Unsec.	
NO0010306889	Songa Offshore SE	9,7%	Oil and gas services	499	24-03-06	Cyprus	Fixed	Sr Sec.	
NO0010307309	Crew Gold Corp	10,1%	Industry	325	30-03-06	Canada	FRN	Sr Sec.	Restructured
NO0010307317	Crew Gold Corp	8,8%	Industry	515	30-03-06	Canada	FRN	Sr Sec.	Restructured
NO0010306699	STX Europe AS	6,0%	Industry	145	05-04-06	Norway	Fixed	Sr Unsec.	
NO0010310543	COSL Drilling	9,6%	Oil and gas services	1 256	27-04-06	Norway	Fixed	Sr Sec.	
NO0010314248	Solstad Offshore ASA	4,9%	Oil and gas services	300	19-05-06	Norway	FRN	Sr Unsec.	
NO0010316086	PetroMena ASA	13,4%	Oil and gas services	2 000	24-05-06	Norway	Fixed	Sr Sec.	Liquidation
NO0010318322	Petrojack ASA	10,2%	Oil and gas services	1 219	30-05-06	Norway	FRN	Sr Sec.	Liquidation
NO0010315310	Club Cruise Entertainment & Travelling Services	-3,3%	Transportation	100	01-06-06	Netherlands	Fixed	Sr Sec.	Liquidation
NO0010321128	DOF ASA	5,1%	Oil and gas services	400	14-06-06	Norway	FRN	Sr Unsec.	
NO0010319452	I. M. Skaugen SE	6,1%	Shipping	624	19-06-06	Norway	FRN	Sr Unsec.	
NO0010313893	Bayerngas Produksjon Norge AS	9,6%	Oil and gas E&P	330	20-06-06	Norway	FRN	Sr Sec.	
NO0010313885	PA Resources AB	10,2%	Oil and gas E&P	630	20-06-06	Sweden	Fixed	Sr Sec.	Non Payment
NO0010321029	Noreco Denmark A/S	14,3%	Oil and gas E&P	660	23-06-06	Denmark	Fixed	Sr Unsec.	
NO0010324379	Peterson AS	9,3%	Industry	385	28-06-06	Norway	FRN	Sr Sec.	Non Payment
NO0010322100	Belships ASA	4,9%	Shipping	111	04-07-06	Norway	FRN	Sr Unsec.	Non Payment
NO0010322746	BW Gas AS	5,3%	Shipping	450	06-07-06	Norway	FRN	Sr Unsec.	
NO0010326044	Seabird Exploration PLC	9,2%	Oil and gas services	200	14-07-06	Virgin Islands (British)	FRN	Sr Unsec.	Restructured
NO0010329543	Aker ASA	6,3%	Industry	1 000	29-08-06	Norway	FRN	Sr Unsec.	
NO0010322043	Volstad Maritime AS	17,1%	Oil and gas services	150	01-09-06	Norway	FRN	Sr Sec.	
NO0010331580	MPF Corp Ltd	-60,4%	Oil and gas services	980	20-09-06	Bermuda	FRN	Sr Sec.	Liquidation
NO0010333206	Oceanteam ASA	21,6%	Oil and gas services	420	27-09-06	Norway	FRN	Sr Sec.	
NO0010334097	AXEL SPRINGER SE	9,5%	Telecom/IT/Media	100	27-09-06	Norway	FRN	Sr Unsec.	
NO0010333560	Thule Drilling AS	-66,5%	Oil and gas services	841	28-09-06	Norway	Fixed	Sr Sec.	Liquidation
NO0010334337	Eitzen Chemical ASA	-1,0%	Shipping	166	04-10-06	Norway	FRN	Sr Unsec.	Restructured
NO0010334345	Eitzen Chemical ASA	1,4%	Shipping	490	04-10-06	Norway	FRN	Sr Unsec.	Restructured
NO0010334279	Deepocean AS	5,8%	Oil and gas services	300	04-10-06	Norway	FRN	Sr Unsec.	
NO0010339013	Electromagnetic Geoservices ASA	17,3%	Oil and gas services	129	02-11-06	Norway	Fixed	Sr Unsec.	
NO0010341332	Akastor ASA	4,9%	Industry	300	01-12-06	Norway	FRN	Sr Unsec.	
NO0010342587	Akastor ASA	6,0%	Industry	150	01-12-06	Norway	Fixed	Sr Unsec.	
NO0010341324	Akastor ASA	5,1%	Industry	650	01-12-06	Norway	FRN	Sr Unsec.	
NO0010341316	Akastor ASA	5,5%	Industry	500	01-12-06	Norway	FRN	Sr Unsec.	
NO0010340425	DP Producer AS	-13,0%	Oil and gas services	457	05-12-06	Norway	FRN	Sr Sec.	Liquidation
NO0010342538	Svithoid Tankers AB	-46,2%	Shipping	200	07-12-06	Sweden	FRN	Sr Unsec.	Liquidation
NO0010345374	B&H Ocean Carriers Ltd.	-20,1%	Shipping	154	12-12-06	Bermuda	FRN	Sr Unsec.	Liquidation
NO0010345119	Havila Shipping ASA	5,5%	Oil and gas services	200	13-12-06	Norway	FRN	Sr Unsec.	
NO0010346000	Sevan Marine ASA	9,9%	Oil and gas services	865	20-12-06	Norway	Fixed	Sr Sec.	
NO0010347735	PetroProd Ltd	-23,3%	Oil and gas services	971	12-01-07	Cayman Islands	FRN	Sr Sec.	Liquidation
NO0010350911	Seadrill Ltd	6,9%	Oil and gas services	1 000	23-01-07	Bermuda	FRN	Sr Unsec.	
NO0010350903	Seadrill Ltd	5,7%	Oil and gas services	500	23-01-07	Bermuda	FRN	Sr Unsec.	
NO0010351638	Dockwise Ltd.	34,7%	Oil and gas services	685	13-02-07	Bermuda	FRN	Sr Sec.	
NO0010354632	Sea Production Ltd	1,8%	Oil and gas services	804	14-02-07	Bermuda	FRN	Sr Sec.	Restructured
NO0010353915	Seabird Exploration PLC	10,0%	Oil and gas services	402	14-02-07	Virgin Islands (British)	FRN	Sr Unsec.	Restructured

NO0010353592	Marine Subsea AS	-7,7%	Oil and gas services	800	15-02-07	Norway	FRN	Sr Sec.	Restructured
NO0010352644	PetroRig III	6,9%	Oil and gas services	1 600	20-02-07	Singapore	FRN	Sr Sec.	Liquidation
NO0010354368	Frigstad Discoverer Invest Ltd (BVI)	19,6%	Oil and gas services	1 227	21-02-07	Virgin Islands (British)	Fixed	Sr Sec.	
NO0010355803	MARACC - Marine Accu ASA	-33,3%	Oil and gas services	731	27-02-07	Norway	FRN	Sr Sec.	Restructured
NO0010354186	Primorskoye Morskoye Parakhodstvo A.O.	-0,2%	Shipping	350	28-02-07	Cyprus	FRN	Sr Unsec.	Restructured
NO0010356249	Delphin Kreuzfahrten	0,0%	Transportation	120	28-02-07	Germany	Fixed	Sr Sec.	Liquidation
NO0010355423	Norske Skogindustrier ASA	4,9%	Industry	1 100	01-03-07	Norway	FRN	Sr Unsec.	
NO0010357387	Nexus Floating Production Ltd	-2,4%	Oil and gas services	1 086	07-03-07	Singapore	Fixed	Sr Sec.	Restructured
NO0010358955	Dof Subsea AS	5,5%	Oil and gas services	500	09-03-07	Norway	FRN	Sr Unsec.	
NO0010357999	Didon Tunisia Ltd	6,1%	Oil and gas E&P	612	13-03-07	Australia	FRN	Sr Sec.	
NO0010356215	Odfjell SE	5,3%	Shipping	300	19-03-07	Norway	FRN	Sr Unsec.	
NO0010360043	Monitor Oil PLC	-97,0%	Oil and gas services	304	23-03-07	Cayman Islands	FRN	Sr Sec.	Liquidation
NO0010360241	Thule Drilling AS	-80,1%	Oil and gas services	245	26-03-07	Norway	Fixed	Sr Sec.	Liquidation
NO0010360324	APL PLC	7,7%	Industry	500	28-03-07	Cyprus	FRN	Sr Unsec.	
NO0010360340	Remedial (Cyprus) Public Company Limited	-1,0%	Oil and gas services	1 280	28-03-07	Cyprus	FRN	Sr Sec.	Liquidation
NO0010360100	Austevoll Seafood ASA	6,3%	Seafood	1 000	29-03-07	Norway	FRN	Sr Unsec.	Restructured
NO0010362809	Interoil Exploration and Production ASA	13,3%	Oil and gas E&P	100	29-03-07	Norway	Fixed	Sr Unsec.	Restructured
NO0010361728	Rubicon Offshore Holdings Limited	4,8%	Oil and gas services	1 075	16-04-07	Bermuda	FRN	Sr Sec.	Restructured
NO0010362916	Petrojack ASA	-8,9%	Oil and gas services	500	19-04-07	Norway	Fixed	Sr Sec.	Liquidation
NO0010363476	Norwegian Air Shuttle ASA	6,7%	Transportation	300	19-04-07	Norway	FRN	Sr Unsec.	
NO0010365745	London Mining Plc	19,0%	Industry	370	26-04-07	United Kingdom	Fixed	Sr Sec.	
