

ECONOMIC COMMENTARIES

Banks' credit risk associated with the oil service industry

NO 5 | 2016

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BANKS' CREDIT RISK
ASSOCIATED WITH THE OIL
SERVICE INDUSTRY

Norwegian banks' direct credit exposures to the oil service industry are low overall. Despite a substantial fall in oil prices and oil investment, banks' losses on loans have remained low. The debt-servicing capacity of a number of oil service companies is declining, and there are prospects of weaker earnings ahead, factors that are reflected in these companies' low equity and bond prices. Several oil service companies may experience problems with servicing debt in the period ahead. Norwegian banks are posting solid profits, with high leverage ratios compared with banks in most other countries. In comparisons with various stress tests and historical loan losses, Norwegian banks are well-positioned to absorb large losses on loans to the oil service industry.

Ida Nervik Hjelseth, Lars-Tore Turtveit and Hanna Winje¹

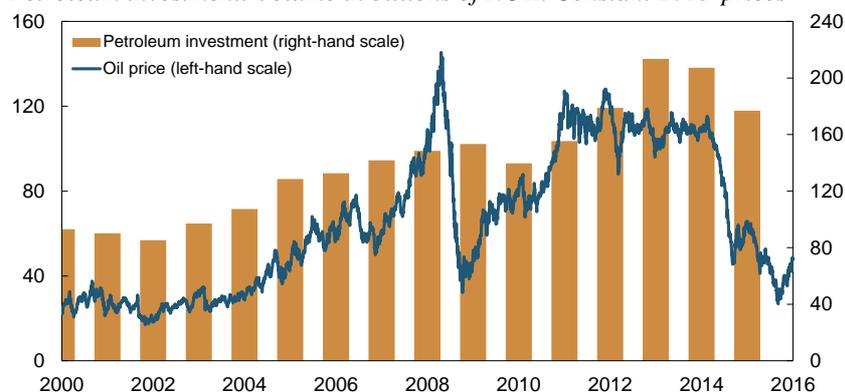
1 Background

In the period 2002–2013, there was a marked rise in oil investment, driven by an increase in oil prices (Chart 1). This led to a pronounced rise in activity in the oil service industry.² Cost levels and the number of employees in the industry increased substantially. The number of oil-related offshore vessels rose sharply. Since new offshore vessels are often highly mortgaged, this has led to a surge in debt in the industry. An increased focus by oil producers on improving efficiency was amplified by falling oil prices from the end of 2014. Oil investment fell, resulting in substantial surplus capacity in the oil service industry. Day rates and prices in new contracts have fallen, and the number of offshore vessels laid up has risen. Norges Bank's regional network reports that output in the oil service industry has fallen markedly and the outlook is weaker (Chart 2).

CHART 1 Oil price and oil investment

Oil price (Brent Blend) in USD per barrel.

Petroleum investment. Volume in billions of NOK. Constant 2013-prices

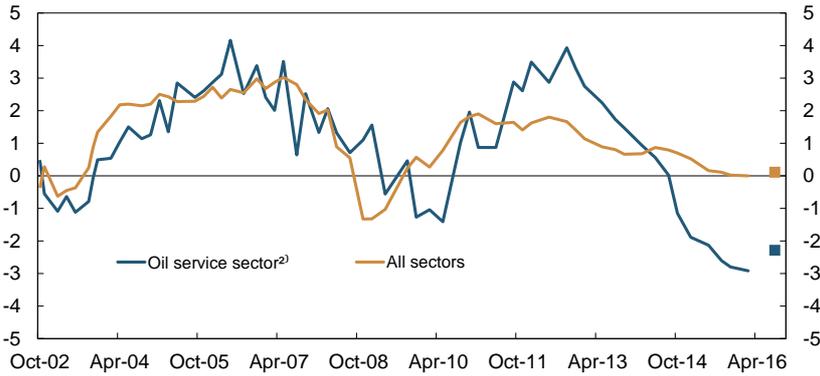


Sources: Thomson Reuters, Statistics Norway and Norges Bank

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² According to EY's report, *The Norwegian oilfield services analysis 2015*, turnover in the oil service industry approximately tripled between 2005 and 2014.

