



Norwegian Petroleum Taxation

Estimating the value of allowing companies to pledge tax allowances from investments on the Norwegian Continental Shelf

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Executive Summary

As the Norwegian continental shelf is maturing, the interest from major international companies is falling. New and smaller players that will have to take over do not have the same credit ratings as the majors, and will thus have to finance their investment activities at a higher interest rate. Additionally, the petroleum industry is characterized by large up-front investments, which forces new players to carry losses forward until they have production on stream. This reduces the value of a project, as the interest rate charged by creditors is much higher than the loss carry forward rate given by the state. Allowing companies to pledge their tax balance will reduce the interest cost, and lower the barriers of entry.

Based on the regulations in the Petroleum Tax Act, the cash flow of investments was modeled. Historic numbers and projections of future investments were used to find an applicable investment level. It was assumed that companies could finance the majority of the tax value of investments with debt. Applying an estimate for the industry's weighted average interest rate provided the interest cost per annum. The value of allowing companies to pledge tax allowances was estimated by adjusting the interest rate to a level representative for secured debt.

The model gave an annual interest cost of NOK 7.30 bn. before tax. Tax deductions of interest costs were calculated to be approximately 60 percent, giving an after tax cost of NOK 2.82 bn. After adjusting the interest rate, the interest cost was reduced by NOK 860 mm. This is a reduction of 11.77 percent, with the state receiving NOK 528 mm. and the industry NOK 332 mm. after tax.

The Norwegian state is already by law obliged to pay out the remaining depreciation of investments, even if extractive business is ceased. The state would receive the majority of the reduced interest costs through increased tax revenue. More important, cheaper funding costs can help ensure that petroleum activity in Norway is continued in the years to come. Reducing the barriers of entry to the continental shelf could lead to less reliable developments and impose a greater risk for the state, which has to be weighed against the lower interest costs.

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1. Introduction

Since the Norwegian offshore production of petroleum started in the early 1970s, values of more than NOK 13 000 bn. in today's value has been added to Norway's GDP. In 2016 it was produced 231 million Sm³ oil equivalents in Norway, with an export value of NOK 350 bn. To take part in such a productive business, companies must however put up with high up-front exploration costs where the success-rates are limited, large up-front investments, a long period of extraction and high risks in the price of oil and gas.

Recent events have challenged the outlook for the Norwegian petroleum industry. After an adjustment of the Petroleum Tax act (PTA) in 2013, reducing the uplift from 30 percent to 22 percent¹, the attractiveness of future investments was reduced. Especially marginally profitable fields were affected, making companies postpone development projects². Additionally, any amendment of the PTA increases the level of uncertainty associated with tax allowances and investments. The dramatic fall in oil prices at the end of 2014 had the same negative effect on projects, since the price fell below the break-even-price for many fields.

The continued development of petroleum resources also has implications for the features of the petroleum industry. As the Norwegian continental shelf (NCS) matures, new discoveries will be smaller in size and value. Large international companies require not only that a project is profitable but also that it is of a considerable size. With the decreasing probability of making large discoveries, so is the interest from the major companies. Both Shell and ExxonMobil are no longer participating in licensing rounds for rights to explore new fields. To ensure future development of the NCS, demands for changes in tax policy for investments are raised (Løvås, 2017). Both on the British continental shelf and in the Gulf of Mexico, smaller companies are considerably more represented in development and operating fields. Also, there are far more small petroleum fields that are active in these areas.

One approach to assure sustained petroleum activity is to lower the financial costs. Today, companies operating on the NCS can only pledge the tax allowances from exploration costs,

¹ Uplift currently amounts to 21.6 percent of investments, see section 3.1.3.

² See Helgeson (2013a, 2013b)

but not from the substantially larger investment costs. When lending capital, a secured loan can be given at much more favorable terms compared to unsecured loans. With the petroleum tax at 78 percent, the government will refund 78 percent of the investments made on the NCS through tax allowances (uplift comes in addition). If the legislation was changed, so that it was allowed to pledge the tax value of investments, companies could finance their projects much cheaper. As a consequence, this would increase the value of a marginally profitable project, which can lead to more activity and a greater income to the state.

After the change in tax policy regarding exploration costs in 2002³ there was a significant increase in companies on the NCS and the number of exploration wells drilled. Most of the new companies participating in petroleum activities were categorized as either small or medium sized in regards to market value (see figure 1.1). Among the operators with fields on stream today however, it is major companies who dominate. The six majors only made up 13 percent of the companies on the NCS in 2016. Still, all of them were among the 15 operators. The primary reason major companies dominate among operators is that the Norwegian government makes extensive requirements to resources and personnel in order to grant operatorship (NPD, 2006). Additionally, it requires a large amount of capital to finance

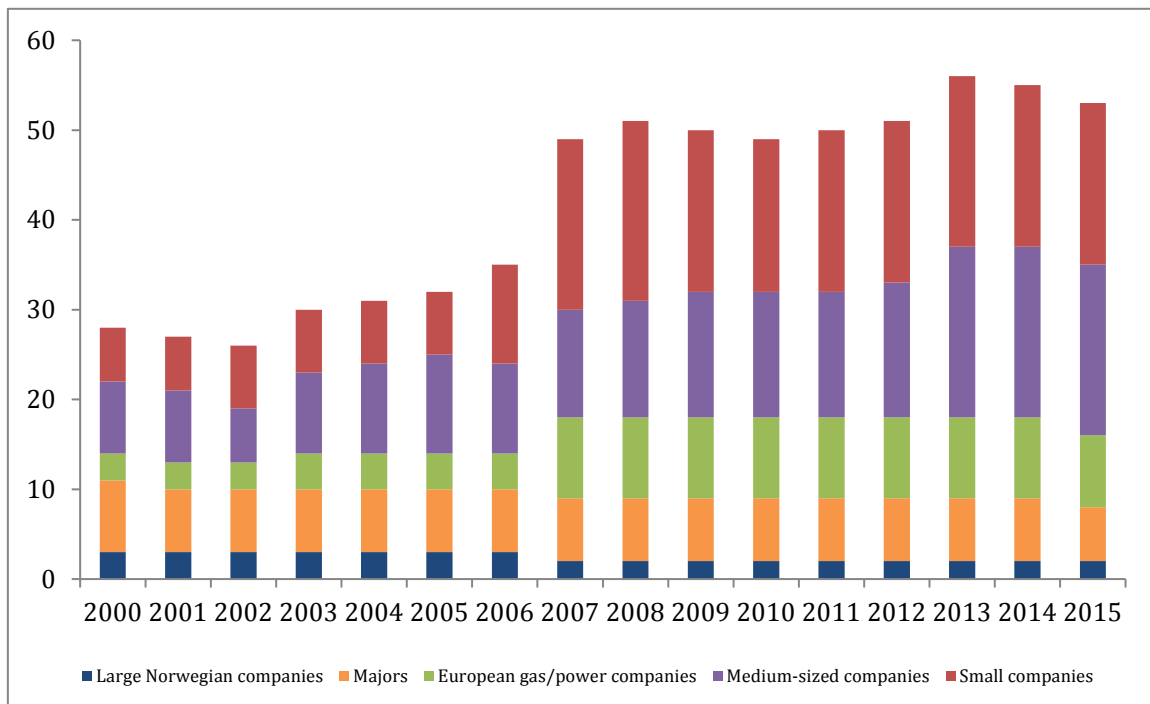


Figure 1.1: Companies on the NCS, categorized by market value. (Source: NPD)

³ See section 3.3.1

the development of a petroleum field.

A significant difference between major multinationals and smaller companies is their cost of capital. As smaller companies tend to bear greater risk, they are charged a higher risk premium when borrowing capital (Brigham & Smith, 1967). Higher risk premium increases the financial costs and makes it more challenging for smaller companies to invest. When company size is a barrier to entry and large companies are less interested in participating, a change in policy is warranted. Making it possible to pledge the tax balance will decrease the perceived risk, thereby reducing the risk premium and thus the difference in cost of capital between small and large companies.

Another differentiating factor is that companies starting operations on the NCS may not have enough income to make deductions against, and have to carry the tax balance forward for several years. As the interest rate charged by banks is higher than the rate for loss carry forward, the financing cost is greater for companies not in a tax position compared to companies in tax position. Allowing to pledge the tax balance will make it less expensive to carry losses forward and thus make it more attractive for new companies to invest.

From the government's perspective the proposed change in policy will give an increase in tax revenue. Reduced financial costs will increase the petroleum companies' tax base, from which the government will receive approximately 60 percent⁴ of the added value.

The motivation for the measure presented is essentially to reduce financial costs for the petroleum industry as well as the difference between companies in and out of tax position.

Chapter 2 will present relevant theory about interest rates. In chapter 3 Norwegian petroleum taxation is described and discussed. Chapter 4 presents how petroleum companies finance their activities. Chapter 5 explains the model used to calculate the financial costs. Chapter 6 uses the model to analyze the interest costs and the value of pledging. In chapter 7 the measure is viewed from the state's perspective. Chapter 8 concludes.