NO0010365455	Kverneland AS	8,6%	Industry	525	27-04-07	Norway	FRN	Sr Unsec.	Restructured
NO0010365463	Kverneland AS	8,9%	Industry	178	27-04-07	Norway	Fixed	Sr Unsec.	Restructured
NO0010363567	Interoil Exploration and Production ASA	2,7%	Oil and gas E&P	748	02-05-07	Norway	FRN	Sr Sec.	Restructured
NO0010365471	Rocksource ASA	8,9%	Oil and gas E&P	200	04-05-07	Norway	FRN	Sr Sec.	Non Payment
NO0010367014	Eastern Echo Holding Plc	17,5%	Oil and gas services	959	04-05-07	Cyprus	Fixed	Sr Sec.	
NO0010368285	Reservoir Exploration Technology ASA	-9,5%	Oil and gas services	400	11-05-07	Norway	FRN	Sr Unsec.	Liquidation
NO0010366966	Sevan Marine ASA	-1,5%	Oil and gas services	1 634	14-05-07	Norway	FRN	Sr Sec.	Restructured
NO0010369200	Norwegian Car Carriers AS	7,3%	Shipping	100	23-05-07	Norway	FRN	Sr Unsec.	
NO0010368996	PetroProd Ltd	-42,4%	Oil and gas services	1 115	24-05-07	Cayman Islands	Fixed	Sr Sec.	Liquidation
NO0010369689	Aker Biomarine ASA	7,8%	Seafood	750	24-05-07	Norway	FRN	Sr Unsec.	
NO0010368509	TTS Group ASA	6,6%	Industry	500	24-05-07	Norway	FRN	Sr Unsec.	Non Payment
NO0010367899	I. M. Skaugen SE	6,4%	Shipping	600	06-06-07	Norway	FRN	Sr Unsec.	
NO0010373673	Northern Offshore LTD	7,2%	Oil and gas services	610	13-06-07	Bermuda	FRN	Sr Sec.	
NO0010372493	Dana Petroleum Norway AS	12,0%	Oil and gas E&P	300	15-06-07	Norway	FRN	Sr Sec.	
NO0010375132	Marine Subsea AS	6,8%	Oil and gas services	1 004	29-06-07	Norway	FRN	Sr Sec.	Restructured
NO0010375819	Mosvold Supply Plc	12,5%	Oil and gas services	185	29-06-07	Cyprus	Fixed	Sr Sec.	
NO0010374937	Oceanlink Ltd	-39,8%	Transportation	150	03-07-07	Bermuda	Fixed	Sr Unsec.	Restructured
NO0010378250	Sølvtrans Rederi AS	9,8%	Seafood	140	03-07-07	Norway	FRN	Sr Unsec.	
NO0010378417	Norse Energy Corp. ASA	10,7%	Oil and gas E&P	200	06-07-07	Norway	FRN	Sr Unsec.	
NO0010375363	COSL Holding AS	7,1%	Oil and gas services	500	06-07-07	Norway	FRN	Sr Unsec.	
NO0010379068	Norwegian Energy Company ASA	12,3%	Oil and gas E&P	2 300	13-07-07	Norway	Fixed	Sr Sec.	
NO0010379076	Norwegian Energy Company ASA	11,6%	Oil and gas E&P	500	13-07-07	Norway	FRN	Sr Sec.	
NO0010375892	DP Producer AS	-43,3%	Oil and gas services	210	24-07-07	Norway	FRN	Sr Unsec.	Liquidation
NO0010378482	Bluewater Holding B.V.	4,6%	Oil and gas services	2 106	01-08-07	Netherlands	FRN	Sr Unsec.	
NO0010378227	Wega Mining AS	-40,1%	Industry	400	02-08-07	Norway	FRN	Sr Unsec.	Restructured
NO0010391642	Sevan Marine ASA	1,7%	Oil and gas services	870	24-10-07	Norway	FRN	Sr Sec.	Restructured
NO0010397532	EMS Seven SEAS AS	8,5%	Oil and gas services	250	19-11-07	Norway	FRN	Sr Unsec.	Non Payment

NO0010397912	Selvaag Bolig ASA	6,7%	Real Estate	400	19-11-07	Norway	FRN	Sr Sec.		
NO0010403546	Reservoir Exploration Technology ASA	-14,4%	Oil and gas services	165	13-12-07	Norway	FRN	Sr Unsec.	Liquidation	
NO0010404940	DOF ASA	6,3%	Oil and gas services	300	20-12-07	Norway	FRN	Sr Unsec.		
NO0010405939	PA Resources AB	9,7%	Oil and gas E&P	672	09-01-08	Sweden	Fixed	Sr Sec.		
NO0010405947	PA Resources AB	11,9%	Oil and gas E&P	420	09-01-08	Sweden	FRN	Sr Sec.		
NO0010425523	Fairstar Heavy Transport NV	11,8%	Oil and gas services	150	14-04-08	Netherlands	FRN	Sr Sec.		B
NO0010429475	Roxar AS	15,8%	Telecom/IT/Media	443	22-05-08	Norway	FRN	Sub.	Non Payment	NR
NO0010440258	Petrolia SE	12,3%	Oil and gas E&P	500	20-06-08	Cyprus	Fixed	Sr Unsec.	Restructured	CCC
NO0010431315	Master Marine AS	13,8%	Oil and gas services	514	20-06-08	Norway	FRN	Sr Sec.	Restructured	CCC
NO0010445935	Polarcus Ltd	16,0%	Oil and gas services	284	30-07-08	Cayman Islands	Fixed	Sr Sec.		B
NO0010457856	I. M. Skaugen SE	10,8%	Shipping	200	16-09-08	Norway	Fixed	Sr Unsec.		BB
NO0010460355	Norse Energy Corp. ASA	14,4%	Oil and gas E&P	153	25-09-08	Norway	Fixed	Sr Unsec.	Restructured	CCC
NO0010479074	Norse Energy Corp. ASA	12,1%	Oil and gas E&P	128	05-12-08	Norway	Fixed	Sr Unsec.	Restructured	CCC
NO0010478019	DNO ASA	6,4%	Oil and gas E&P	443	08-12-08	Norway	Fixed	Sr Unsec.		
NO0010478027	DNO ASA	4,7%	Oil and gas E&P	297	08-12-08	Norway	FRN	Sr Unsec.		
NO0010478001	DNO ASA	3,7%	Oil and gas E&P	253	08-12-08	Norway	FRN	Sr Unsec.		
NO0010499197	I. M. Skaugen SE	8,4%	Shipping	175	11-03-09	Norway	FRN	Sr Unsec.		BB
NO0010502602	Austevoll Seafood ASA	9,3%	Seafood	300	30-03-09	Norway	FRN	Sr Unsec.		B
NO0010502594	Austevoll Seafood ASA	9,2%	Seafood	300	30-03-09	Norway	FRN	Sr Unsec.		B
NO0010502578	Austevoll Seafood ASA	9,0%	Seafood	100	30-03-09	Norway	FRN	Sr Unsec.		B
NO0010507007	Color Group AS	7,6%	Transportation	200	22-04-09	Norway	FRN	Sr Unsec.		BB
NO0010521909	Bergen Group ASA	7,3%	Oil and gas services	106	13-05-09	Norway	FRN	Sr Sec.		CCC
NO0010518400	DOF ASA	11,8%	Oil and gas services	975	15-06-09	Norway	FRN	Sr Sec.		B
NO0010521263	Kverneland AS	9,9%	Industry	525	17-06-09	Norway	FRN	Sr Unsec.		
NO0010504608	Akastor ASA	8,1%	Industry	187	26-06-09	Norway	FRN	Sr Unsec.		
NO0010504616	Akastor ASA	9,6%	Industry	1 913	26-06-09	Norway	Fixed	Sr Unsec.		
NO0010521610	Norske Skogindustrier ASA	13,5%	Industry	530	30-06-09	Norway	Fixed	Sr Unsec.		B
NO0010524366	Norske Skogindustrier ASA	14,5%	Industry	220	30-06-09	Norway	FRN	Sr Unsec.		B
NO0010521891	Bergen Group ASA	10,5%	Oil and gas services	170	06-07-09	Norway	FRN	Sr Sec.		CCC
NO0010526627	Dof Subsea AS	14,7%	Oil and gas services	500	09-07-09	Norway	FRN	Sr Unsec.		B
NO0010534613	I. M. Skaugen SE	8,7%	Shipping	500	01-09-09	Norway	FRN	Sr Unsec.		B
NO0010534563	Havila Shipping ASA	18,8%	Oil and gas services	300	14-09-09	Norway	FRN	Sr Unsec.		B
NO0010536501	REC silicon ASA	12,2%	Industry	1 250	16-09-09	Norway	Fixed	Sr Unsec.		BB
NO0010538127	EMS Seven SEAS AS	12,9%	Oil and gas services	100	22-09-09	Norway	FRN	Sr Unsec.	Restructured	BB
NO0010538119	EMS Seven SEAS AS	13,7%	Oil and gas services	300	22-09-09	Norway	Fixed	Sr Unsec.	Restructured	BB
NO0010538473	Blom ASA	-22,6%	Telecom/IT/Media	343	25-09-09	Norway	FRN	Sr Sec.	Restructured	CCC
NO0010542509	Equinox Offshore Accomodation Limited	11,9%	Oil and gas services	231	13-10-09	Singapore	Fixed	Sr Sec.	Restructured	
NO0010542475	Prosafe SE	6,6%	Oil and gas services	500	14-10-09	Cyprus	FRN	Sr Unsec.		BB
NO0010549603	Wilh. Wilhelmsen ASA	9,6%	Shipping	600	02-11-09	Norway	Fixed	Sr Unsec.		BB
NO0010550411	Seadrill Ltd	5,4%	Oil and gas services	800	10-11-09	Bermuda	FRN	Sr Unsec.		BB
NO0010548449	Norwegian Energy Company ASA	13,5%	Oil and gas E&P	1 250	20-11-09	Norway	Fixed	Sr Sec.	Restructured	CCC
NO0010548431	Norwegian Energy Company ASA	10,9%	Oil and gas E&P	750	20-11-09	Norway	FRN	Sr Sec.		CCC
NO0010555378	Odfjell SE	7,3%	Shipping	500	04-12-09	Norway	FRN	Sr Unsec.		B
NO0010560725	PA Resources AB	9,9%	Oil and gas E&P	500	09-12-09	Sweden	FRN	Sr Unsec.		B
NO0010559180	Solstad Offshore ASA	7,5%	Oil and gas services	700	11-12-09	Norway	FRN	Sr Unsec.		B
NO0010561426	Crew Gold Corp	7,5%	Industry	269	11-12-09	Canada	Fixed	Sr Sec.		