CHART 2 Norges Bank’s regional network. Output growth
Past three months and next six months. Index.¹⁾ At February 2016



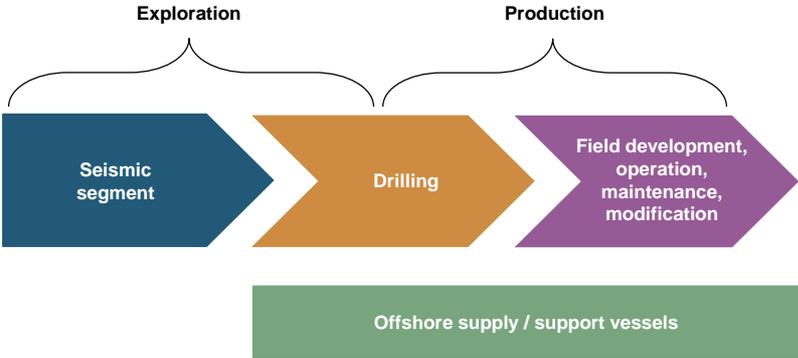
1) The index ranges from -5 to +5, where -5 indicates a sharp decline, while +5 indicates sharp growth.
 2) Up until 2015, the series only includes manufacturing enterprises with deliveries to petroleum activities on the Norwegian continental shelf. As from 2015, the series also includes oil-related service providers and exporters.
 Source: Norges Bank

In this Economic Commentary, we examine more closely banks’ credit risk associated with the oil-related sector, with a focus on the oil service industry. We describe banks’ exposures to the oil-related sector. This is followed by a discussion of credit risk in the oil service industry by examining financial reporting figures and market pricing for a sample of oil service companies. Finally, we review historical loan losses and relevant stress tests, and investigate whether banks will be able to deal with scenarios with high loan losses. The downturn in the oil-related sector may spill over to other sectors of the economy. Such spillover effects are not assessed in this Commentary.

2 Oil service companies

The oil-related sector comprises the oil service industry and oil producers. We define the oil service industry as enterprises that provide goods and services to oil producers.³ We divide the industry into various segments on the basis of their contributions in the oil production value chain (Chart 3). Oil service companies in the exploration phase are generally affected earlier by substantial cuts in oil producers’ investing activity. It often takes longer before suppliers of goods and services for the production phase are affected.

CHART 3 Position of oil service companies in the value chain



³ The Norwegian petroleum sector includes both oil and gas production. Therefore, lower gas prices will also affect the oil service industry.

Seismic segment companies gather data on potential oil deposits. They are particularly important in the exploration phase, but are also used to some extent later in a field's lifetime. *Drilling companies'* rigs are leased for exploratory drilling and production drilling. Companies in *field development, operation, maintenance and modification* (hereinafter referred to as field development and operation) supply subsea installations, floating production units and crew housing, engineering services and modules for oil installations. In the *supply segment*, there are two main categories of vessels: platform supply vessels (PSVs) and anchor handling tug supply (AHTS) vessels.

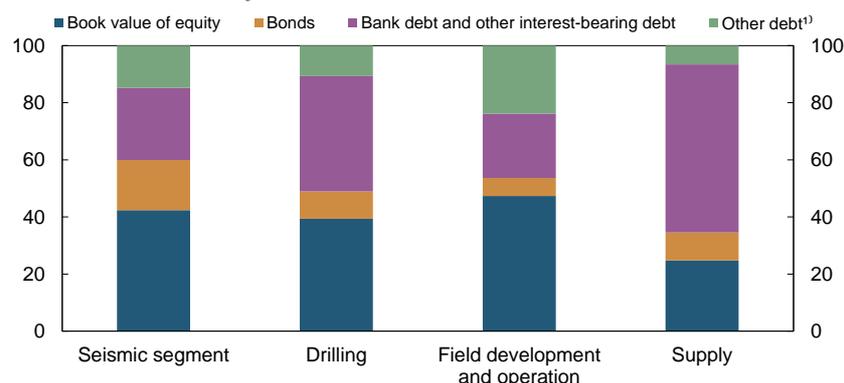
Many of the large enterprises in the oil service industry are listed companies. To analyse the oil service industry's credit risk, we have compiled a sample comprising 27 oil service companies listed on Oslo Børs.⁴ The sample includes both Norwegian and foreign companies.⁵

At end-2015, the sample had total assets of approximately NOK 600 billion. Of this, equity overall accounted for 40 percent, but there was variation among segments (Chart 4). Interest-bearing debt was over NOK 280 billion, of which drilling and supply accounted for around 80 percent.

Interest-bearing debt includes, among other things, amounts owed to banks, bonds and export financing guaranteed by the Norwegian Export Credit Guarantee Agency (GIEK), for example.⁶ In the sample, 20 of 27 companies have bonds outstanding. Even if the extent of bond financing has increased considerably over the past decade, bank debt generally represents the largest liability item for these companies. These companies often have loans from more than one bank, and several of the loans have been granted by syndicates of both Norwegian and international banks.