⁴ Financial costs are not subject to a full 78 % write off. See section 3.1.4.

2. Theory

2.1 Interest rate

The concept of interest rate can in its simplest form be explained by the fact that lending money must be rewarded. Hence, interest can be called the price of money (Fisher, 1930). The amount returned tomorrow must exceed the amount lent today for the creditor to be satisfied. How high the rate of interest is will depend the type of loan, supply & demand, inflation and government policy. For each type of loan, the interest rate will ultimately be contingent on the risk, i.e. the likelihood of the loan not being repaid as expected. Naturally, higher risk leads to a higher rate of interest.

In this thesis the relevant factor for different rates of interest is risk⁵. A change in policy as suggested should reduce the perceived risk with financing the tax balance accrued from investing on the NCS. The rate of interest can be split into two components, a risk-free rate plus a risk premium, similar to the Capital Asset Pricing Model (CAPM) (Sharpe, 1970). The loan is regarded as an asset for the lender and the expected return ($E(R_i)$) of the asset can be described by the following equation, where r_f is the risk-free rate and rp is the risk premium:

$$E(R_i) = r_f + rp \quad (2.1)$$

2.1.1 Risk-free interest rate

A risk-free rate is defined as the rate of return on an investment with no risk of financial loss (Investopedia, 2017). However, the term ‘risk-free’ can have different interpretations and there is no consensus measurement of it (Kemp, 2009). One might derive a risk-free rate by applying regression techniques to a variety of instruments carrying different levels of credit risk. Because the different sources of risk are often co-integrated, disaggregating them is not appropriate. Instead, yields on debt issued by the government of the relevant currency, Treasury Bills or Government bonds, are commonly used as proxy for risk-free rates. The

⁵ A change in policy can affect the investment level and thus also change the demand for loan. It is however not in the scope of this thesis do estimate how supply and demand affect the rate of interest.

default risk should be eliminated when the government in question can issue its own currency.

When calculating the interest rate for the carry forward of deficits, the Norwegian Tax Administration uses yields on 12-month Treasury bills issued by the Norwegian central bank to determine the risk-free rate.

Debt issued by governments is not necessarily free of risk (Kemp, 2009). Currencies can devalue to zero (e.g. after a revolution or if the county loses a war) and countries do not always honor obligations in their own currencies (e.g. Russia in the 1990s). Since such risks are intrinsic to the currency itself, Kemp argues that yields on government debt is a natural way of defining ‘risk-free,’ as long as ‘risk-free’ is understood to be as free as possible from risk of default. However, even identical government bonds vary in yield, depending on the currency they are issued in. The variation is caused by differences in expected inflation (Damodaran, 2008). High inflation currencies will have a higher risk-free rate than low inflation currencies. Uncertainty about future inflation levels will affect the interest rate but must be considered a risk premium (explained in section 2.1.2).

A common misconception is to regard benchmark rates such as the London Interbank Offered Rate (LIBOR) and the Norway Interbank Offered Rate (NIBOR) as risk-free rates. These rates serve as a reference rate for many debt instruments. For example, most of the companies on the NCS pay interest based on NIBOR plus a given margin to their creditors (Equation 2.2). The interbank offered rates serve as an indicator for the rate at which banks offer short-term unsecured loans to other banks. As they are unsecured, they are not free of risk and therefore priced accordingly.

$$\text{Interest rate} = \text{NIBOR} + \text{margin} \quad (2.2)$$

Essential in this thesis is to measure the value of reducing the margin that petroleum companies pay to their creditors. Combining equations (2.1) and (2.2) gives an expression for the margin (2.3), which is the risk premium less the difference between the NIBOR and the risk-free rate.

$$\text{Margin} = rp - (\text{NIBOR} - r_f) \quad (2.3)$$

As the difference between NIBOR and the risk-free rate is relatively small, 0.83 percent to 0.43 percent as of June 8, 2017, the margin will comprise most of the risk premium. Next different sources of risk premium are described.

2.1.2 Risk premium

When a loan is not regarded as completely risk-free, the issuer demands a compensation for taking on risk. This is known as the risk premium. The primary reason that companies are charged a higher rate of interest than the risk-free rate is due to *credit risk*, which is the likelihood of the company defaulting on its debt (Basel Committee on Banking Supervision, 2000). Evaluating a company's ability to pay back debt is done by credit rating agencies such as Standard & Poor's or Moody's. Credit ratings can address bonds issued by the company or the company itself. Based on these ratings creditors will adjust the rate of interest they charge.

In addition, companies operating on the NCS are subject to *foreign exchange risk*. When the petroleum is traded in U.S. dollar and the annual accounts are reported in NOK, the uncertainty in the exchange rate is a risk factor. To illustrate, a German government bond is considered to be risk-free, but since it is denominated in Euros it is not risk-free for an investor holding NOK. Companies trading across borders and currencies bear more risk compared to those only operating within a single currency, resulting in a higher risk premium.

As mentioned above, uncertainty about future inflation is a risk factor. Although the inflation rate has remained relatively low for several years, an economic crisis can accelerate the inflation overnight. To protect themselves against inflation risk, creditors will add a premium as compensation, which increases in times of economic uncertainty.

Time is also a noteworthy risk factor. Characteristic for the petroleum industry is that it takes several years until a project becomes profitable. This means that loans financing the investments are held over a long period of time. With more time for adversity to hit the borrower, a longer maturity on the loan increases the credit risk. Inflation has a greater negative effect on the principal for long-term loans compared to short-term loans.

2.1.3 Collateral

To reduce the credit risk associated with a loan, debt can be secured by collateral. The borrower pledges assets to the lender as a guarantee for the loan. If the borrower defaults on the loan, the bank seizes control over the pledged asset.

A borrower may pledge various types of property as collateral, physical assets or trade receivables. The most common use of collateral is with a mortgage. The property that is bought is pledged as a security for the bank. In the case of default, the house may be liquidated and the proceeds are used to pay off the debtor's obligations against the bank.

The relevant asset for this thesis is a company's tax balance. The tax balance represents money owed to the company by the state, in the form of tax allowances. In general, companies are not allowed to pledge or transfer claims on tax allowances (Sktbl. § 10-1 (2)). In 2007 there was made an exception, where companies were given access to pledge and transfer tax allowances related to exploration activities on the NCS (Sktbl. § 10-1 (3)). With regards to loans, this meant that a bank now could seize the tax balance if the associated loan defaulted. Consequently, the credit risk was reduced and companies benefited in the form of paying lower risk premiums.

All else equal, pledging collateral decreases the risk of a given loan, since it gives the lender a specific claim on an asset without diminishing its general claim against the borrower (Berger & Udell, 1990). However, Berger & Udell find that secured loans have on average riskier borrowers compared to unsecured ones. Secondly their data suggest that the value of the recourse against the collateral does not fully compensate for the higher risk of secured borrowers. As the purpose of the amendment suggested in this thesis is to encourage smaller companies to operate on the NCS, the increased risk associated with smaller companies needs to be taken into account.

3. Norwegian Petroleum Taxation

Because of the extraordinary returns from extracting petroleum resources, the PTA was introduced to capture the resource rent. In addition to the ordinary corporate tax (CT) rate of 24 percent, petroleum revenues are subject to an additional 54 percent special tax (SPT). This gives a marginal tax rate of 78 percent.

The petroleum taxation system is designed to be neutral to investments offshore. An investment that is profitable in the onshore tax system should also be profitable with the offshore tax system. Vice versa, an investment not profitable onshore must not be made profitable by petroleum taxation. Furthermore, a company's investment decisions should not depend on their tax position. The neutrality features of the Norwegian petroleum system have been debated since its introduction, with the state and the industry on each side⁶. A look at this discussion is found at the end of this chapter. First the relevant parts of the petroleum tax system will be presented, before the discussion of neutrality features and a comparison with the UK petroleum tax system is made.

3.1 Petroleum tax act

Introduced in 1975, the PTA covers all petroleum related activities on the NCS. Its purpose is to secure Norway a fair share of the resource rent that is generated from extracting petroleum. The PTA covers petroleum activities on the NCS. Income generated from sale of petroleum extracted on the NCS, processing of petroleum and pipeline transportation is included in the offshore tax base subject to 78 percent tax. Income from non-petroleum related activities within the geographical area of the PTA is regarded as ordinary onshore income.

In general, only the net profits of a company is taxable. Royalties are no longer used in the Norwegian petroleum tax system. Consolidation between fields is allowed, which means that losses from one field can be written off against the company's income from another field. Allowing for cross-field allowances differs from a ring-fence system (used in the UK), where fields are taxed separately. Here losses from one field cannot be written off against

⁶ See (NOU 2000:18), (Sørli & Reinskou, 2012), (Harbo, 2013)

profits of another field, unless the first field is abandoned. This increases the risk of investing in a new field as it takes several years until revenues exceed the investment.