NO0010560683	Bonheur ASA	7,0%	Oil and gas services	1 000	15-12-09	Norway	FRN	Sr Unsec.		B
NO0010561608	Marine Subsea	-57,0%	Oil and gas services	1 795	16-12-09	Cyprus	Fixed	Sr Sec.	Restructured	

NO0010560915	Norwegian Air Shuttle ASA	9,2%	Transportation	600	17-12-09	Norway	FRN	Sr Unsec.		B
NO0010560204	Bassdrill Alpha Ltd	18,7%	Oil and gas services	322	22-12-09	Bermuda	Fixed	Sr Sec.		CCC
NO0010563489	Rem Offshore ASA	7,4%	Oil and gas services	400	27-01-10	Norway	FRN	Sr Unsec.		B
NO0010566904	STX Europe AS	19,0%	Industry	250	26-03-10	Norway	Fixed	Sr Unsec.		CCC
NO0010571144	Eltek ASA	11,0%	Industry	200	08-04-10	Norway	FRN	Sr Unsec.		B
NO0010571714	Transocean Limited	7,7%	Oil and gas services	1 500	30-04-10	Norway	FRN	Sr Unsec.		B
NO0010572126	Sevan Marine ASA	21,2%	Oil and gas services	269	04-05-10	Norway	Fixed	Sr Sec.		CCC
NO0010572381	J. Lauritzen A/S	10,8%	Shipping	700	05-05-10	Denmark	Fixed	Sr Unsec.		B
NO0010572530	Color Group AS	7,0%	Transportation	500	05-05-10	Norway	FRN	Sr Unsec.		BB
NO0010574833	Skdp 1 Ltd Cyprus	32,6%	Oil and gas services	1 468	20-05-10	Cyprus	Fixed	Sr Sec.	Restructured	CCC
NO0010580921	Remedial Cayman Limited	-3,3%	Oil and gas services	1 058	28-06-10	Cayman Islands	Fixed	Sr Unsec.	Liquidation	
NO0010582422	Bergen Group ASA	11,9%	Oil and gas services	330	09-07-10	Norway	FRN	Sr Sec.		CCC
NO0010582430	Bergen Group ASA	12,2%	Oil and gas services	138	09-07-10	Norway	FRN	Sr Sec.		CCC
NO0010582505	Havila Shipping ASA	12,8%	Oil and gas services	500	19-07-10	Norway	FRN	Sr Unsec.		B
NO0010582919	Electromagnetic Geoservices ASA	10,7%	Oil and gas services	125	21-07-10	Norway	FRN	Sr Sec.		B
NO0010582794	DOF ASA	9,8%	Oil and gas services	950	22-07-10	Norway	FRN	Sr Unsec.		B
NO0010582950	Sevan Marine ASA	-8,6%	Oil and gas services	625	10-08-10	Norway	Fixed	Sr Sec.	Restructured	CCC
NO0010582968	Sevan Marine ASA	-10,8%	Oil and gas services	601	10-08-10	Norway	Fixed	Sr Sec.	Restructured	CCC
NO0010584246	Floatel Superior Ltd.	16,8%	Oil and gas services	462	02-09-10	Bermuda	Fixed	Sr Sec.		CCC
NO0010584683	Interoil Exploration and Production ASA	11,6%	Oil and gas E&P	310	14-09-10	Norway	Fixed	Sr Sec.	Restructured	CCC
NO0010587991	I. M. Skaugen SE	11,2%	Shipping	300	17-09-10	Norway	FRN	Sr Unsec.		B
NO0010587983	Farstad Shipping ASA	5,8%	Oil and gas services	400	27-09-10	Norway	FRN	Sr Unsec.		BB
NO0010588262	Norwegian Car Carriers AS	11,1%	Shipping	225	29-09-10	Norway	Fixed	Sr Unsec.		B
NO0010588841	Middle East Jackup I Company	17,4%	Oil and gas services	293	29-09-10	United States of America	Fixed	Sr Sec.		CCC
NO0010589492	Seadrill Ltd	6,6%	Oil and gas services	2 042	05-10-10	Bermuda	Fixed	Sr Unsec.		BB
NO0010588833	Ship Finance International Limited	6,4%	Shipping	500	07-10-10	Bermuda	FRN	Sr Unsec.		B
NO0010589716	Dof Subsea AS	9,6%	Oil and gas services	750	14-10-10	Norway	FRN	Sr Unsec.		B
NO0010589732	Austevoll Seafood ASA	6,5%	Seafood	500	14-10-10	Norway	FRN	Sr Unsec.		B
NO0010590300	Polarcus Ltd	13,4%	Oil and gas services	473	29-10-10	Norway	Fixed	Sr Sec.		CCC
NO0010590342	Bonheur ASA	6,5%	Oil and gas services	600	29-10-10	Norway	FRN	Sr Unsec.		B
NO0010590441	Havila Shipping ASA	-0,1%	Oil and gas services	225	08-11-10	Norway	FRN	Sr Sec.		B
NO0010590961	Panoro Energy ASA	15,2%	Oil and gas E&P	205	15-11-10	Norway	Fixed	Sr Sec.		CCC
NO0010590979	Panoro Energy ASA	13,7%	Oil and gas E&P	627	15-11-10	Norway	Fixed	Sr Sec.		CCC
NO0010591068	Color Group AS	7,0%	Transportation	900	16-11-10	Norway	FRN	Sr Unsec.		BB
NO0010591332	Fairstar Heavy Transport NV	12,4%	Oil and gas services	300	18-11-10	Netherlands	FRN	Sr Unsec.		B
NO0010591977	Aker ASA	7,3%	Industry	850	23-11-10	Norway	FRN	Sr Unsec.		B
NO0010591985	Aker ASA	9,5%	Industry	150	23-11-10	Norway	Fixed	Sr Unsec.		B
NO0010591423	Teekay Offshore Partners LP	7,5%	Shipping	600	29-11-10	Marshall Islands	FRN	Sr Unsec.		B
NO0010592207	Havila Shipping ASA	11,3%	Oil and gas services	300	02-12-10	Norway	FRN	Sr Unsec.		B
NO0010592306	Norwegian Energy Company ASA	10,8%	Oil and gas E&P	700	06-12-10	Norway	FRN	Sr Unsec.	Restructured	CCC
NO0010592074	Golden Close Maritime Corp Ltd	11,6%	Oil and gas services	2 769	09-12-10	Bermuda	Fixed	Sr Sec.		CCC
NO0010592785	DOF ASA	8,6%	Oil and gas services	600	09-12-10	Norway	FRN	Sr Unsec.		B
NO0010593627	Sevan Marine ASA	-87,5%	Oil and gas services	700	22-12-10	Norway	Fixed	Sr Unsec.	Restructured	CCC
NO0010593502	EMS Seven SEAS AS	-63,7%	Oil and gas services	300	23-12-10	Norway	Fixed	Sr Sec.	Restructured	
NO0010593510	EMS Seven SEAS AS	-63,8%	Oil and gas services	100	23-12-10	Norway	FRN	Sr Sec.	Restructured	
NO0010598022	NBT AS	13,0%	Industry	143	30-12-10	Norway	Fixed	Sr Sec.	Non Payment	CCC
NO0010598923	Host Hoteleiendom AS	8,7%	Real Estate	150	27-01-11	Norway	FRN	Sr Sec.		B
NO0010598782	Det Norske Oljeselskap ASA	10,3%	Oil and gas E&P	600	28-01-11	Norway	FRN	Sr Unsec.		B

NO0010599020	Morpol ASA	8,3%	Seafood	500	03-02-11	Norway	FRN	Sr Unsec.		B
NO0010598907	Olympic Ship AS	7,7%	Oil and gas services	350	09-02-11	Norway	FRN	Sr Unsec.		B
NO0010599384	Transocean Limited	13,6%	Oil and gas services	560	24-02-11	Norway	Fixed	Sr Unsec.		B
NO0010599400	Transocean Limited	12,1%	Oil and gas services	940	24-02-11	Norway	FRN	Sr Unsec.		B
NO0010600299	Prosafe SE	5,6%	Oil and gas services	500	25-02-11	Cyprus	FRN	Sr Unsec.		BB
NO0010600364	Solstad Offshore ASA	6,5%	Oil and gas services	700	25-02-11	Norway	FRN	Sr Unsec.		B
NO0010604689	I. M. Skaugen SE	9,1%	Shipping	350	15-03-11	Norway	FRN	Sr Unsec.		CCC
NO0010601198	Dannemora Mineral AB	-55,2%	Industry	668	22-03-11	Sweden	Fixed	Sr Sec.	Liquidation	CCC