CHART 4 Financing structure of the sample of oil service companies

Book values. Percent of total assets. At 31 December 2015



1) Other liabilities include trade creditors, accrued expenses and obligations such as pensions and tax.

Sources: Bloomberg, company annual and quarterly reports and Norges Bank

4 Both group subsidiaries and the group parent may be listed companies. In such cases, one of the parties has been excluded to avoid double counting. Companies with interest-bearing debt of less than NOK 50 million have also been excluded, as well as companies without available financial reporting figures from 2014 Q1 to 2015 Q3.

5 Foreign companies are included in the sample, since Norwegian banks also have loans to foreign oil service companies.

6 Other interest-bearing debt financing includes leasing and loans from shareholders and other private parties.

3 Norwegian banks' exposure to the oil-related sector

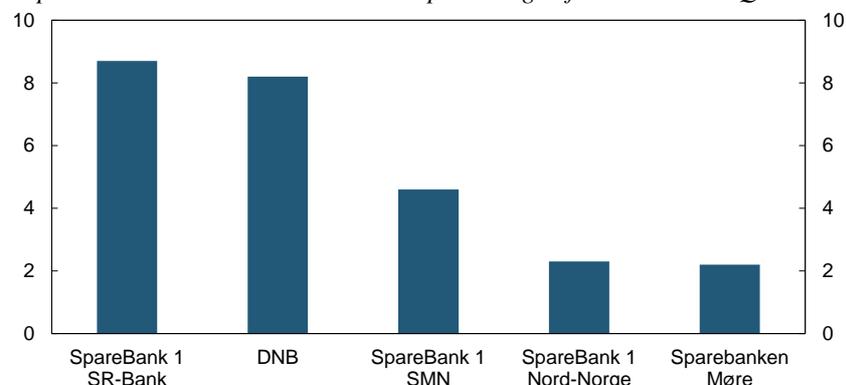
Norwegian banks' direct exposure to the oil-related sector is low overall. Exposure to the oil service industry will then be even lower. Banks' sector segmentation varies across banks, and therefore deviates from the one we have used for the oil service industry in this Commentary. The segments we refer to as drilling and supply is often a significant part of banks' offshore segment.

Exposure to the oil-related sector was just over NOK 200 billion, measured by "exposure at default" (EAD) at end-2015.⁷ The EAD of corporate lending portfolios is often larger than loans outstanding, since this measure includes among other things unused lines of credit. According to Finanstilsynet (Financial Supervisory Authority of Norway), oil-related exposures measured against total loans outstanding account for around 5 percent of the loans of the 16 largest banks.

DNB and SpareBank 1 SR-Bank (SR-Bank) have the highest exposure to the oil-related sector (Chart 5). According to SR-Bank, 8.7 percent of its total credit exposure is oil-related. DNB reports that 8.2 percent of its credit exposure is oil-related. Measured as a share of their corporate lending portfolios, their exposure amounts to around 26 percent and 17 percent, respectively. Nordea Bank Norge, which is the second-largest bank in Norway, does not disclose exposure to the oil-related sector in detail, but according to the Norwegian Ship Register, the bank has some exposure to offshore supply companies.

CHART 5 Exposure to the oil-related sector of selected large banks

Exposure to oil-related industries as a percentage of EAD. At 2016 Q1



Sources: DNB, SpareBank 1 SR-Bank, SpareBank 1 SMN, SpareBank 1 Nord-Norge and Sparebanken Møre

Further analysis of banks' exposure focuses on DNB and SR-Bank, since they have the highest oil-related exposure of the largest Norwegian banks.

3.1 SR-Bank's and DNB's exposure to the oil-related sector

SR-Bank's largest oil-related exposure is to the offshore segment, which in its reporting includes supply, drilling and the seismic segment (Chart 6).⁸ DNB reports