Sale of crude oil and gas is obviously a major income source for companies on the NCS. As the petroleum is often sold to affiliated companies, the government has decided to implement a norm price to assure revenues are taxed on the basis of market prices. The Petroleum Price Council is responsible for setting the norm price, and the system differentiates between different qualities of the petroleum. The norm price is applied to both internal and external sales.

Tax Calculation

Operating income (norm prices)
- Operating expenses
- Depreciation for investments (Linear over 6 years)
- Exploration costs
- Environmental taxes and area fees
- (+) Net financial costs (income)
= Corporate tax base (24 %)
+ (-) Financial costs (income) allocated onshore
- Uplift
= Special tax base (54 %)

Table 3.1: Tax Calculation

(Source: The Ministry of Petroleum and Energy)

The entire NCS is divided into blocks, and licenses including one or more blocks are granted to companies through annual licensing rounds. A production license is normally awarded to a group of companies, with one company appointed as operator. The operator is in charge of the day-to-day management of the petroleum activity. Including several companies in a partnership for a license can give smaller companies experience and ensures optimal resource allocation (Norwegian Petroleum, 2017). The licenses are awarded free of charge (except a minor handling fee) to ensure that a license is given to the company or group of companies that best meets the state's requirements, as opposed to the winner of a bidding war. Once awarded, licensees have to pay an annual fee for each square kilometer of the acreage covered by a production license. In addition, companies on the NCS are levied a tax on CO₂ emissions and direct emissions of natural gas. Environmental taxes and area fees amounted to NOK 6.6 bn. in 2016.

Tax from operations on the NCS is to be paid in six installments, starting August 1 in the income year and then bi-monthly until the last payment June 1 the following year. The first three installments are paid on a best estimate basis, while the correct tax will be paid in the last two or three installments when the details of the annual accounts are known.

3.1.1 Exploration costs

Costs incurred with the purpose of discovering and locating petroleum resources are considered as exploration costs. These costs include, but are not limited to, geological surveys, acquisition and shooting of seismic, drilling costs and all administration cost related to these activities. Exploration costs are considered operating expenses (OPEX) and may be subject to immediate expense (PTA, § 3c).

Drilling of exploratory wells, which represent the major exploration cost, is regarded as exploratory costs as long as they are related to searching for and determining the existence of petroleum (so called wildcat wells). Determining if the reservoir is economically feasible to develop, drilling of appraisal wells, are also regarded as exploration costs until development has been decided. Appraisal wells drilled in the development phase are considered as development costs and must be capitalized. If a company acquires depreciable assets such as drilling rigs for use in exploration, this will have to follow the capitalization and depreciation rules in the General Tax Act (GTA).

After a low annual figure for exploration wells in the late 1990s and in the beginning of the 2000s, the Norwegian government looked to encourage more exploration (NPD, 2016, p. 5). The reimbursement system for exploration costs, effective January 1, 2005, was introduced to reduce the barriers of entry to the NCS. A company that is not in a tax position is entitled to an immediate refund of the tax value (78 %) of the exploration costs, with the exception of financial costs. The refund will be disbursed as a part of the ordinary tax settlement the following year (Samuelsen, 2011). The refund is limited to the tax value of the net tax losses and it will naturally have to be taken out of the loss carry forward to prevent a double deduction.

The reimbursement system takes away any difference between being in a tax paying position and not. The value of the tax allowance is not distorted by any differences between the loss

carry forward rate⁷ and the company's discount rate. As it can take over 10 years from a discovery until the field is put in production, it can be financial challenging for a new entrant to carry losses forward this many years until they are in a tax position and can benefit from tax allowances. With immediate reimbursement, this is no longer an issue.

Equally important for lowering the barriers of entry, was permitting companies to pledge or transfer the tax refund. Even with the reimbursement system, companies need to finance the tax value of the exploration costs until it is refunded. For a small or medium sized company, such a large loan would only be offered with a substantial risk premium given the old regulation. Now companies can finance up to 78 percent of the exploration cost at a much lower interest rate.

Figure 3.1 shows an increase in both applicants in licensing rounds and exploration wells spudded after 2005, with most of the new entrants being small and mid-sized companies. Clearly the reimbursement system lowered the barriers of entry and made it more attractive for new players by reducing the investment risk.

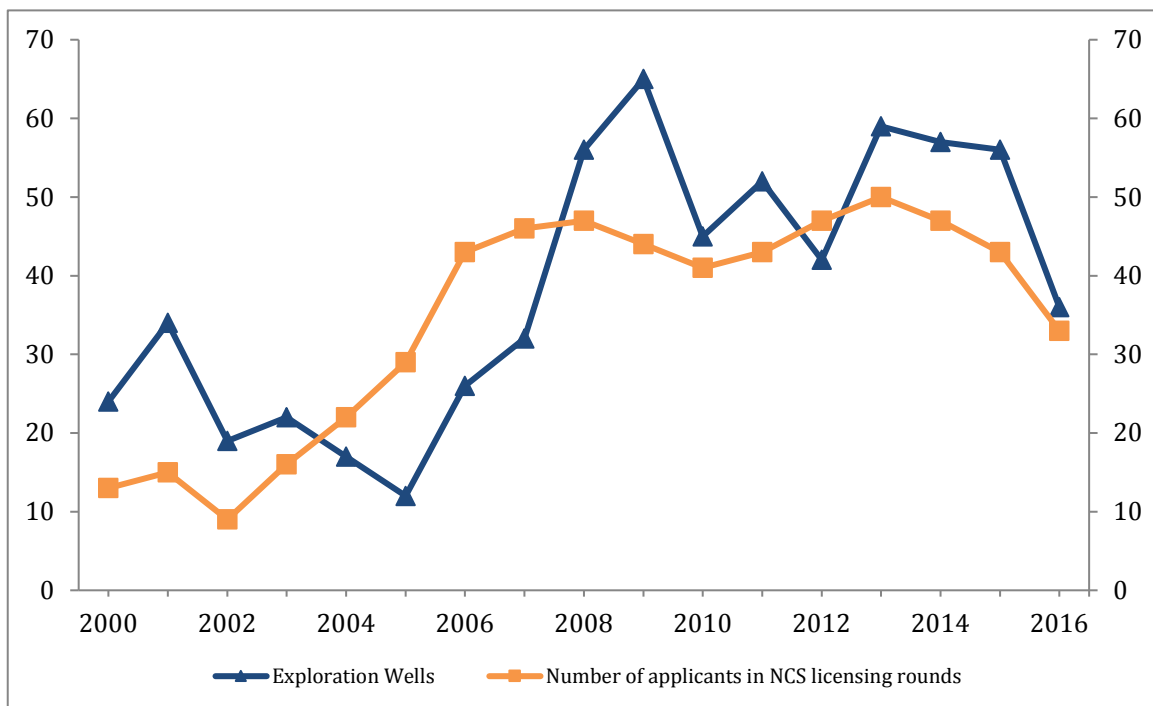


Figure 3.1: Exploration activity. (Source: NPD)

⁷ See section 3.1.5 about loss carry forward

3.1.2 Capital Expenditures

Investments in capital expenditures (CAPEX) are regarded as all costs incurred for development and installation of offshore production facilities, including pipelines. CAPEX are capitalized and depreciated linearly over 6 years, i.e. 1/6 of the accumulated costs each year (PTA §3b). Exemptions are installations in Finnmark and some municipalities in Troms, which can be depreciated over just 3 years. Also, if expected lifetime of an asset is less than 3 years, the costs can be expensed.

As opposed to the GTA, where depreciation starts when the asset is operational, the PTA allows for depreciation the same year the investment made (PTA §3b). For an installation with a three-year construction time, half of the investment made in year one is already depreciated when production starts.

3.1.3 Uplift

For the petroleum tax system to be neutral between investments on- or offshore, normal returns have to be shielded from the 54 percent special tax. Therefore, an additional deduction, called uplift, is allowed in the special tax base. The size of the uplift has changed over the last years as it is debatable what a normal return on investments are. Today the uplift amounts to 21.6 percent of the investments, given over a period of four years (i.e. 5.4 per year). This is down from 30 percent in 2013 and 22 percent in 2016.

Both the depreciation and uplift are calculated based on a company's CAPEX. If the available uplift is larger than the net special tax basis (before uplift), unused uplift may be carried forward indefinitely with interest the same way as losses carry forward. Also, if a company ceases its operations on the NCS, the tax value of the unused uplift may be sold or be subject to a direct payout, similarly to any loss carry forward. However, if a production facility is closed down prior to the four-year uplift period is over, there will be no further uplift adjustment.