NO0010605025	Havila Shipping ASA	1,3%	Oil and gas services	300	30-03-11	Norway	Fixed	Sr Sec.		B
NO0010605033	Havila Shipping ASA	-0,3%	Oil and gas services	300	30-03-11	Norway	FRN	Sr Sec.		B
NO0010606171	North Atlantic Drilling Ltd	7,9%	Oil and gas services	2 757	31-03-11	Bermuda	Fixed	Sr Unsec.		B
NO0010605728	PA Resources AB	-19,8%	Oil and gas E&P	900	05-04-11	Sweden	Fixed	Sr Unsec.	Restructured	B
NO0010606189	DNO ASA	8,4%	Oil and gas E&P	758	11-04-11	Norway	FRN	Sr Unsec.		CCC
NO0010606197	DNO ASA	10,2%	Oil and gas E&P	560	11-04-11	Norway	FRN	Sr Unsec.		CCC
NO0010607302	Etrion Corporation	9,5%	Industry	467	18-04-11	Canada	Fixed	Sr Sec.		B
NO0010606320	Norwegian Energy Company ASA	0,4%	Oil and gas E&P	638	27-04-11	Norway	Fixed	Sr Sec.	Restructured	CCC
NO0010606338	Norwegian Energy Company ASA	9,1%	Oil and gas E&P	325	27-04-11	Norway	FRN	Sr Sec.	Restructured	CCC
NO0010607112	Boa OCV AS	8,6%	Oil and gas services	1 200	27-04-11	Norway	FRN	Sr Sec.		B
NO0010607625	Ocean Rig UDW Inc.	9,8%	Oil and gas services	2 655	27-04-11	Marshall Islands	Fixed	Sr Unsec.		B
NO0010607377	Dof Subsea AS	7,7%	Oil and gas services	750	29-04-11	Norway	FRN	Sr Unsec.		B
NO0010607476	REC silicon ASA	8,0%	Industry	913	03-05-11	Norway	Fixed	Sr Unsec.		BB
NO0010607484	REC silicon ASA	6,4%	Industry	713	03-05-11	Norway	FRN	Sr Unsec.		BB
NO0010609829	Fred Olsen Energy ASA	6,0%	Oil and gas services	1 400	12-05-11	Norway	FRN	Sr Unsec.		BB
NO0010609837	Electromagnetic Geoservices ASA	10,4%	Oil and gas services	250	26-05-11	Norway	FRN	Sr Unsec.		B
NO0010611031	Jasper Explorer PLC	13,8%	Oil and gas E&P	899	27-05-11	Cyprus	Fixed	Sr Sec.	Liquidation	CCC
NO0010612203	AB Stena Metall Finans	5,2%	Industry	750	08-06-11	Sweden	FRN	Sr Unsec.		BB
NO0010614217	Global Rig Company AS	13,4%	Oil and gas services	323	09-06-11	Norway	Fixed	Sr Sec.		CCC
NO0010614407	Stolt-Nielsen Limited	7,0%	Shipping	1 600	22-06-11	Bermuda	FRN	Sr Unsec.		BB
NO0010614241	Realkapital European Opportunity AS	7,9%	Real Estate	100	24-06-11	Norway	FRN	Sr Sec.		CCC
NO0010622582	Sevan Marine ASA	34,1%	Oil and gas services	195	22-07-11	Norway	Fixed	Sr Sec.		CCC
NO0010623101	TrollDrilling & Services Ltd	16,3%	Oil and gas services	328	19-08-11	Cyprus	Fixed	Sub.		CCC
NO0010625775	Havila Holding AS	13,7%	Oil and gas services	410	26-09-11	Norway	FRN	Sr Sec.		B
NO0010628217	Polarcus Ltd	14,5%	Oil and gas services	230	14-11-11	Cayman Islands	Fixed	Sr Unsec.		CCC
NO0010628753	Songa Offshore SE	4,7%	Oil and gas services	1 400	17-11-11	Cyprus	Fixed	Sr Unsec.		CCC
NO0010628860	Chloe Marine Corporation Ltd	-21,2%	Oil and gas services	870	17-11-11	Bermuda	Fixed	Sr Sec.	Liquidation	CCC
NO0010630155	Color Group AS	7,5%	Transportation	500	25-11-11	Norway	FRN	Sr Unsec.		BB
NO0010633225	Deep Drilling 1 Pte. Ltd	12,0%	Oil and gas services	742	21-12-11	Singapore	Fixed	Sr Sec.	Restructured	CCC
NO0010635329	Teekay Offshore Partners LP	6,4%	Shipping	600	27-01-12	Marshall Islands	FRN	Sr Unsec.		B
NO0010635212	Aker ASA	6,5%	Industry	500	30-01-12	Norway	FRN	Sr Unsec.		BB
NO0010635865	DOF ASA	3,3%	Oil and gas services	700	07-02-12	Norway	FRN	Sr Unsec.		B
NO0010636012	Austevoll Seafood ASA	6,3%	Seafood	400	07-02-12	Norway	FRN	Sr Unsec.		BB
NO0010635725	Prosafe SE	3,4%	Oil and gas services	500	08-02-12	Cyprus	FRN	Sr Unsec.		BB
NO0010635824	Bonheur ASA	5,5%	Oil and gas services	300	10-02-12	Norway	FRN	Sr Unsec.		B
NO0010635816	Bonheur ASA	5,9%	Oil and gas services	700	10-02-12	Norway	FRN	Sr Unsec.		B
NO0010636111	Seadrill Ltd	5,4%	Oil and gas services	1 250	13-02-12	Bermuda	FRN	Sr Unsec.		BB
NO0010635964	Farstad Shipping ASA	-4,8%	Oil and gas services	400	15-02-12	Norway	FRN	Sr Unsec.		BB
NO0010636301	Dof Subsea AS	8,3%	Oil and gas services	700	15-02-12	Norway	FRN	Sr Unsec.		B
NO0010636616	SinOceanic II AS	12,0%	Shipping	570	17-02-12	Norway	Fixed	Sr Sec.		CCC

NO0010637077	Pacific Drilling S.A.	8,4%	Oil and gas services	1 685	23-02-12	Luxembourg	Fixed	Sr Unsec.		B
NO0010636632	I. M. Skaugen SE	-4,6%	Shipping	400	27-02-12	Norway	FRN	Sr Unsec.		CCC
NO0010637614	Deep Drilling 7 Pte. Ltd. and Deep Drilling 8 Pte.	15,0%	Oil and gas services	1 347	05-03-12	Singapore	Fixed	Sr Sec.		CCC
NO0010637325	BWG Homes AS	6,5%	Industry	300	12-03-12	Norway	FRN	Sr Unsec.		BB
NO0010638075	BW Offshore Limited	5,2%	Oil and gas services	500	15-03-12	Bermuda	FRN	Sr Unsec.		B
NO0010637952	Aker ASA	5,9%	Industry	500	16-03-12	Norway	FRN	Sr Unsec.		BB
NO0010637945	Selvaag Bolig ASA	6,2%	Real Estate	300	16-03-12	Norway	FRN	Sr Unsec.		B
NO0010640774	Stolt-Nielsen Limited	6,7%	Shipping	800	19-03-12	Bermuda	FRN	Sr Unsec.		BB
NO0010640766	Stolt-Nielsen Limited	5,7%	Shipping	700	19-03-12	Bermuda	FRN	Sr Unsec.		BB
NO0010638133	Hurtigruten ASA	13,3%	Transportation	500	20-03-12	Norway	FRN	Sr Unsec.		B
NO0010640824	OSX 3 Leasing B.V	-17,4%	Oil and gas services	2 975	20-03-12	Netherlands	Fixed	Sr Sec.	Liquidation	CCC
NO0010638158	Viking Supply Ships A/S	-10,4%	Oil and gas services	385	21-03-12	Denmark	FRN	Sr Unsec.		CCC
NO0010641673	I. M. Skaugen SE	-7,7%	Shipping	350	11-04-12	Norway	FRN	Sr Unsec.		CCC
NO0010641715	Odfjell SE	6,6%	Shipping	600	11-04-12	Norway	FRN	Sr Unsec.		B
NO0010642200	Norwegian Air Shuttle ASA	8,5%	Transportation	600	13-04-12	Norway	FRN	Sr Unsec.		B
NO0010643281	DFDS A/S	5,5%	Transportation	500	02-05-12	Denmark	FRN	Sr Unsec.		BB
NO0010643257	Teekay LNG Partners L.P.	7,3%	Shipping	700	03-05-12	Marshall Islands	FRN	Sr Unsec.		B
NO0010647431	Aker Solutions ASA	5,6%	Industry	1 500	06-06-12	Norway	FRN	Sr Unsec.		