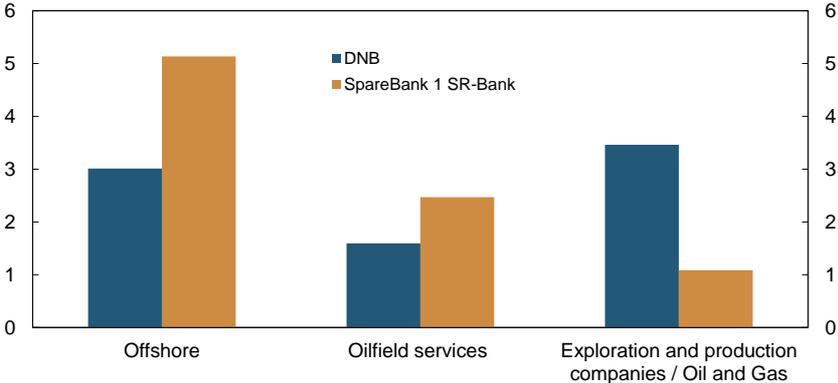
⁷ Banks often disclose exposure as EAD since this measure is used in calculating capital adequacy. According to their financial reporting, the credit exposure of DNB, SpareBank 1 SR-Bank, SpareBank 1 SMN and Sparebanken Møre was close to NOK 200 billion at end-2015. The exposures of the other banks will likely bring total exposure to over NOK 200 billion.

⁸ At the same time, these banks' corporate exposures differ, and the way they report these exposures differs. Therefore, the figures are not directly comparable.

that its largest oil-related exposure is to the oil and gas segment, which mainly includes oil producers and refiners.

SR-Bank has not reported a risk breakdown by corporate segment, but it appears to have a higher risk on its overall corporate loans than DNB (Chart 7).⁹ This may reflect a higher share of oil-related exposure at SR-Bank (Chart 5). At the same time, SR-Bank has a high exposure to offshore, which according to DNB's risk classification of its exposures has the highest risk in the oil-related sector (Chart 8). Different models and lower thresholds for medium and high risk for SR-Bank also affect the presentation.

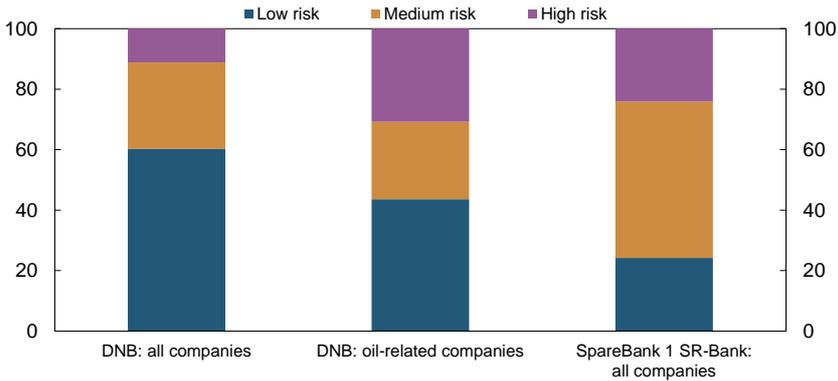
CHART 6 Oil-related exposure¹
Percent of total credit exposure (EAD). At 2015 Q4



1) Based on the banks' own classifications. DNB's seismic segment exposure has been moved from oilfield services to offshore. In addition, DNB's offshore segment comprises supply, drilling and some parts of the field development and operation segment. SR-Bank's offshore segment comprises the seismic segment, supply and drilling.

Sources: DNB and SpareBank 1 SR-Bank

CHART 7 Banks' own risk classifications
Different definitions of risk based on PD classifications. Percent of EAD. At 2016 Q1

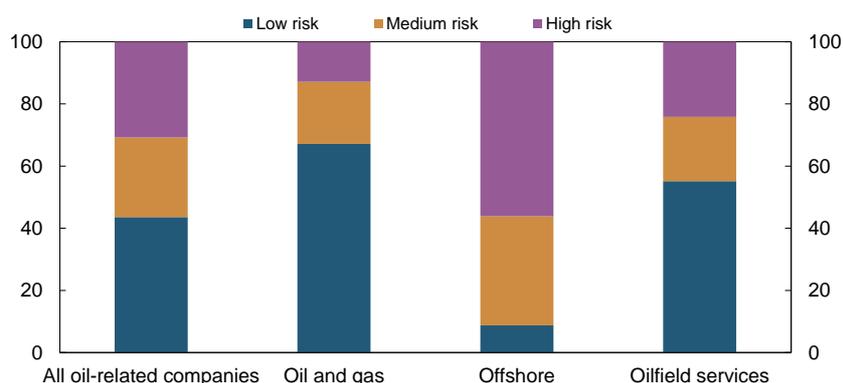


Sources: DNB and SpareBank 1 SR-Bank

⁹ The risk classifications are based on probability of default (PD) and are defined differently by each bank. Low, medium and high risk is defined by SR-Bank as a PD of up to 0.5 percent, up to 2.5 percent and above 2.5 percent, respectively. For DNB, low, medium and high risk is defined as a PD of up to 0.76 percent (risk classes 1-4), up to 3 percent (risk classes 5-7) and above 3 percent (risk class 8 and higher), respectively.