3.1.4 Financial costs

Financial costs are under the current legislation divided into two different categories; (1) interest cost and foreign exchange gains/losses related to interest bearing debts, and (2) all other financial items (PTA § 3d). The second category includes all costs of financial nature,

such as emission costs, bank costs, costs related to capital injections etc. Costs incurred with hedging foreign exchange risks on interest bearing loans or other payables are also regarded as “other financial items.” The first category is subject to an allocation between the offshore and onshore tax regime, while the second category will only be subject to the onshore tax regime. The deduction offshore is set equal to the share of financial costs that equals 50 percent of the ratio between the tax value of offshore assets at year-end and average interest-bearing debt through the fiscal year. Assuming no foreign exchange gains or losses, the allocation offshore can be expressed as:

$$\text{Interest costs deductible offshore} = \frac{\text{Net interest cost} * 50\% * \text{Tax value of offshore assets}}{\text{Average interest bearing debt}} \quad (3.1)$$

The remaining financial costs will consequently be allocated to the onshore tax base. If a company does not have sufficient income onshore, which may often be the case, the difference may be re-allocated as deductions in the offshore CT basis.

Interest cost can be expressed as the interest rate, r , multiplied with the average interest bearing debt, \overline{Debt} . Equation 3.2 shows how interest costs deductible offshore can be expressed by the interest rate and the tax value of offshore assets, and is independent of how much debt the assets are financed with. This gives an incentive to borrow less, since less debt would increase the deductions in percent of pre tax interest costs.

$$\text{Interest costs deductible offshore} = \frac{r * \overline{Debt} * 50\% * \text{Tax value}}{\overline{Debt}} = r * 50\% * \text{Tax value} \quad (3.2)$$

Regarding the 50 percent limitation in equation (3.1), it is worth noting that this is set discretionary and without theoretical backing (Samuelsen, 2011). Also, companies that operates offshore and do not have any activities onshore may still have a significant part of their financial costs allocated onshore. Especially companies with only exploration activities will have a minimal tax asset basis and therefore most of their financial costs are allocated onshore. The principle that financial income and costs should be taxed within the same regime as the respective investments does not hold for the current legislation.

3.1.5 Loss carry forward

Today, companies may carry forward their losses indefinitely and with interest. If the extractive business on the NCS is terminated, any remaining loss carry forward may be sold or be subject to a direct payout of the tax value from the state. The same rule also applies to

any unused uplift, as mentioned above. However, this was not the case earlier. For losses incurred prior to January 1, 2002, the loss carry forward was not given any interest and was without the opportunity of sale or direct payout. If a business activity was terminated, the loss carry forward of the business activity was lost even though the company as such was continued. This regulation imposed an unnecessary risk of not receiving all tax allowances, especially for smaller companies, thus increasing the cost of capital. For example, large abandonment and decommissioning costs at the end of production may not be deducted if the company does not have additional projects, i.e. income.

From 2002 the loss carry forward with interest was introduced, but it was not until January 1, 2006 companies were allowed to transfer, sell or receive a payout of the tax loss. The interest rate is set annually by the Ministry of Finance (PTA § 3c) and is calculated separately from losses in the corporate tax base. It is based on 12-month Treasury bills plus 0.5 percent and adjusted down with the corporate tax rate. The rate for 2016 was set January 30, 2017 to 0.8 percent:

$$0.8 \% = [(0.50 + 0.5) * (1 - 0.25)] \quad (3.3)$$

3.2 Neutrality features of Norwegian petroleum tax system

The Norwegian petroleum tax system has been highly debated over whether or not it distorts investments on the NCS. A report published by Pöyry Management Consulting claimed that fast depreciation is a subsidy to the petroleum industry (Aarsnes & Lindgren, 2012). Professor at the University of Oslo, Diderik Lund (2012), replied that the tax system must be viewed as a whole and that depreciation and uplift are measures to counteract the negative effect of the higher tax rate.

According to Sørli & Reinskou (2012), the PTA theoretically gives investment incentive offshore and tax position is of no relevance for investment decisions. However, companies do not differentiate between risky and risk-free cash flows, which the government has based the PTA on, and may perceive the system as distortive towards companies in tax position. With a discount rate above 11.7 percent, they found the system to discourage investments offshore.

After the thesis by Sørli & Reinskou (2012) was published, the uplift has been reduced from 30 percent to 21.6 percent. The government deemed the uplift to be too generous and wanted petroleum companies to be more conscious of costs and secure a more balanced development of Norwegian economy (Harbo, 2013). This change was met with criticism by professors Osmundsen & Johnsen (2013) claiming that it would lead to loss of revenue for Norway and increase the uncertainty in the business. All though the investments on the NCS are much lower now than in 2013, it is difficult to measure the effect from the change in uplift because of the dramatic fall in oil prices.

3.3 Comparison with UK

In the United Kingdom petroleum tax system, companies are entitled to a 100 percent first-years allowance on capital expenditure, compared to the six-year linear depreciation in the Norwegian system. It is instead similar to the Norwegian treatment of exploration costs (except for the reimbursement system). As a result, a company in tax position will only need to finance the tax value of an investment for a single year, in contrast to six years in the Norwegian system.

Losses can be carried back against profits from the same field in preceding periods or carried forward against future profits from the same field. As an incentive for increased petroleum activity, a company can claim a so-called Ring-Fence Expenditure Supplement (RFES) if it accrues a loss in particular period and it is unable to offset it against any taxable profits. The RFES increases the carry forward loss by 10 percent to the next year. A company is entitled to this claim up to 10 years. New players in the industry are normally exposed to high capital costs because of uncertainty, and the RFES is a measure that can compensate for this.

A higher rate for the carry-forward of deficits in Norway will certainly be positive for companies in the way of increased net present value of an investment. The price of this measure is lower tax revenues for the state. If the government instead allows companies to pledge the tax value of their investments, the reduced finance costs will give a larger tax base and increase tax revenues.

4. Financing

To find the cost of financing petroleum activities it is necessary to look at how the petroleum companies raise their funds. Companies on the NCS vary in size and structure, and how they finance their activities is in large part dependent on this. Next, two common sources of debt are presented.

4.1 Loan from group company

In multinational companies, the parent company normally incurs the external debt and then extends loans to its subsidiaries to fund operations within the group. Because large companies tend to have ‘stronger equity support in their capital structures, more stable cash flows, and more certain investment opportunities,’ they are more likely to get unsecured financing (Hempel, Coleman, & Simonson, 1986). For example, Statoil ASA is a regular bond issuer with an Aa3 rating at Moody’s, and its outstanding loan to Statoil Petroleum AS was NOK 65 bn. at the end of 2015⁸.

Dealing with multinational companies and Norwegian companies that have activities both on and outside the NCS, Norwegian tax authorities has had a challenge when assessing intercompany transactions. With a 78 percent marginal tax rate on the NCS, companies will seek to minimize income and maximize costs in the special tax regime. The Norwegian transfer pricing legislation (Sktl § 13-1) is supplemented by the OECD guidelines, where the arms length principle is key. It states that if conditions in transactions between two companies differ from those that would be made between independent companies, any profit that would arise were it not for these conditions may be included in the profits of that company and taxed accordingly (OECD, 2003). Said in a different way, companies must set an interest rate for group companies equal to what they would charge a similar independent company.

⁸ As the owner of the group’s production licenses on the NCS, Statoil Petroleum AS is a co-obligor of debt securities of Statoil ASA.

4.2 Reserve-based lending

For independent companies or companies not fully owned by a parent company, reserve-based lending (RBL) facilities are the main means by which debt finance is raised. An RBL facility is a type of cash flow lending where the size of the facility is determined by the value of the borrower's petroleum reserves rather than the state of its accounts (Ross-McCall & Thomas, 2015). Reserve reports produced by an independent third-party engineer will estimate the net present value of proved developed reserves, taking into account assumptions about costs, discount rate and tax rate (SMBC, 2017). The reserves can be challenging to value accurately, especially with shifting commodity prices. Normally the lender requires an updated reserve report biannually to re-determine the borrowing base. The facility can either be a bilateral agreement with a bank or with a consortium of banks.

As an example, AkerBP has a RBL facility of USD 4 bn. issued from a consortium consisting of 20 banks. The loan carries an interest of LIBOR plus a margin of 2.75 percent. The borrowing base was USD 3.9 bn. as of December 31, 2016.

5. Model

The model used in this thesis is based upon how investments are treated financially, according to the PTA. By modeling the interest costs of the petroleum industry, the effects of reducing the credit margin can be estimated.

5.1 Modeling interest costs

In order to calculate the financing costs for the petroleum industry, the cash flow for investments made have to be modeled. The model will first illustrate the after tax cash flow for an investment, then the tax treatment of interest costs accrued from financing the investment. Since CAPEX are depreciated over a six-year period, cash flows for a given year include tax deductions from CAPEX five years back. Thus, the model will include the accumulated tax balance from all undepreciated tax allowances and the associated interest costs.

5.1.1 Tax treatment of investments

The tax treatment of CAPEX is presented using an arbitrarily chosen level of investment. In the next chapter a representative investment level will be applied. An illustration of the tax treatment is shown in table 5.1 and should be viewed together with the presentation for simplification purposes. The table assumes that the company investing is in full tax position and shows the cash flow of an investment over the six-year depreciation period.