NO0010649403	Songa Offshore SE	-0,1%	Oil and gas services	750	11-06-12	Cyprus	Fixed	Sr Unsec.		B
NO0010649924	Borgestad ASA	10,4%	Real Estate	100	22-06-12	Norway	Fixed	Sr Unsec.		B
NO0010650112	Atlantic Offshore AS	12,7%	Oil and gas services	200	26-06-12	Norway	FRN	Sr Unsec.		CCC
NO0010654379	Ocean Yield ASA	9,4%	Shipping	600	06-07-12	Norway	FRN	Sr Unsec.		B
NO0010657174	Havila Shipping ASA	-19,4%	Oil and gas services	500	30-08-12	Norway	FRN	Sr Unsec.	Non Payment	CCC
NO0010657406	Stolt-Nielsen Limited	6,8%	Shipping	500	04-09-12	Bermuda	FRN	Sr Unsec.		BB
NO0010657398	Aker ASA	5,1%	Industry	1 000	07-09-12	Norway	FRN	Sr Unsec.		BB
NO0010657802	DOF ASA	-4,2%	Oil and gas services	700	12-09-12	Norway	FRN	Sr Unsec.		B
NO0010657919	Color Group AS	6,5%	Transportation	700	18-09-12	Norway	FRN	Sr Unsec.		B
NO0010657711	Cermaq Group AS	6,7%	Seafood	900	21-09-12	Norway	FRN	Sr Unsec.		BB
NO0010659931	Olympic Ship AS	-10,2%	Oil and gas services	300	21-09-12	Norway	FRN	Sr Unsec.	Restructured	B
NO0010657299	Global Investments Group Finance Ltd.	11,2%	Shipping	864	24-09-12	Virgin Islands (British)	Fixed	Sr Unsec.		
NO0010660400	TiZir Ltd	-2,8%	Industry	1 567	28-09-12	United Kingdom	Fixed	Sr Sec.		B
NO0010659899	Teodin Acquico AS	8,8%	Other	380	02-10-12	Norway	FRN	Sr Sec.		B
NO0010660954	Höegh LNG Holdings Ltd.	8,4%	Shipping	750	03-10-12	Bermuda	FRN	Sr Unsec.		B
NO0010661051	Aker Solutions ASA	3,8%	Industry	1 000	09-10-12	Norway	FRN	Sr Unsec.		
NO0010661150	Teekay Corporation	6,6%	Shipping	700	09-10-12	Canada	FRN	Sr Unsec.		B
NO0010661382	Floatel International Ltd	12,1%	Oil and gas services	1 143	11-10-12	Bermuda	Fixed	Sr Sec.		B
NO0010661358	Golar LNG Partners LP	6,7%	Shipping	1 300	12-10-12	Marshall Islands	FRN	Sr Unsec.		B
NO0010661465	Austevoll Seafood ASA	6,6%	Seafood	500	15-10-12	Norway	FRN	Sr Unsec.		BB
NO0010661655	Ship Finance International Limited	6,5%	Shipping	600	19-10-12	Bermuda	FRN	Sr Unsec.		B
NO0010661846	J. Lauritzen A/S	6,2%	Shipping	500	24-10-12	Denmark	FRN	Sr Unsec.		B
NO0010662018	Oceanteam ASA	3,6%	Oil and gas services	531	24-10-12	Norway	FRN	Sr Unsec.		CCC
NO0010661390	Norwegian Energy Company ASA	11,7%	Oil and gas E&P	300	30-10-12	Norway	Fixed	Sr Unsec.	Restructured	CCC
NO0010662356	Solör Bioenergi Holding AB	1,7%	Industry	650	02-11-12	Sweden	FRN	Sr Sec.	Restructured	B
NO0010662901	Dolphin Group ASA	-39,3%	Oil and gas services	400	14-11-12	Norway	FRN	Sr Unsec.	Liquidation	B
NO0010664758	Odfjell SE	6,3%	Shipping	800	03-12-12	Norway	FRN	Sr Unsec.		B
NO0010664741	Odfjell SE	7,3%	Shipping	600	03-12-12	Norway	FRN	Sr Unsec.		B
NO0010665359	BWG Homes AS	10,4%	Industry	350	12-12-12	Norway	FRN	Sr Unsec.		BB
NO0010665292	Sektor Portefølje III AS	5,6%	Real Estate	875	14-12-12	Norway	FRN	Sr Sec.		

NO0010665508	Navigator Holdings Ltd	9,9%	Shipping	701	18-12-12	Marshall Islands	Fixed	Sr Unsec.		B
NO0010664808	Havila Shipping ASA	9,5%	Oil and gas services	100	20-12-12	Norway	FRN	Sr Unsec.		CCC
NO0010664899	Boa Offshore AS	8,7%	Oil and gas services	200	20-12-12	Norway	FRN	Sr Unsec.		B
NO0010667835	Atlantic Offshore AS	12,7%	Oil and gas services	150	20-12-12	Norway	FRN	Sr Unsec.		CCC
NO0010668122	Grieg Seafood ASA	8,9%	Seafood	400	21-12-12	Norway	FRN	Sr Unsec.		B
NO0010669971	Vestland Offshore Invest AS	12,1%	Oil and gas services	150	15-01-13	Norway	FRN	Sr Sec.		CCC
NO0010669633	Prosafe SE	-6,7%	Oil and gas services	500	17-01-13	Cyprus	FRN	Sr Unsec.		BB
NO0010668601	Eitzen Chemical ASA	-45,2%	Shipping	294	17-01-13	Norway	FRN	Sr Sec.	Restructured	
NO0010670144	Dof Subsea AS	1,4%	Oil and gas services	1 300	22-01-13	Norway	FRN	Sr Unsec.		B
NO0010670128	Teekay Offshore Partners LP	-0,1%	Shipping	800	25-01-13	Marshall Islands	FRN	Sr Unsec.		B
NO0010670110	Teekay Offshore Partners LP	5,7%	Shipping	500	25-01-13	Marshall Islands	FRN	Sr Unsec.		B
NO0010670441	Siem Offshore Inc.	-2,9%	Oil and gas services	600	30-01-13	Cayman Islands	FRN	Sr Unsec.		B
NO0010670730	AGR Holdings AS	14,4%	Oil and gas services	550	05-02-13	Norway	FRN	Sr Sec.		B
NO0010671084	Fjord Line AS	9,3%	Transportation	300	05-02-13	Norway	FRN	Sr Unsec.		B
NO0010671233	Felleskjøpet Agri SA	4,0%	Other	500	13-02-13	Norway	FRN	Sr Unsec.		
NO0010671480	Felleskjøpet Agri SA	3,4%	Other	200	13-02-13	Norway	FRN	Sr Unsec.		
NO0010671605	P/F Bakkafrost	7,0%	Seafood	500	14-02-13	Faroe Islands	FRN	Sr Unsec.		BB
NO0010672314	Norwegian Energy Company ASA	11,5%	Oil and gas E&P	300	25-02-13	Norway	Fixed	Sr Unsec.	Restructured	CCC
NO0010672827	Marine Harvest ASA	5,6%	Seafood	1 250	12-03-13	Norway	FRN	Sr Unsec.		BB
NO0010673148	Seadrill Ltd	-25,9%	Oil and gas services	1 800	12-03-13	Bermuda	FRN	Sr Unsec.		BB
NO0010672835	Rem Offshore ASA	-16,9%	Oil and gas services	350	14-03-13	Norway	FRN	Sr Unsec.		B
NO0010673346	Braathens Aviation AB (publ)	8,6%	Transportation	272	20-03-13	Sweden	FRN	Sr Unsec.		B
NO0010673528	DFDS A/S	4,9%	Transportation	700	21-03-13	Denmark	FRN	Sr Unsec.		BB
NO0010673841	BW Offshore Limited	3,0%	Oil and gas services	500	21-03-13	Bermuda	FRN	Sr Unsec.		BB
NO0010673791	IGas Energy Plc	-5,6%	Oil and gas E&P	961	22-03-13	United Kingdom	Fixed	Sr Sec.		CCC
NO0010673734	Sea Trucks Group Limited	-6,9%	Oil and gas services	3 352	26-03-13	Virgin Islands (British)	Fixed	Sr Sec.		CCC
NO0010674187	Island Drilling Company ASA	-24,8%	Oil and gas services	813	03-04-13	Norway	Fixed	Sr Sec.		