CHART 8 DNB's risk classification in various segments¹⁾

PD classification. Percent of EAD. At 2016 Q1



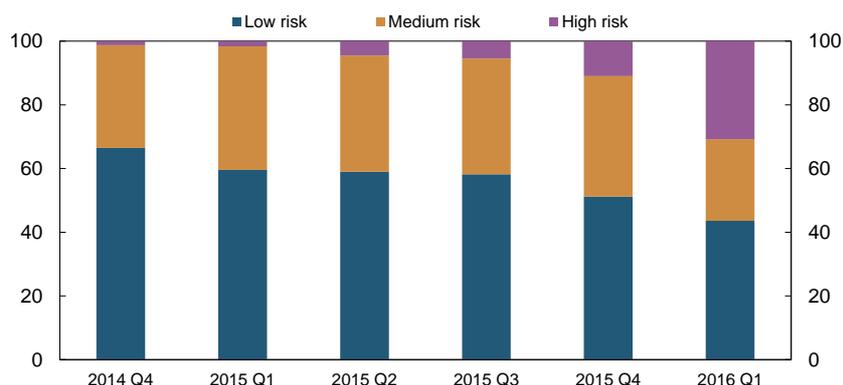
1) DNB's seismic segment exposures are included here in Oilfield services.

Source: DNB

For DNB, a migration has taken place towards a higher risk classification for oil-related customers since end-2014 (Chart 9). Changes in banks' risk classification may indicate expectations of higher losses ahead.

CHART 9 Changes in DNB's risk classification of oil-related exposures

PD classification. Percent of EAD



Source: DNB

4 Credit risk in the oil service industry

The credit risk associated with banks' oil-related exposures can be analysed on the basis of key ratios and the market pricing of oil service companies. First, we look at developments in debt-servicing capacity, liquidity and equity ratios over the past two years in the sample of oil service companies.¹⁰ Then we compare book values with market pricing.

4.1 Debt-servicing capacity

Corporate debt servicing capacity may be calculated as earnings as a percentage of debt. Slightly simplified, debt-servicing capacity can be understood as the share of debt that companies are capable of covering from current earnings. In the analysis, we

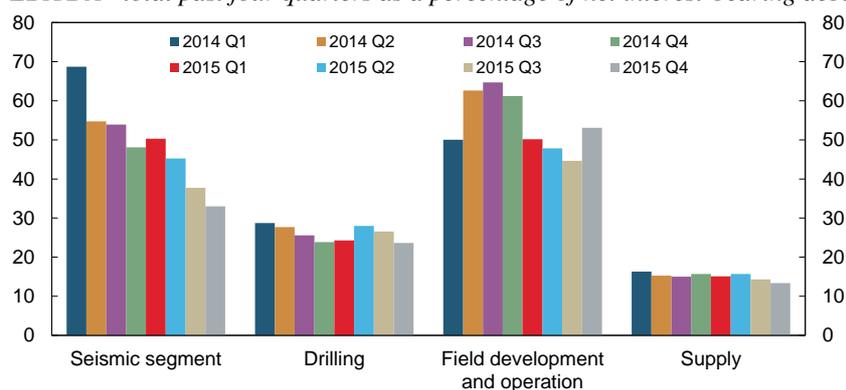
¹⁰ After publishing financial statements for 2015 Q4, some companies have made revisions. For example, some companies have recognised additional impairment losses. These revisions are not included in the analyses.

define earnings as earnings before interest, tax, depreciation, amortisation and impairment (EBITDA) and use net interest-bearing debt as the debt variable.¹¹

Debt-servicing capacity declined gradually over the period (Chart 10).¹² The decline has been most pronounced for companies in the seismic segment. Demand for services from seismic companies has been declining, and overall turnover was lower in 2015 than in 2014. This led to a reduction in earnings through 2015. At the same time, net interest-bearing debt has risen steadily over the past two years. According to seismic companies' annual reports, demand is expected to be even lower in 2016.

CHART 10 Debt-servicing capacity in the sample of oil service companies

EBITDA¹⁾ total past four quarters as a percentage of net interest-bearing debt



1) EBITDA is earnings before interest, tax, depreciation, amortisation and impairment. The EBITDA measure has been standardised by Bloomberg, but manual adjustments have been made where erroneous registrations appear in Bloomberg's measure.