Consider an investment of 100 in field developments for a company in full tax position in year 1. The depreciation after tax for the next six years is 13.0 p.a.⁹. Uplift of 5.4 percent only counts against the special tax base, giving an after tax value of 2.9 for years 1 through 4. After depreciation and uplift, the net after tax cash flow in year 1 is -84.1. In years 2 through 4 and 5 through 6, the company will receive 15.9 and 13.0 respectively in reduced tax costs. Accumulated cash flow for this investment is -10.3, which means approximately 90 percent off the investments is recovered through the tax system.

⁹ $(1 - (0.24 + 0.54)) * \frac{100}{6} = 13.0$

Cash flow (year)	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Total
CAPEX	-100						-100.0
Tax depreciation (CT + SPT)	13.0	13.0	13.0	13.0	13.0	13.0	78.0
Uplift (SPT)	2.9	2.9	2.9	2.9			11.7
Net after tax cash flow	-84.1	15.9	15.9	15.9	13.0	13.0	-10.3
<i>Accumulated cash flow</i>	-84.1	-68.2	-52.3	-36.3	-23.3	-10.3	
After tax value of undepr. tax balances OB	0.0	73.7	57.8	41.9	26.0	13.0	
Added in the period from new CAPEX	89.7	0.0	0.0	0.0	0.0	0.0	89.7
Monetized in the period through reduced tax	-15.9	-15.9	-15.9	-15.9	-13.0	-13.0	-89.7
After tax value of undepr. tax balances CB	73.7	57.8	41.9	26.0	13.0	0.0	
<i>Accumulated cash flow adjusted for undepr. tax balances</i>	-10.3	-10.3	-10.3	-10.3	-10.3	-10.3	

Table 5.1: Tax treatment of investments, example assuming full tax position

In year 1, when the investment is made, the company adds 89.7 to its tax balance. This is the after tax value of depreciation and uplift. During the year 15.9 is monetized through reduced tax, giving a closing balance of 73.7. This value can be considered as remaining funds to be recovered. If the closing balance is subtracted from the cash flow in year 1, -84.1, the adjusted cash flow is -10.3. This is the same value as the accumulated cash flow for the total investment described above. Consequently, if the company takes into consideration what it will get back from the government, it only has to expend approximately 10 percent of the investment from its own book. Table 5.1 shows how the tax balance is reduced each year as deductions are drawn, and the closing balance in year 6 is zero. The rationale behind this way of looking at the tax balance will be explained next.

5.1.2 Tax treatment of interest costs

Since the tax balance can be considered as money to be recovered (through reduced tax costs) from the government, this part of the investment can be financed by a loan that is repaid with each year's tax deductions. With an investment of 100 in year 1, 89.7 is added to the tax balance and can be drawn from a loan facility (In reality banks would not accept a loan-to-value (LTV) to be entirely 100 percent, but for simplicity reasons it is allowed in this illustration). As the company receives 15.9 in reduced tax during year 1, the loan is reduced correspondingly. For the next 5 years the loan will continue to be repaid along with the reduced taxes until the investment is completely depreciated and the loan is paid off.

To illustrate financial costs in the model, an arbitrary interest rate is set to 5 percent p.a. The interest cost for each year is calculated from the average of the opening and closing balance in the respective year. This gives a pre tax interest cost of 1.8 in the first year (see table 5.2). The amount of financial cost deductible against the offshore tax base is shown in equation

Cash flow (year)	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Total
CAPEX	-100						-100.0
Tax depreciation (CT + SPT)	13.0	13.0	13.0	13.0	13.0	13.0	78.0
Uplift (SPT)	2.9	2.9	2.9	2.9			11.7
Net after tax cash flow	-84.1	15.9	15.9	15.9	13.0	13.0	-10.3
<i>Accumulated cash flow</i>	-84.1	-68.2	-52.3	-36.3	-23.3	-10.3	
Loan facility to finance tax balances OB	0.0	73.7	57.8	41.9	26.0	13.0	212.5
Drawn	89.7	0.0	0.0	0.0	0.0	0.0	89.7
Repaid	-15.9	-15.9	-15.9	-15.9	-13.0	-13.0	-89.7
Loan facility to finance tax balances CB	73.7	57.8	41.9	26.0	13.0	0.0	212.5
<i>Pre tax interests (5 %)</i>	1.8	3.3	2.5	1.7	1.0	0.3	10.6
<i>Post tax interests</i>	0.8	1.6	1.2	0.8	0.5	0.2	5.3
<i>Tax deduction interest costs</i>	55 %	51 %	51 %	51 %	47 %	24 %	50 %

Table 5.2: Tax treatment of interest costs

3.1, with the remaining costs deducted against the onshore tax base. Post tax interest costs for the company in year 1 then becomes 0.8. Over the 6-year period, a loan of 89.7 accumulates 10.6 in interest before tax. After tax the interest cost is 5.3. Ultimately, the company receives approximately 50 percent tax deductions on interest costs if the tax balance is fully funded by a loan. As the equation is linear, any interest rate will give the same percent of deductions.

The following analysis aims to calculate the interest costs accrued from funding investments in the NCS for a single year. The after tax interests for year 1 in table 5.2 is to be 0.8 for an investment of 100. However, the model should take into account that investments from the previous five years still have undepreciated tax balances. Given that these investments also were financed with a loan equivalent to the recoverable tax balance, the associated interest cost has to be included in the model.

With an investment of 100, 89.7 is drawn from the loan facility and 15.9 is repaid during the first year. An equal investment from the previous year will thus have an opening balance of 73.3 the present year. Similarly, investments made two years ago will have an opening balance this year of 57.8 (equal to year 3 in table 5.2). Following this reasoning, a company investing 100 each year will in a given year have an opening balance on their loan facility equal the sum of all opening balances in table 5.2; 212.5. As 89.7 is both added from new CAPEX and monetized through reduced tax the same year, the closing balance of the loan facility in year 1 is also 212.5. Similar to the rightmost column in table 5.2, a 5 percent interest rate gives 10.6 in pre tax interest where approximately 50 percent can be deducted.

To summarize, the model used in the analysis is based on table 5.2. Estimates of CAPEX and interest rate will be applied. The total loan facility will have to be adjusted with an appropriate LTV.

5.2 Model assumptions

All companies are assumed to be in a tax paying position (for all years). This means that tax deductions are carried out the year they are given. In reality this does not hold as companies starting their operations have low, if any, sources of income. Also, changes in oil price can take a company making profits one year out of tax position the next. A company that is not in a tax paying position will have to carry losses forward. As companies' discount rate is higher than the loss carry forward rate, the present value of the tax balance will be less if it is carried forward. This increases the cost of financing. Assuming all companies are in a tax position therefore gives the best-case scenario of financing costs.

With the investment being made anytime during the year and tax being paid six times bi-monthly starting August 1, exact interest costs are difficult to measure. Assuming that investments are distributed uniformly over a year, estimates for interest costs are approximated to accrue from the average of opening and closing balances.

Various fees paid to the bank in direct connection with a loan, e.g. establishment fees or commitment fees, are included in the interest deducted against the SPT. In this model these types of costs are considered negligible and are not included. However, as the fees are labeled under interest costs in the annual accounts, they are indirectly included when the interest rate for the industry is estimated.

Tax regime has changed over the last years. In this model the rates are set to be the same for all years, CT of 24 %, SPT of 54 %, uplift of 21.6 % over four years and a six years straight line depreciation of CAPEX. Environmental taxes and area fees are not included.

Deductions are assumed to be made the same year as the investment, in accordance with the PTA. Also investment payments are assumed to be carried out that same year, not when the capitalized asset is delivered. The construction time for the capitalized asset is therefore irrelevant.

6. Analysis

In this part, the model presented in section 5.1.2 will be used to measure the interest cost associated to financing the tax value of investments on the NCS. First, a representative level of investment to be used in the model has to be determined whereupon the weighted average interest rate for the industry will be applied. After the interest cost is calculated, the risk premium that would be cut when pledging the tax balance can be valued.

6.1 Estimating the interest cost

6.1.1 Investments

It was invested NOK 135 bn. in CAPEX on the NCS in 2016 (NPD, 2017). This was a reduction of 16.7 percent from the year before and down 27.4 percent from the highest level in 2013, NOK 186 bn. The reduced investment activity is in part due to the completion of several large development projects, but also because new projects have been postponed following the dramatic fall in oil price in 2014. As a result of cost-cutting efforts and a slightly increasing oil price, new field developments are expected over the next few years, giving a moderate increase in investments starting from 2018.