NO0010674377	Pioneer Public Properties II AS	7,1%	Real Estate	200	05-04-13	Norway	FRN	Sr Sec.		B
NO0010673866	Island Offshore Shipholding LP	-5,8%	Oil and gas services	700	05-04-13	Cayman Islands	FRN	Sr Unsec.		B
NO0010674542	Telio Holding ASA	19,4%	Telecom/IT/Media	300	10-04-13	Norway	FRN	Sr Unsec.		B
NO0010674328	Troms Offshore Supply AS	17,4%	Oil and gas services	500	11-04-13	Norway	FRN	Sr Sec.		B
NO0010674047	Oceanic Champion AS	2,2%	Oil and gas services	401	12-04-13	Norway	Fixed	Sr Sec.		B
NO0010675051	Boa SBL AS	-14,7%	Oil and gas services	400	19-04-13	Norway	FRN	Sr Sec.		B
NO0010675572	Bulk Invest ASA	-0,6%	Shipping	300	19-04-13	Norway	FRN	Sr Unsec.		B
NO0010675580	Atlantica Tender Drilling Ltd	-4,9%	Oil and gas services	886	24-04-13	Bermuda	Fixed	Sr Sec.		B
NO0010675671	Sterling Resources (UK) Ltd.	3,6%	Oil and gas E&P	1 309	30-04-13	United Kingdom	Fixed	Sr Sec.	Non Payment	CCC
NO0010675986	Klaveness Ship Holding AS	6,5%	Shipping	300	08-05-13	Norway	FRN	Sr Unsec.		B
NO0010679467	Oro Negro Drilling Pte. Ltd.	8,1%	Oil and gas services	697	13-05-13	Singapore	Fixed	Sr Sec.		B
NO0010678782	GlobalConnect A/S	8,0%	Telecom/IT/Media	708	15-05-13	Denmark	Fixed	Sr Sec.		B
NO0010679475	Eidesvik Offshore ASA	-3,9%	Oil and gas services	300	22-05-13	Norway	FRN	Sr Unsec.		B
NO0010679871	Farstad Shipping ASA	-17,5%	Oil and gas services	1 000	29-05-13	Norway	FRN	Sr Unsec.		BB
NO0010680069	Volstad Shipping AS	-28,4%	Oil and gas services	275	30-05-13	Norway	FRN	Sr Sec.	Non Payment	B
NO0010680317	Aker ASA	3,0%	Industry	700	06-06-13	Norway	FRN	Sr Unsec.		BB
NO0010682321	Northland Resources AB (publ)	-95,3%	Industry	1 697	06-06-13	Sweden	Fixed	Sr Sec.	Liquidation	CCC
NO0010682339	Northland Resources AB (publ)	-96,6%	Industry	577	06-06-13	Sweden	Fixed	Sr Sec.	Liquidation	CCC
NO0010680309	Aker ASA	3,7%	Industry	1 300	06-06-13	Norway	FRN	Sr Unsec.		BB
NO0010680150	Polarcus Ltd	-43,9%	Oil and gas services	547	07-06-13	Cayman Islands	Fixed	Sr Unsec.	Restructured	B
NO0010682131	Norlandia Care Group AS	6,6%	Other	650	07-06-13	Norway	FRN	Sr Sec.		B

NO0010682370	AB Stena Metall Finans	5,5%	Industry	300	12-06-13	Sweden	FRN	Sr Unsec.		BB
NO0010682404	Wilh. Wilhelmsen ASA	3,7%	Shipping	700	13-06-13	Norway	FRN	Sr Unsec.		BB
NO0010682255	AS Tallink Grupp	6,3%	Transportation	900	18-06-13	Estonia	FRN	Sr Unsec.		
NO0010683626	Atea ASA	4,0%	Telecom/IT/Media	300	19-06-13	Norway	FRN	Sr Unsec.		
NO0010683592	Petrolia SE	10,1%	Oil and gas E&P	289	20-06-13	Cyprus	Fixed	Sr Unsec.		
NO0010683873	Viking Supply Ships A/S	11,4%	Oil and gas services	100	24-06-13	Denmark	Fixed	Sr Unsec.		CCC
NO0010682537	Electromagnetic Geoservices ASA	-6,9%	Oil and gas services	350	26-06-13	Norway	FRN	Sr Unsec.		B
NO0010683725	Selvaag Bolig ASA	7,7%	Real Estate	500	27-06-13	Norway	FRN	Sr Unsec.		B
NO0010683840	GasLog Ltd	7,2%	Shipping	1 000	27-06-13	Bermuda	FRN	Sr Unsec.		B
NO0010684145	Det Norske Oljeselskap ASA	4,4%	Oil and gas E&P	1 900	02-07-13	Norway	FRN	Sr Unsec.		B
NO0010683717	Hexagon Composites ASA	6,8%	Industry	300	02-07-13	Norway	FRN	Sr Unsec.		B
NO0010683832	Latina Offshore Limited	2,8%	Oil and gas services	2 143	03-07-13	Bermuda	Fixed	Sr Sec.		CCC
NO0010684327	Bassdrill Alpha Ltd	7,9%	Oil and gas services	556	05-07-13	Bermuda	Fixed	Sr Sec.		B
NO0010684574	Volstad Subsea AS	-3,9%	Oil and gas services	650	05-07-13	Norway	FRN	Sr Sec.		B
NO0010686835	Teekay LNG Partners L.P.	5,0%	Shipping	900	03-09-13	Marshall Islands	FRN	Sr Unsec.		BB
NO0010686561	E Forland AS	-0,4%	Oil and gas services	525	04-09-13	Norway	FRN	Sr Sec.		CCC
NO0010689763	Iona Energy Company (UK) Ltd.	-55,8%	Oil and gas E&P	1 858	27-09-13	United Kingdom	Fixed	Sr Sec.	Liquidation	CCC
NO0010691116	OSA Goliath Pte. Ltd.	-42,0%	Oil and gas services	960	09-10-13	Singapore	Fixed	Sr Sec.	Restructured	CCC
NO0010692205	Oro Negro Fortius Pte. Ltd.	17,0%	Oil and gas services	1 036	18-10-13	Singapore	Fixed	Sr Unsec.		CCC
NO0010691892	Prosafe SE	-8,1%	Oil and gas services	700	22-10-13	Cyprus	FRN	Sr Unsec.		BB
NO0010692411	North Atlantic Drilling Ltd	-33,3%	Oil and gas services	1 500	30-10-13	Bermuda	FRN	Sr Unsec.		B
NO0010692585	EWOS Group AS	14,1%	Seafood	1 040	31-10-13	Norway	FRN	Sub.		
NO0010692155	EWOS Holding AS	6,7%	Seafood	1 810	31-10-13	Norway	FRN	Sr Sec.		
NO0010692882	General Exploration Partners Inc.	-16,8%	Oil and gas E&P	932	13-11-13	Cayman Islands	Fixed	Sr Sec.		CCC
NO0010694672	Curato Holding AS	8,3%	Other	500	22-11-13	Norway	FRN	Sr Sec.		B
NO0010694565	World Wide Supply AS	-35,4%	Oil and gas services	916	26-11-13	Norway	Fixed	Sr Sec.	Non Payment	B
NO0010695042	BWG Homes AS	19,0%	Industry	350	28-11-13	Norway	FRN	Sr Unsec.		BB
NO0010697220	Dolphin Group ASA	-63,5%	Oil and gas services	500	05-12-13	Norway	FRN	Sr Unsec.	Liquidation	CCC
NO0010697279	Salamander Energy Plc	7,9%	Oil and gas E&P	926	06-12-13	United Kingdom	Fixed	Sr Unsec.	Non Payment	CCC
NO0010697048	Norwegian Energy Company ASA	-62,5%	Oil and gas E&P	736	09-12-13	Norway	Fixed	Sr Sec.	Restructured	CCC
NO0010697030	Norwegian Energy Company ASA	-17,4%	Oil and gas E&P	1 399	09-12-13	Norway	Fixed	Sr Sec.	Restructured	CCC
NO0010697485	Bluewater Holding B.V.	-15,6%	Oil and gas services	2 444	10-12-13	Netherlands	Fixed	Sr Unsec.		CCC
NO0010697493	Bluewater Holding B.V.	10,4%	Oil and gas services	150	10-12-13	Netherlands	Fixed	Sr Unsec.		CCC
NO0010698053	IGas Energy Plc	-19,5%	Oil and gas E&P	184	11-12-13	United Kingdom	Fixed	Sr Unsec.		CCC
NO0010697956	Atlantic Offshore AS	-29,6%	Oil and gas services	500	16-12-13	Norway	FRN	Sr Unsec.		CCC
NO0010699077	Boa Offshore AS	-33,6%	Oil and gas services	500	18-12-13	Norway	FRN	Sr Unsec.		B
NO0010699317	Axis Offshore Pte. Ltd.	-10,7%	Oil and gas services	366	18-12-13	Singapore	FRN	Sr Sec.		CCC
NO0010699168	Color Group AS	6,1%	Transportation	700	18-12-13	Norway	FRN	Sr Unsec.		B
NO0010699861	The North Alliance AS	8,1%	Telecom/IT/Media	150	20-12-13	Norway	FRN	Sr Sec.		B
NO0010699721	Host Hoteleiendom AS	8,5%	Real Estate	120	20-12-13	Norway	FRN	Sr Sec.		CCC
NO0010699887	Jack-Up InvestCo 3 Ltd	16,2%	Industry	334	03-01-14	Malta	Fixed	Sr Sec.		CCC
NO0010699770	Blue Pioneer Pte. Ltd.	12,3%	Oil and gas services	383	13-01-14	Singapore	FRN	Sr Sec.		CCC
NO0010701105	Aker ASA	1,4%	Industry	1 427	24-01-14	Norway	FRN	Sr Unsec.		BB
NO0010700982	Oro Negro Drilling Pte. Ltd.	-14,5%	Oil and gas services	4 445	24-01-14	Singapore	Fixed	Sr Sec.	Non Payment	B
NO0010700909	Teekay Offshore Partners LP	-7,5%	Shipping	1 000	30-01-14	Marshall Islands	FRN	Sr Unsec.		BB
NO0010701287	StormGeo Holding AS	7,9%	Telecom/IT/Media	500	31-01-14	Norway	FRN	Sr Sec.		B
NO0010703192	DOF ASA	-18,7%	Oil and gas services	700	07-02-14	Norway	FRN	Sr Unsec.		B
NO0010703655	Hospitality Invest AS	6,4%	Real Estate	600	12-02-14	Norway	FRN	Sr Sec.		B

NO0010703374	Metro Exploration Holding Corp.	-67,6%	Oil and gas services	1 134	14-02-14	Liberia	Fixed	Sr Sec.	Non Payment	B
NO0010704182	Norshore Atlantic B.V.	12,4%	Oil and gas services	916	21-02-14	Netherlands	Fixed	Sr Sec.	Restructured	CCC
NO0010704125	Fred Olsen Energy ASA	-32,0%	Oil and gas services	1 100	28-02-14	Norway	FRN	Sr Unsec.		BB
NO0010705361	BW Offshore Limited	-2,5%	Oil and gas services	750	11-03-14	Bermuda	FRN	Sr Unsec.		BB
NO0010705551	Stolt-Nielsen Limited	-0,7%	Shipping	1 250	18-03-14	Bermuda	FRN	Sr Unsec.		BB
NO0010705791	Seadrill Ltd	-42,6%	Oil and gas services	1 412	18-03-14	Bermuda	FRN	Sr Unsec.		BB
NO0010705601	AINMT Scandinavia Holdings AS	12,8%	Telecom/IT/Media	1 412	19-03-14	Sweden	Fixed	Sr Sec.		B
NO0010705742	Ship Finance International Limited	0,4%	Shipping	900	19-03-14	Bermuda	FRN	Sr Unsec.		B
NO0010705874	Klaveness Ship Holding AS	4,0%	Shipping	400	20-03-14	Norway	FRN	Sr Unsec.		B
NO0010705833	Ridgebury Crude Tankers LLC	8,6%	Shipping	1 277	20-03-14	Marshall Islands	Fixed	Sr Sec.		B
NO0010705999	Felleskjøpet Agri SA	5,1%	Other	400	25-03-14	Norway	Fixed	Sr Unsec.		