Sources: Bloomberg and Norges Bank

Also for companies in field development and operation, debt-servicing capacity was somewhat lower in 2015 than in 2014. Turnover fell gradually with falling demand through the period.¹³ Order book values at end-2015 had been reduced substantially compared with 2014. Activity is expected to decline further.

For drilling and supply, debt-servicing capacity has been fairly stable, but has declined slightly over the past few quarters. The level of debt-servicing capacity is lower in drilling and supply than in the other segments. This reflects the fact that drilling and supply are capital-intensive industries with large balance sheets relative to income generated. The share of debt financing is also somewhat higher in these segments.

According to the Norwegian Shipowners' Association, Norwegian offshore shipowners expect reduced turnover and weaker profitability in 2016 compared with 2015. The number of ships and rigs in layup has risen steadily since autumn 2014, and Norwegian offshore shipowners estimate that the number will rise towards summer

11 For a description of the various measures of debt-servicing capacity, see "[Debt-servicing capacity of Norwegian listed non-financial companies](#)", *Economic Commentaries* 3/2016, Norges Bank.

12 The Norwegian krone depreciated considerably in the period 2014-2015. In isolation, this will contribute to higher turnover and earnings of companies with portions of their sales in foreign currency. For hedging purposes, it is common to borrow in the same currency in which the company has turnover. On balance, it seems therefore reasonable to assume that exchange rate movements over the period have a limited impact on debt-servicing capacity.

13 The largest company in the segment has high debt-servicing capacity owing to low interest-bearing debt. Excluding this company, debt-servicing capacity in this segment would be on a par with the debt-servicing capacity in drilling. In 2015 Q4, this company substantially reduced its net debt, which resulted in an increase in debt-servicing capacity overall.

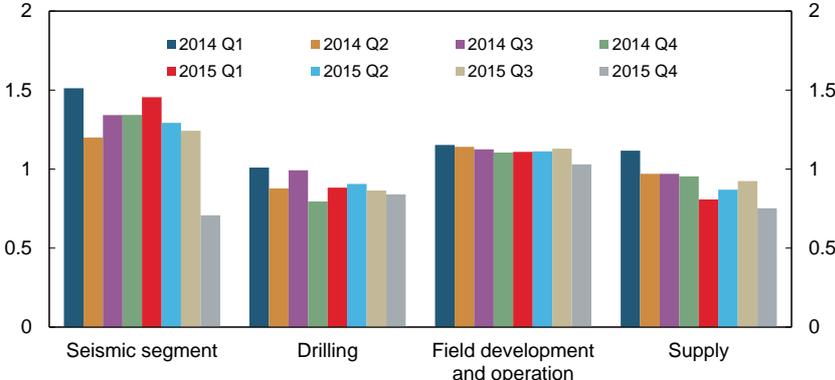
2016. Such developments will likely continue to weaken the debt-servicing capacity of supply and drilling companies ahead. Even if demand from oil producers should eventually rise, it will take time to absorb the overcapacity of vessels. There is therefore a risk that debt-servicing capacity will remain weak ahead.

4.2 Liquidity

Companies should have a buffer of liquid assets to draw on if current earnings are weakened to the extent that they are no longer sufficient to meet payment obligations as they fall due. One of the most commonly used key ratios in analyses of corporate liquidity is the ratio of current assets¹⁴ to current liabilities. This ratio indicates the extent to which current assets are financed short-term. When the current ratio is lower than 1, a portion of non-current assets¹⁵ is also being financed with short-term debt.

CHART 11 Liquidity in the sample of oil service companies

Current assets as a share of current liabilities



Sources: Bloomberg and Norges Bank

In 2015 Q4, current ratios were below 1 in the seismic, drilling and supply segments. Liquidity weakened in all segments (Chart 11). An important reason was that some companies breached loan covenants on their interest-bearing debt. The loans fall due and are reclassified from non-current to current liabilities. If the companies are unable to renegotiate loan covenants, liquidity will be put under pressure. Some of these companies already have new covenants in place, which in isolation raises their current ratio. Nevertheless, the overall current ratios are low, even when one disregards the increase in current liabilities owing to the breach of loan covenants.