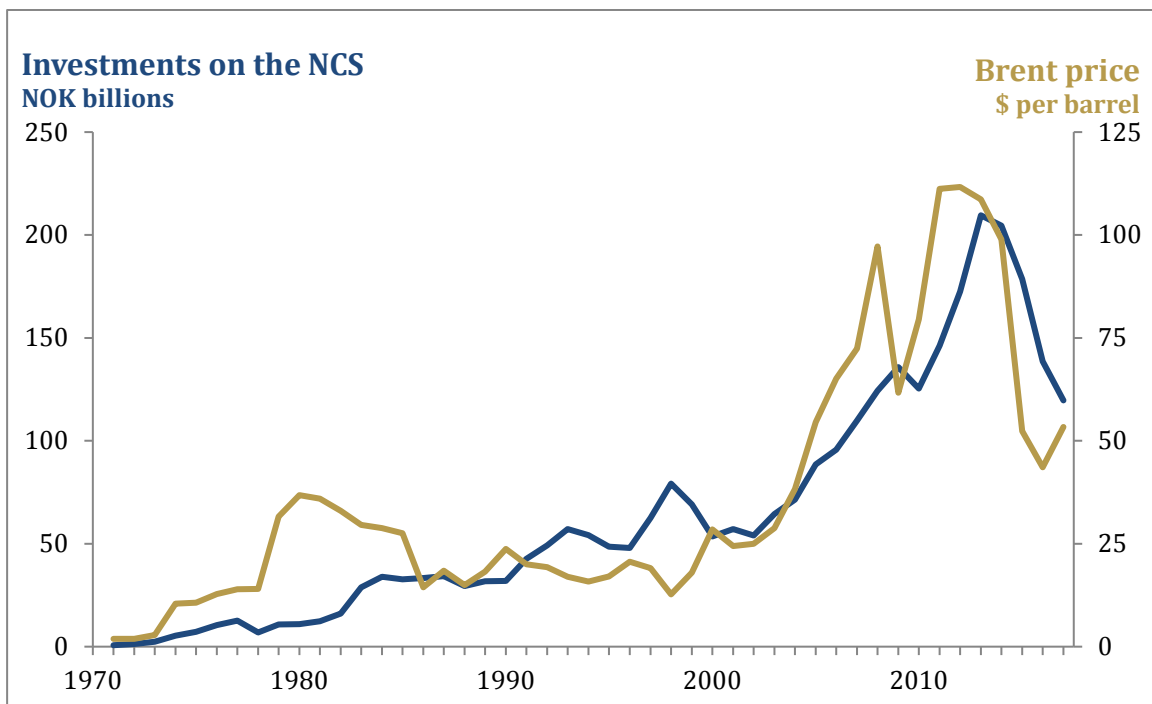


Figure 6.1: Investments and oil price (Source: Statistics Norway)

Figure 6.1 shows that the level of investment on the NCS is fluctuating and that it is moving close to the oil price. As the CAPEX from year to year also are sensitive to projects starting up or completing, an average investment level over a period of time need to be used to be representative. The average NPDs historic-and prognosis numbers from 2010 to 2021 is NOK 140 bn. per year. This will serve as the level of investment in the model.

Constant investments of NOK 140 bn. per year give the companies a tax balance of NOK 297 bn. This is the after tax value of undepreciated tax allowances. Exploration credit facilities normally fund 95 % of the tax value of exploration costs. An RBL will have a lower LTV since the tax credit is recovered over six years instead of one. Additionally, any remaining uplift will cease should the company close down operations before the four-year period of uplift is over. Assuming that companies can finance 85 %¹⁰ of the tax balance with debt, the total debt will be NOK 253 bn. It is from this principal the interest cost will be estimated from. Next, the interest rate to be used in the model will be determined.

6.1.2 Interest rate

The interest rate to be used in the model should reflect the interest cost of the petroleum industry in Norway as a whole. As the companies operating on the NCS vary in size and activities so does their debt and the interest rate they are charged. Large multinational companies can get cheap financing from their parent company, while small and new players carry a larger credit risk and consequently get more expensive financial agreements. Therefore, a weighted average of the companies' interest rate with respect to each company's debt will serve as the models interest rate. This is calculated by dividing the sum of all relevant interest costs over the sum of all debt from which the interest accrue. A company will often have several sources of debt. Where it is apparent, the cheapest source of debt is included in the calculations estimate.

To begin with, the annual accounts from 12 companies with production license were used in the calculation. In order to cover as much of the industry's debt as possible, companies with the most licenses were selected. The companies included were Petoro, Statoil, Aker BP, Lundin, Total, Wintershall, DEA, Eni, Point Resources, ExxonMobil, ConocoPhillips and

¹⁰ A conservative estimate that is slightly less than the depreciation part of the tax balance: $\frac{78}{89.3} = 87.3$.

Shell. In addition, four smaller licensees were used to find the interest cost for small players with exploration activities. These four were Faroe, Tullow, Lime and Atlantic. The most recent year with all companies' annual accounts published at The Brønnøysund Register Centre (BRC) at the time this thesis was written was 2015, and it is numbers from this year that will be used when calculating the interest rate to be used in the model.

The weighted average interest rate for the selected companies was 2.58 % in 2015 (see table 6.1). In comparison, the average 3-month NIBOR rate for 2015 was 1.29 %, resulting in a margin of 129 basis points (bps). As larger companies tend to have cheaper funding agreements, this primary calculation is assumed to underestimate the true interest rate for the petroleum industry in Norway. To find the interest rate that represents the whole industry, an estimate for the remaining companies with investments on the NCS needs to be included.

Evaluating 16 of the 46 companies operating on the NCS gives a good indication of the debt agreements that apply to the industry. Lundin (7th most licenses on the NCS) and Faroe (12th)

Company	Interest	Debt	Rate	CAPEX
<i>Petoro</i> ¹¹	(33 116)	(4 150 436)	(0.80 %)	28 000 000 000
Statoil	2 287 000 000	92 500 000 000	2.47 %	38 220 000 000
Aker BP	514 429 081	16 778 508 846	3.07 %	7 403 766 300
Lundin	685 839 731	16 972 730 000	4.04 %	8 412 000 000
Total	493 000 000	24 250 000 000	2.03 %	14 206 000 000
Wintershall	136 818 414	5 492 068 628	2.49 %	4 335 256 383
DEA	108 171 000	3 317 047 000	3.26 %	1 009 872 000
Eni	593 886 000	22 653 499 500	2.62 %	9 599 656 000
Point	22 576 000	528 583 000	4.27 %	121 304 000
ExxonMobil	84 000 000	4 015 500 000	2.09 %	5 400 000 000
ConocoPhillips	404 000 000	19 938 500 000	2.03 %	7 050 000 000
Shell	92 000 000	4 273 000 000	2.15 %	3 694 000 000
SUM	5 421 720 226	210 719 436 974	2.57 %	127 451 854 683
<i>Other</i>	2 308 142 763	57 120 464 332	4.04 %	34 334 645 317
SUM Industry	7 729 862 989	267 839 901 306	2.89 %	162 000 000 000
Margin			1.60 %	
<i>Total CAPEX on NCS 2015</i>				<i>162 000 000 000</i>
<i>Scaling ratio</i>				1.2711

Table 6.1: Interest rates for selected companies in 2015. (Source: BRC)

¹¹ State-owned Petoro were left out of the calculation of the average interest cost because its risk-free funding is not representative.

have the same interest rate on their RBL, NIBOR + 275 bps. Point (9th) and Lime (34th) both have a slightly lower credit margin than Faroe on their exploration credit facilities, 160 bps compared to 185 bps¹². These findings suggest that interest rates do not increase continuously as company size decreases, but rather reaches a ceiling. It is therefore assumed that the rest of the companies on the NCS can get funding at a margin similar to Lundin and Faroe, 275 bps above NIBOR. In the event that one or more companies cannot obtain such terms on their funding agreements, their impact on the overall average interest cost will be negligible due to their relatively small debt size.

The interest rate for the remaining companies, labeled ‘Other’ in table 6.1 and figure 6.2, needs a weight, i.e. size of debt, for it to be included in the calculation. The total CAPEX for the petroleum industry in 2015 was NOK 162 bn. Dividing the industry CAPEX over the CAPEX for the 12 companies gives a ratio that can be used to scale the debt for the group ‘Other’. Subtracting one from the scaling ratio and multiplying it with the total debt of the 12 companies gives an estimate of the size of debt. The group of remaining companies is estimated to have NOK 57 bn. in debt, with the debt of the industry totaling NOK 167 bn.