NO0010708316	Ocean Yield ASA	2,0%	Shipping	1 000	26-03-14	Norway	FRN	Sr Unsec.		BB
NO0010708167	Pharmaq Holding AS	8,8%	Seafood	725	28-03-14	Norway	FRN	Sr Sec.		
NO0010708209	Harkand Finance Inc.	-16,8%	Oil and gas services	1 378	28-03-14	Marshall Islands	Fixed	Sr Sec.		B
NO0010708670	Siem Offshore Inc.	-11,3%	Oil and gas services	700	28-03-14	Cayman Islands	FRN	Sr Unsec.		B
NO0010708506	Veritas Petroleum Services B.V.	5,2%	Industry	418	01-04-14	Netherlands	Fixed	Sr Sec.		B
NO0010708332	Jacob Holm & Sønner Holding A/S	7,6%	Industry	597	03-04-14	Denmark	FRN	Sr Sec.		B
NO0010709199	Northland Resources AB (publ)	-44,5%	Industry	383	07-04-14	Sweden	Fixed	Sup. Sr	Liquidation	
NO0010709215	Wilh. Wilhelmsen ASA	1,4%	Shipping	800	09-04-14	Norway	FRN	Sr Unsec.		BB
NO0010709280	Awilco Drilling Plc	-4,8%	Oil and gas services	745	09-04-14	United Kingdom	Fixed	Sr Sec.		B
NO0010709264	Etrion Corporation	8,4%	Industry	217	23-04-14	Canada	Fixed	Sr Sec.		B
NO0010709272	Etrion Corporation	-2,3%	Industry	662	23-04-14	Canada	Fixed	Sr Sec.		B
NO0010705296	PSOS Finance Limited	-6,4%	Oil and gas services	957	23-04-14	Cayman Islands	Fixed	Sr Sec.		CCC
NO0010710700	OSA Goliath Pte. Ltd.	18,3%	Oil and gas services	136	07-05-14	Singapore	Fixed	Sr Sec.	Restructured	
NO0010710882	Genel Energy Limited	-26,5%	Oil and gas E&P	4 319	14-05-14	United Kingdom	Fixed	Sr Unsec.	Restructured	B
NO0010710932	Prospector Finance II SARL	9,4%	Oil and gas services	593	19-05-14	Luxembourg	Fixed	Sr Sec.		B
NO0010711153	Infratek Group AS	6,8%	Industry	650	20-05-14	Norway	FRN	Sr Sec.		B
NO0010711773	Cermaq Group AS	4,4%	Seafood	750	27-05-14	Norway	FRN	Sr Unsec.		BB
NO0010711732	Golden Energy Offshore Services AS	-31,7%	Oil and gas services	370	28-05-14	Norway	FRN	Sr Sec.	Non Payment	B
NO0010711948	Global Rig Company AS	0,3%	Oil and gas services	720	03-06-14	Norway	Fixed	Sr Sec.		B
NO0010712870	DigiPlex Fet AS	5,2%	Telecom/IT/Media	500	11-06-14	Norway	FRN	Sr Sec.		B
NO0010713274	Havyard Group ASA	-7,9%	Industry	150	13-06-14	Norway	FRN	Sr Unsec.		B
NO0010712839	Olympic Ship AS	-34,4%	Oil and gas services	500	18-06-14	Norway	FRN	Sr Unsec.	Restructured	B
NO0010713522	Sanjel Corporation	-68,8%	Industry	1 831	19-06-14	Canada	Fixed	Sr Unsec.	Non Payment	B
NO0010713548	Solstad Offshore ASA	-17,8%	Oil and gas services	1 000	24-06-14	Norway	FRN	Sr Unsec.		B
NO0010714009	Havila Holding AS	1,4%	Oil and gas services	410	25-06-14	Norway	FRN	Sr Sec.		CCC
NO0010713217	Cegal Group AS	0,4%	Telecom/IT/Media	225	26-06-14	Norway	FRN	Sr Sec.		B
NO0010714124	Pioneer Public Properties III AS	6,4%	Real Estate	385	27-06-14	Norway	FRN	Sr Sec.		B
NO0010713738	Beerenberg Holdco II AS	0,3%	Oil and gas services	1 100	27-06-14	Norway	FRN	Sr Sec.		B
NO0010713779	Xcite Energy Resources PLC	-28,0%	Oil and gas E&P	856	30-06-14	Virgin Islands (British)	Fixed	Sr Sec.		CCC
NO0010713860	Norwegian Air Shuttle ASA	3,5%	Transportation	825	03-07-14	Norway	FRN	Sr Unsec.		B
NO0010714512	Exmar Netherlands BV	5,0%	Shipping	1 000	07-07-14	Netherlands	FRN	Sr Unsec.		B
NO0010714389	Polarcus Ltd	-64,3%	Oil and gas services	350	08-07-14	Cayman Islands	FRN	Sr Unsec.	Restructured	B
NO0010714538	Bonheur ASA	-8,6%	Oil and gas services	600	09-07-14	Norway	FRN	Sr Unsec.		B
NO0010714520	Bonheur ASA	-4,3%	Oil and gas services	900	09-07-14	Norway	FRN	Sr Unsec.		B
NO0010714561	Jacktel AS	0,5%	Oil and gas services	798	09-07-14	Norway	Fixed	Sr Sec.		B
NO0010714595	Crayon Group Holding AS	1,6%	Telecom/IT/Media	650	10-07-14	Norway	FRN	Sr Sec.		B
NO0010715188	Opus Offshore Ventures Pte Ltd	20,2%	Oil and gas services	556	18-07-14	Singapore	Fixed	Sr Sec.		

NO0010715212	Latina Offshore Holding Limited	5,5%	Oil and gas services	471	31-07-14	Bermuda	Fixed	Sr Sec.		B
NO0010714470	Weifa ASA	6,1%	Other	400	07-08-14	Norway	FRN	Sr Sec.		
NO0010717473	Prosafe SE	-20,5%	Oil and gas services	700	09-09-14	Cyprus	FRN	Sr Unsec.		BB
NO0010719503	Personalhuset AS	1,9%	Other	375	11-09-14	Norway	FRN	Sr Sec.		B
NO0010720238	Rem Offshore ASA	-43,6%	Oil and gas services	500	25-09-14	Norway	FRN	Sr Unsec.		B
NO0010720766	Borgestad ASA	8,7%	Real Estate	300	03-10-14	Norway	FRN	Sr Sec.		B
NO0010720790	Boa OCV AS	-21,4%	Oil and gas services	1 200	07-10-14	Norway	FRN	Sr Sec.		B
NO0010722028	Golden Close Maritime Corp Ltd	-44,5%	Oil and gas services	2 635	24-10-14	Bermuda	Fixed	Sr Sec.		B
NO0010722523	Neptuno Finance Ltd	5,3%	Oil and gas services	1 423	07-11-14	Hong Kong	Fixed	Sr Sec.		CCC
NO0010724370	Green Dragon Gas Ltd.	-11,6%	Oil and gas E&P	596	20-11-14	Cayman Islands	Fixed	Sr Sec.		
NO0010724313	Norwegian Air Shuttle ASA	5,8%	Transportation	225	21-11-14	Norway	FRN	Sr Sec.		B
NO0010724818	Oro Negro Impetus Pte. Ltd	-32,0%	Oil and gas services	1 240	04-12-14	Singapore	Fixed	Sr Sec.	Non Payment	B
NO0010729908	Interoil Exploration and Production ASA	-77,0%	Oil and gas E&P	268	28-01-15	Norway	Fixed	Sr Sec.		