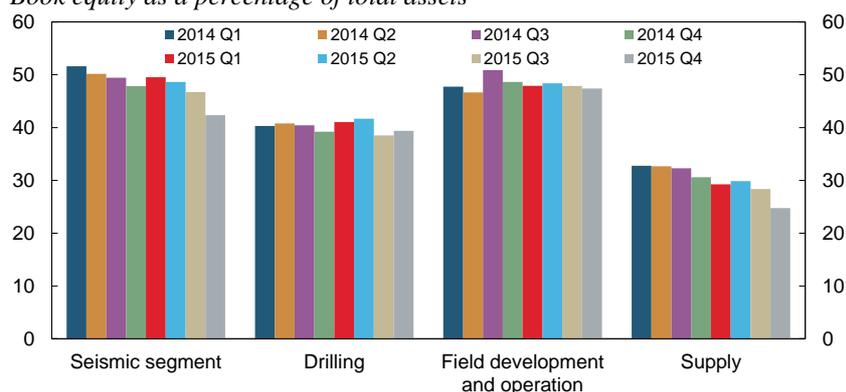
4.3 Solvency

The equity ratio provides an indication of how much a company can lose before debt capital incurs losses. In the supply and seismic segments, book equity ratios have declined recently (Chart 12). Equity ratios overall have remained stable in both drilling and field development and operation, but there is some variation among companies.

14 Current assets are assets that are not held for continuing use in the business and that in normal circumstances can be converted to cash in a relatively short time, often within one year. Examples of typical current assets for the oil service industry are trade receivables and cash.
 15 Non-current assets are assets held for continuing use in the business. These assets are considered to be a business's fixed capital and are less liquid. Vessels of various kinds are typical examples of the non-current assets of many oil service companies.

CHART 12 Equity ratio in the sample of oil service companies

Book equity as a percentage of total assets

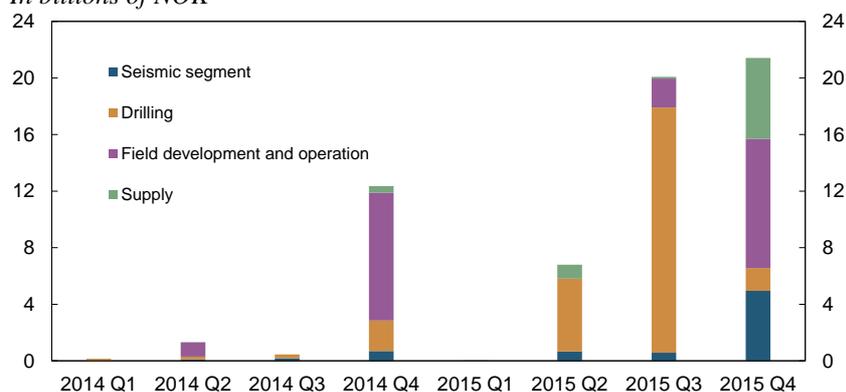


Sources: Bloomberg and Norges Bank

The lower equity ratios of many companies partly reflect negative earnings owing to the fall in demand. Equity is also affected by changes in the value of assets. Companies are obliged to recognise asset impairments if there is reason to assume that the asset's carrying amount exceeds its fair value. Asset impairments weaken earnings and have a negative effect on equity. Asset impairments were particularly high in 2014 Q4 and in the latter two quarters of 2015 (Chart 13). Companies recognised impairment losses on vessels, goodwill and holdings in associates. In 2015 Q4, nearly all companies recognised impairment losses, which had a fairly substantial impact on equity ratios, particularly in the supply and seismic segments. These impairment charges are generally due to a substantial reduction in the future earnings the assets are expected to generate and lower expected selling prices. If low oil prices and low oil investment persist, equity ratios may weaken further.

CHART 13 Asset impairment in the sample of oil service companies

In billions of NOK



Sources: Company quarterly reports and Norges Bank

Companies' key ratios overall show that the seismic segment, whose activities are earlier in the value chain for oil production, has been hardest hit by the downturn so far. Developments in key ratios for companies in drilling, field development and operation and supply have so far been more stable. For several companies in these segments, a large share of earnings is associated with contracts entered into before the fall in oil prices, when terms were substantially better. As the contracts entered into on favourable terms expire, the decline may become more evident in the earnings in these segments as well. The developments in key ratios are in line with DNB's risk classification in recent quarters (Chart 9).