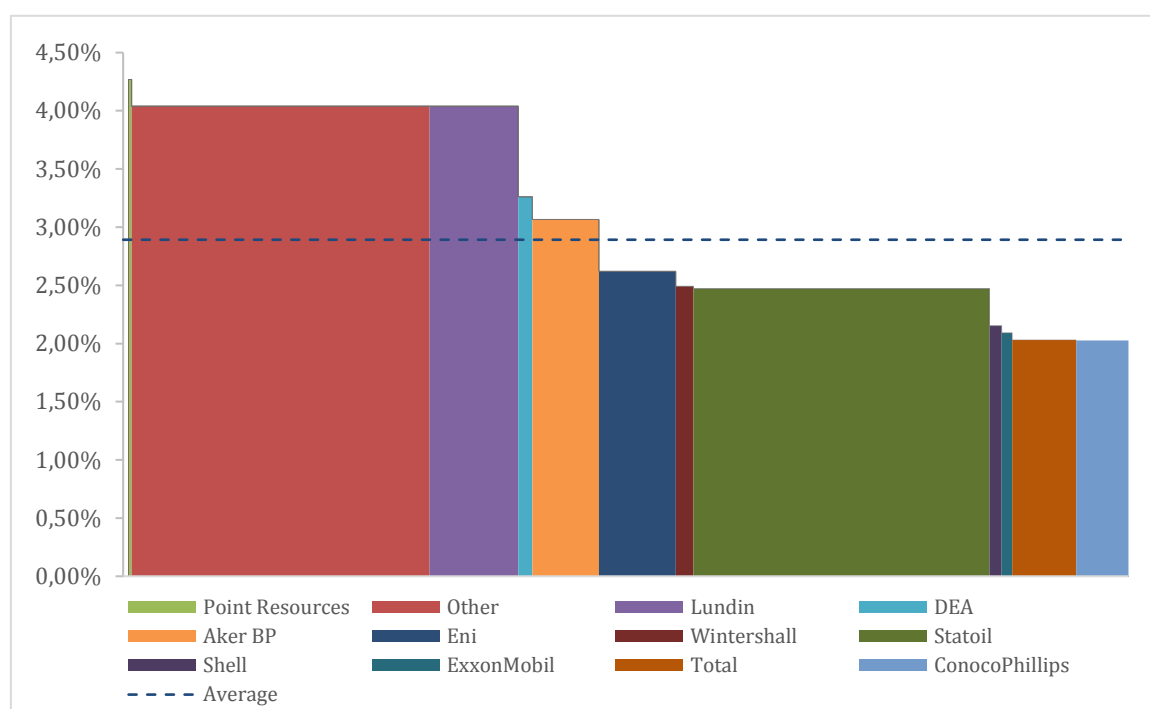


Figure 6.2: Interest rates and debt size. (Source BRC)

¹² Exploration credit facilities have lower rates because of the reimbursement system and pledging of exploration costs (see section 3.1.1)

Figure 6.2 is an illustration of table 6.1 and shows the interest rate for each selected company along with the size of their debt. Statoil is the single largest player, but does not have the lowest rate. The major international companies have slightly lower financial agreements with their parent company. To the left of Statoil the interest gradually increases until it reaches the ceiling of NIBOR + 275 bps. Point Resources' rate being above the ceiling is considered an error in observing their true interest cost. This presumption is supported by their interest rate for 2014, which is considerably lower (BRC, 2017).

6.1.3 Interest costs

Including the estimate for the rest of the industry in the calculation gives an average interest rate of 2.89, 160 bps above NIBOR. Applying this interest rate to the model, together with LTV and level of investment, the industry will incur 7.30 bn. in interest p.a. on NOK 253 bn. in debt.

Approximately 60 percent of the interest costs will be covered by the state through tax deductions, leaving the industry with a post tax interest cost of NOK 3.15 bn. p.a. The deduction is greater in percent compared to what was described in section 5.1.2 since the LTV is less than 100 percent. Interest cost deductible offshore are independent of LTV¹³, thus reducing the LTV increases the tax deductions relative to pre tax interest costs.

Investment p.a.	139.83	Input
Tax balance	297.14	Calculation
LTV	85.00 %	Input
Loan facility	252.57	Calculation
Interest rate	2.89 %	Calculation
Pre tax interests	7.30	Output
Post tax interests	2.82	Output
Tax deduction	61.37 %	Output

Table 6.2: Summary of model, numbers in NOK bn.

¹³ See section 3.1.4 about Financial costs

6.2 Value of pledging

This part of the analysis will take the interest cost of NOK 7.30 bn. and estimate how much of it can be reduced by allowing companies to pledge their tax balance.

Large multinational companies paid just over 2 percent in interest on their debt in 2015. A margin of about 75 bps above NIBOR is well below the margin that small players have to pay on their exploration credit facilities, where the tax value of exploration costs is pledged. This indicates that the large companies have such a high credit rating that their loans are supported by their creditworthiness rather than the security of an underlying asset. Allowing to pledge the tax balance that arise from investments will thus have little to no impact on the interest rate the large companies are charged.

Smaller companies on the other hand, may not have the same credit rating and cannot obtain the same terms on their unsecured loans. This could be because they have less stable sources of income or not as certain investment opportunities. In 2015, the companies with the lowest credit rating paid a margin of 275 bps above NIBOR, compared to the large multinational companies' margin of 75 bps. This is a difference of two percentage points and represents a significant barrier of entry on the NCS. In addition, it can take several years until new players are in a tax position, which means that it will take a longer time before the tax value of the investments is recovered. When the interest rate is higher than the rate for loss carry forward, there is a difference in capital costs between companies in and out of tax position. A lower interest rate will reduce this difference.

Pledging security would improve the observed credit risk and reduce the interest rate for the smaller companies. How much the rates would decrease is not observable as there are no market prices for an RBL with pledged security. The product on the market today that is most comparable is an exploration credit facility. The only difference would be that the RBL finances a tax balance over six years compared to one year for the exploration credit facility. Since the tax balance will be pledged, the time difference should not have the same effect it has on an unsecured loan.

As previously mentioned, Lime, one of the smallest players on the NCS, has an exploration credit facility where they pay a margin of 160 bps. This rate is assumed to be the highest rate companies would have to pay when their tax balance is pledged. Applying NIBOR + 160 bps as a maximum when estimating the industry's average interest rate (as in section 6.1.2)

gives a new rate of 2.55 percent (margin of 126 bps). Substituting this rate into the model gives a new pre tax interest cost of NOK 6.44 bn. p.a., which is 860 mm. lower than without pledging. This is a reduction of 11.77 percent. With tax deductions the state would receive NOK 528 mm. more in tax payments and the industry would have their after tax cost reduced by NOK 332 mm.

<i>Value of pledging</i>	
Interest rate	2.89 %
Interest rate (pledge)	2.55 %
Interest costs	7.30
Interest cost (pledge)	6.44
Value of pledging	0.860

Table 6.3: Value of pledging. Numbers in NOK billions.

Today, the value of pledging is a cost that is leaking out of the petroleum industry and into the hands of financial institutions or bondholders. In a longer perspective the cost can inhibit investments in new or existing facilities.

6.3 Sensitivity

Most of the credit facilities and loans extended by group companies have floating interest rates. The interest cost is of course dependent on changes in the reference rate, which is NIBOR for loans in NOK. The rate used in the analysis was the average for 2015, 1.29 %.

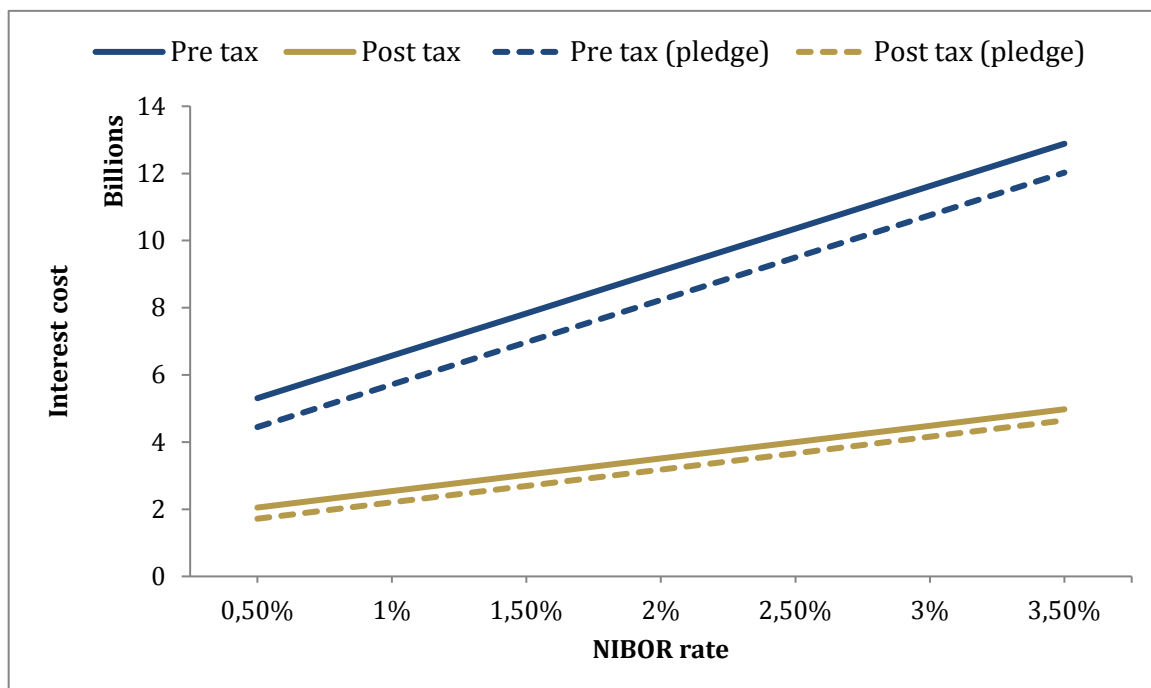


Figure 6.3: Interest costs' sensitivity to NIBOR

As of May 2017 the rate is quoted at 0.9 %, while the average for the last 15 years is 3.03 %. Figure 6.3 shows the effect on the industry's interest cost from changes in the NIBOR rate. The cost of NOK 7.7 bn. would increase to NOK 12.3 bn. with the NIBOR at 3.00 %. The after tax value is approximately 40 percent of pre tax value, and would increase from NOK 3.1 bn. to NOK 5.0 bn.