NO0010732076	Seabird Exploration PLC	-76,6%	Oil and gas services	188	03-03-15	Cyprus	Fixed	Sr Sec.		CCC
NO0010732811	VIZRT GROUP AS	9,4%	Telecom/IT/Media	924	13-03-15	Norway	FRN	Sr Sec.		B
NO0010733819	Stolt-Nielsen Limited	-0,5%	Shipping	1 100	08-04-15	Bermuda	FRN	Sr Unsec.		BB
NO0010734965	Ocean Yield ASA	-6,2%	Shipping	1 000	29-04-15	Norway	FRN	Sr Unsec.		B
NO0010734999	Austevoll Seafood ASA	0,5%	Seafood	500	04-05-15	Norway	FRN	Sr Unsec.		BB
NO0010735731	Teekay LNG Partners L.P.	-7,2%	Shipping	1 000	19-05-15	Marshall Islands	FRN	Sr Unsec.		BB
NO0010736549	Norwegian Air Shuttle ASA	7,2%	Transportation	1 000	20-05-15	Norway	FRN	Sr Unsec.		B
NO0010736481	Golar LNG Partners LP	-6,6%	Shipping	1 130	22-05-15	Marshall Islands	FRN	Sr Unsec.		B
NO0010736382	Det Norske Oljeselskap ASA	-14,6%	Oil and gas E&P	2 327	27-05-15	Norway	Fixed	Sub.		B
NO0010737158	Aker ASA	-7,9%	Industry	1 000	29-05-15	Norway	FRN	Sr Unsec.		BB
NO0010736895	AB Stena Metall Finans	2,4%	Industry	458	29-05-15	Sweden	FRN	Sr Unsec.		BB
NO0010737174	Nelja Energia AS	7,4%	Industry	434	02-06-15	Estonia	FRN	Sr Unsec.		
NO0010737133	Color Group AS	-0,3%	Transportation	700	02-06-15	Norway	FRN	Sr Unsec.		B
NO0010739683	Höegh LNG Holdings Ltd.	-1,8%	Shipping	1 021	05-06-15	Bermuda	FRN	Sr Unsec.		B
NO0010740459	Goliath Offshore Holdings Pte. Ltd.	-96,5%	Oil and gas services	1 721	11-06-15	Singapore	Fixed	Sr Sec.	Non Payment	
NO0010740467	Goliath Offshore Holdings Pte. Ltd.	15,0%	Oil and gas services	339	11-06-15	Singapore	Fixed	Sup. Sr	Non Payment	
NO0010740111	BW Offshore Limited	-21,5%	Oil and gas services	900	16-06-15	Bermuda	FRN	Sr Unsec.		BB
NO0010740392	DNO ASA	-54,6%	Oil and gas E&P	3 098	18-06-15	Norway	Fixed	Sr Unsec.		CCC
NO0010741358	NBT AS	5,5%	Industry	223	30-06-15	Norway	Fixed	Sr Sec.		CCC
NO0010741598	NBT AS	8,7%	Industry	101	30-06-15	Norway	Fixed	Sr Sec.		CCC
NO0010741689	GripShip AS	7,9%	Seafood	210	13-07-15	Norway	FRN	Sr Sec.		B
NO0010741747	Digiplex Norway AS	2,6%	Telecom/IT/Media	575	17-07-15	Norway	FRN	Sr Sec.		BB
NO0010741895	Boa Offshore AS	-33,0%	Oil and gas services	150	17-07-15	Norway	FRN	Sub.		B
NO0010744246	NSA Bondco Limited	-76,9%	Oil and gas services	1 240	02-09-15	Netherlands	Fixed	Sr Sec.		
NO0010746852	LM Group Holding A/S	16,4%	Industry	475	08-10-15	Denmark	FRN	Sr Sec.		B
NO0010747280	Merkantilbygg Holding AS	7,2%	Real Estate	200	12-10-15	Norway	Fixed	Sr Sec.		
NO0010752298	Scatec Solar ASA	5,8%	Industry	500	19-11-15	Norway	FRN	Sr Unsec.		B
NO0010751332	DBB Jack-Up Services A/S	-2,9%	Industry	919	26-11-15	Denmark	FRN	Sr Sec.		B
NO0010752710	AB Stena Metall Finans	5,2%	Industry	994	27-11-15	Sweden	FRN	Sr Unsec.		BB
NO0010753262	Aurora LPG Holding ASA	6,5%	Shipping	200	09-12-15	Norway	FRN	Sr Unsec.		B
NO0010753437	Norwegian Air Shuttle ASA	16,1%	Transportation	1 192	11-12-15	Norway	Fixed	Sr Unsec.		B
NO0010754062	B121 Holding AS	8,0%	Real Estate	390	14-12-15	Norway	Fixed	Sr Sec.		BB
NO0010754534	Bulk Industrier AS	10,6%	Real Estate	200	18-12-15	Norway	FRN	Sr Sec.		B
NO0010754690	Sjølivet Holding AS	6,1%	Real Estate	100	22-12-15	Norway	Fixed	Sr Sec.		

Appendix 4

ISIN	Short Name	Reason
NO0010266620	Thule Drilling AS 05/07 10,00%	Insufficient Data
NO0010273808	Neptune Marine Inv AS 05/09 11,00% USD C	Insufficient Data
NO0010273212	Sinvest ASA 05/09 9,50%	Insufficient Data
NO0010277650	USD Eastern Drilling ASA 05/13	Insufficient Data
NO0010279631	Sinvest ASA 05/09 FRN	Insufficient Data
NO0010282726	Aker Invest II KS 05/10 8,00%	Insufficient Data
NO0010299126	DDI Holding AS 06/12 9,30% USD C	Insufficient Data
NO0010297955	Deep Sea Supply ASA 06/11 FRN Call	Insufficient Data
NO0010302680	(Inactive) Nextgentel Hold ASA 06/10 FRN	Inactive
NO0010305154	DDI Holding AS 06/12 10,00% C	Insufficient Data
NO0010305162	DDI Holding AS 06/12 FRN USD C	Insufficient Data
NO0010309149	(Inactive) Ocean Rig ASA 06/11 FRN USD C	Inactive
NO0010310238	DDI Holding AS 06/12 9,30% USD C	Insufficient Data
NO0010317829	Vmetro ASA 06/09 FRN	Insufficient Data
NO0010320955	Tandberg Data ASA 06/08 9,75% USD C	Insufficient Data
NO0010331895	Neptune Marine Invest AS 06/09 FRN USD C	Insufficient Data
NO0010332943	APL ASA 06/11 FRN Call	Insufficient Data
NO0010332000	Northern Logistic Proper ASA 06/11 FRN C	Insufficient Data
NO0010334261	(Inactive) Viking Drilli ASA 06/11 FRN C	Inactive
NO0010334253	(Inactive) Viking Dr ASA 06/11 FRN USD C	Inactive
NO0010345598	Deep Sea Bergen In AS 06/11 11,00% USD C	Insufficient Data
NO0010342983	Sevan Drilling AS 06/12 FRN C	Insufficient Data
NO0010344815	(Inactive) MPU Offshore ASA 06/11 FRN C	Inactive
NO0010346810	(Inactive) Standa ASA 07/11 10,50% USD C	Inactive
NO0010354061	Ability Drilling ASA 07/12 FRN C	Insufficient Data
NO0010353683	(Inactive) Rowan D AS 07/13 11,25% USD C	Inactive
NO0010356009	(Inactive) Rowan D AS 07/13 11,25% USD C	Inactive
NO0010362080	Solstad Rederi II AS 07/11 FRN P	Insufficient Data
NO0010364250	Cecon 1 AS and Cecon AS 07/16 ADJ USD C	Insufficient Data
NO0010367634	Seametric Interna AS 07/12 11,625% USD C	Insufficient Data
NO0010369556	(Inactive) Nordic He ASA 07/12 FRN USD C	Inactive
NO0010373400	(Inactive) Proserv Group AS 07/10 FRN	Inactive
NO0010378045	(Inactive) Rowan D AS 07/13 11,25% USD C	Inactive
NO0010404015	(Inactive) Krillsea Group AS 07/12 FRN C	Inactive
NO0010403488	(Inactive) Viking Drilli ASA 07/12 FRN C	Inactive
NO0010403496	(Inactive) Viking ASA 07/12 15,00% USD C	Inactive
NO0010417017	Estatia Resort Property AS 08/11 FRN C	Insufficient Data
NO0010428352	(Inactive) Bergen Oilfiel AS 08/10 FRN C	Inactive
NO0010446503	Front Explorat AS 08/12 11,00% USD C SUB	Insufficient Data
NO0010551609	Lotos Explorati AS 09/17 15,37372% USD C	Insufficient Data
NO0010604705	Cecon 1 and Cecon 2 AS 11/16 8,00% USD C	Insufficient Data
NO0010622525	EOAL Cyprus Holdings 11/15 15,00% USD C	Insufficient Data
NO0010627938	EMS Seven SEAS AS 11/14 12,00% C	Insufficient Data
NO0010654544	Villa Organic AS 12/15 FRN P/C	Insufficient Data
NO0010662323	Oro Negro Drilli 12/15 16,00% USD STEP C	Insufficient Data
NO0010662315	Oro Negro Dri 12/15 10,56842% USD STEP C	Insufficient Data
NO0010665367	Otium AS 12/17 FRN STEP C	Insufficient Data
NO0010672298	Cecon Shipping 2 AS 13/14 0,00% USD C	Insufficient Data
NO0010701097	Oro Negro Drilling Pte. 14/19 7,50% USD	Insufficient Data
NO0010701071	Oro Negro Drilling Pte. 14/19 7,50% USD	Insufficient Data
NO0010710551	Wema Group Holding AS 14/17 FRN C	Insufficient Data
NO0010726086	Cecon Shipping 3 AS 14/16 20,00% USD C	Insufficient Data
NO0010733827	Genel Energy Finan Plc 15/19 7,50% USD C	Exchanged after 8 days