The effect of allowing to pledge the tax balance will not change in absolute terms should the NIBOR change. Pledging the tax balance will reduce the margin companies pay, but the floating rate is equally exposed to interest rate risk.

The value of pledging will however depend on how much the interest margin is reduced. In the model it is assumed that companies can borrow at a maximum margin of 160 bps when allowed to pledge, down from 275 bps without pledging. Should this margin only be reduced to 200 bps, the value of pledging is reduced from NOK 912 mm. to NOK 570 mm. (figure 6.4).

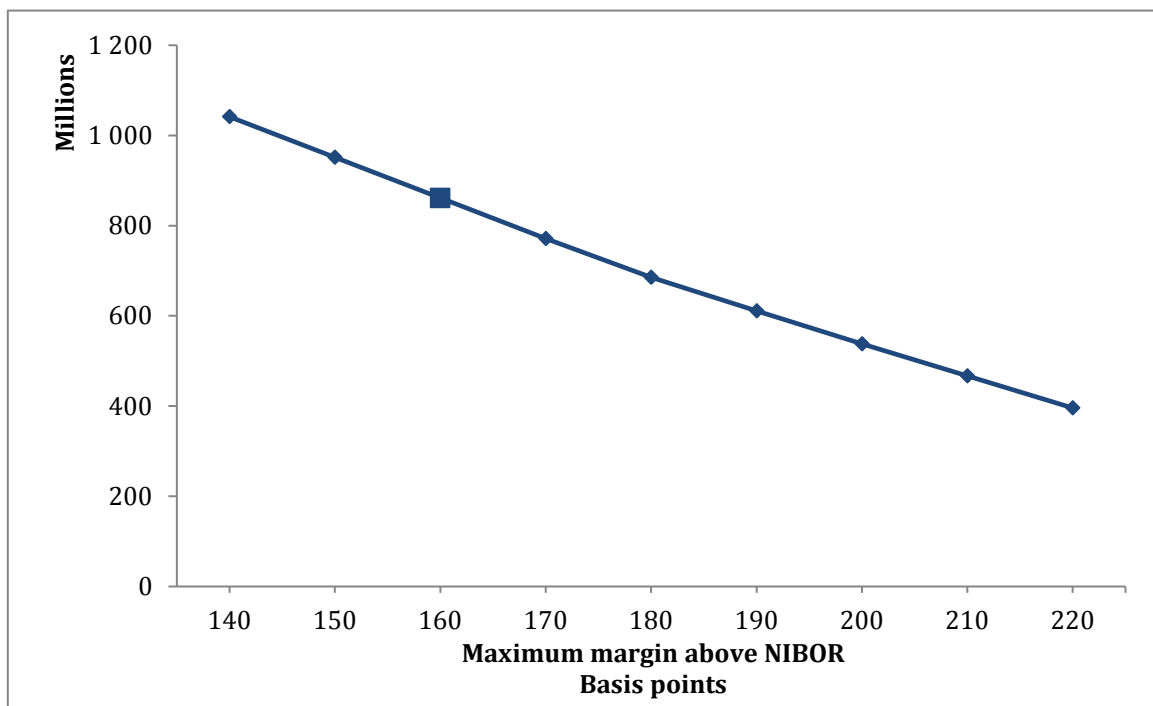


Figure 6.4: Value of pledging, sensitivity.

7. State's perspective

Reducing the financial cost for companies will consequently reduce their tax allowances and increase the tax income for the state. More important, cheaper funding costs can help ensure that the activity on the NCS is continued in the years to come. Accounting for 13 percent of the income to the Norwegian state in 2016, petroleum is Norway's largest industry. With the oil price halved since 2014, and both Shell and ExxonMobil no longer interested in exploring in Norway, more diversity and competition from smaller players might be necessary for development of new fields. At the same time, there are some disadvantages that need to be addressed.

As mentioned earlier, claims on tax allowances are in general not allowed to be pledged or transferred (sktbl. § 10-1 (2)). The restriction is meant to ease the Tax Administration's access to offsetting tax (sktbl. § 13-1). The access to offsetting tax is a simple way of ensuring that any defaulted tax liabilities are settled. Because the petroleum industry consists of a small number of taxpayers and the policy change would be in line with previous amendments aiming to equate new and existing players, pledging claims on tax allowances from exploration activities were permitted effective January 1, 2007 (Ot.prp. nr. 1 (2006-2007), p. 9.6.11).

Secured loans give riskier borrowers compared to unsecured loans (Berger & Udell, 1990). Unsecured loans require better credit rating, which is associated with larger companies. NPD has strict requirements for new players applying for licenses to ensure a predictable development of the shelf. Lowering the barriers of entry could lead to less competent players and unreliable development. The high marginal tax rate imposes a high risk for the state as they cover 78 percent of the industry's costs. If a license partner shuts down its operations and leaves the shelf, the tax value of losses carried forward will be given as a cash refund by the state. Consequently, a production facility that is closed down before revenue is generated will cause considerable expenses for the state.

Large companies with good credit ratings can be preferred from the state's perspective to ensure stable development of petroleum fields. But as the shelf matures, this privilege may no longer be attainable if the activity shall sustain. The reward to risk ratio is not in the scope of this thesis, but could be basis for further studies.

8. Conclusion

The petroleum industry is facing challenges with a lower oil price and a maturing shelf, after a long period of prosperity. Smaller players are calling for measures to reduce the barriers of entry and increase the competition on the NCS. This thesis has studied one of such actions, which is allowing companies to pledge tax allowances from investments in CAPEX.

New and small players do not have the same credit rating as established major companies, and will thus have to finance their investment activities at a higher interest rate. Pledging the tax balance will reduce the differences in the rates between small and large companies.

The Norwegian state is already by law obliged to pay out the remaining depreciation if extractive business is ceased. Allowing petroleum companies to pledge the tax value of investments will give creditors exclusive claim on the tax balance. This would reduce the risk perceived by creditors and lower the interest rate demanded.

Modeling the interest costs accrued from CAPEX gave an annual cost of NOK 7.3 bn. before tax. Approximately 60 percent of the costs are deducted from the tax base, leaving the industry with a post tax interest cost of NOK 2.8 bn. p.a. The interest rate charged to exploration credit facilities gives an indication of what companies can finance a pledged tax balance at. Setting the maximum interest rate to NIBOR + 160 bps reduced the annual pre tax interest cost to NOK 6.44 bn., a reduction of 11.77 percent. The value of pledging is NOK 860 mm. p.a., with the state receiving NOK 528 mm. and the industry NOK 332 mm.

Sensitivity analysis shows that changes in the reference rate, NIBOR, from today's low figure to the average of the last 10 years, 2.71 percent, would increase the pre pledge interest cost to NOK 10.9 bn. The value of pledging would remain the same in absolute value. It could however be reduced in value should the maximum margin companies have to pay be higher than 160 bps. A maximum margin of 200 bps reduces the value to NOK 538 mm.

Tax allowances are in general not allowed to be pledged and would require an amendment to the Norwegian Petroleum Act equal to (Ot.prp. nr. 1 (2006-2007)) which allowed the tax value of exploration costs to be pledged. Reducing the barriers of entry to the NCS could lead to less reliable developments and impose a greater risk for the Norwegian state. This risk must be weighed against the state's increased tax income and the incentive for sustained petroleum investments that lower financial costs gives.

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10. Appendix

10.1 Glossary and definitions

BRC	The Brønnøysund Register Centre
CT	Corporate Tax
CAPEX	Capital Expenditure
CAPM	Capital Asset Pricing Model
GTA	The General Tax Act (Skatteloven)
LIBOR	London Interbank Offered Rate
LTV	Loan-to-value
NCS	Norwegian Continental Shelf
NIBOR	Norwegian Interbank Offered Rate
NOU	Norsk Offentlig Utredning (Official Norwegian Report)
NPD	Norwegian Petroleum Directorate
OPEX	Operational Expenditure
PTA	The Petroleum Tax Act (Petroleumskatteloven)
RBL	Reserve-based Lending
RFES	Ring-Fence Expenditure Supplement
SPT	Special Tax
Basis point (BPS)	Unit of measure for interest rates. One basis point equals 1/100 th of one percent
Mature	A basin or area that has been well explored. Also used on a field that has produced 50 percent of its proved and probable reserves.
Tax balance	A company's deferred tax credit. Losses carried forward and tax value of undepreciated assets (including unused uplift).
Tax offsetting	A settlement method where two claims are settled against each other.
Tax position	A company is in a tax position if it has a positive result after deducting tax allowances. A company not in a tax position will carry losses forward.