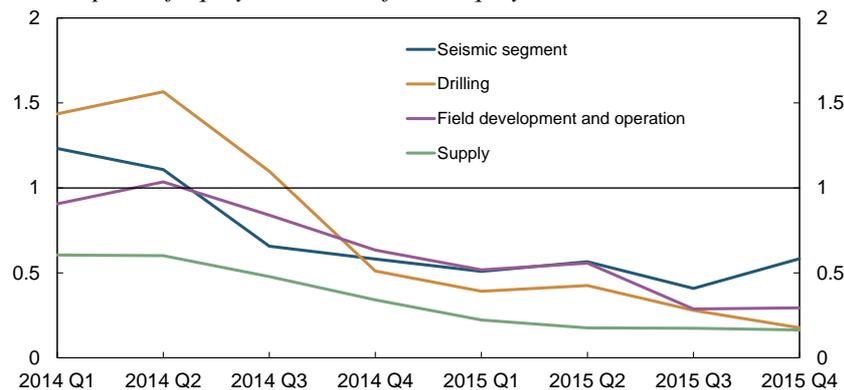
4.4 Market pricing of oil service companies

The market price of equity and bonds captures prospects for future earnings to a greater degree than financial reporting figures. These prices reflect market participants' assessments of both idiosyncratic circumstances such as solvency, liquidity and the quality of the order book, and more general macroeconomic conditions that affect earnings prospects. Equity and bond prices are now very low for many oil service companies, even in those segments where financial reporting figures are still solid.

The ratio of market value to book value of equity is called the price-to-book ratio. A price-to-book ratio equal to 1 means that the market value of equity is equal to the value recognised in the financial statements. Price-to-book ratios in the oil service industry began to decline in the second half of 2014, around the same time as oil prices began to fall (Chart 14). Price-to-book ratios vary across segments, but in 2015 Q4 were far below 1 in all segments. This indicates that the market is more pessimistic regarding future earnings and the value of the companies' assets than what appears in the financial statements, despite the fact that the companies have recognised substantial impairment losses.

CHART 14 Price-to-book ratios in the sample of oil service companies

Market price of equity as a share of book equity

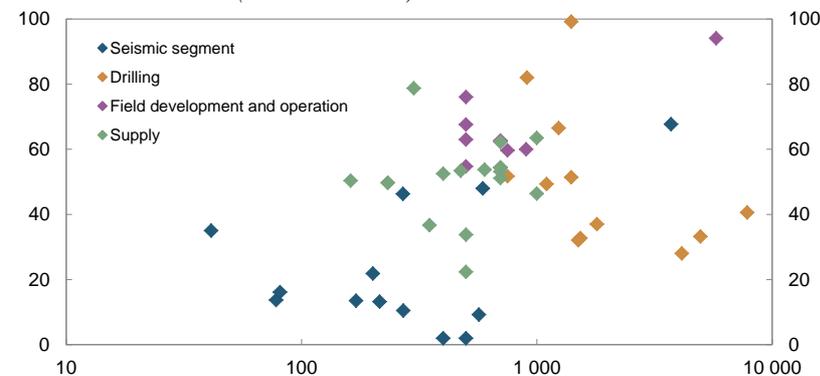


Sources: Bloomberg and Norges Bank

CHART 15 Pricing of bonds outstanding in the sample of oil service companies

Horizontal axis: Bonds outstanding in billions of NOK (logarithmic scale).

Vertical axis: Prices (nominal = 100). At 31 March 2016



Sources: Stamdata, Nordic Bond Pricing and Bloomberg

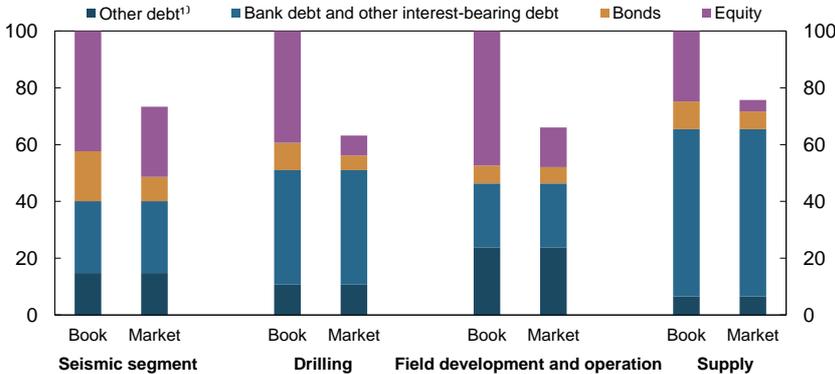
The price of bonds issued by oil-service companies has fallen considerably. For the sample of oil service companies, over half of bonds outstanding are priced at below 50

percent of the nominal amount (Chart 15). This suggests that market participants regard the risk of default as considerable and the value of the assets in any bankruptcy as low. The seismic companies in the sample are, on average, priced the lowest, which reflects the fact that nearly all of the seismic companies in the sample have restructured their debts or gone bankrupt. The initiation of debt-restructuring processes by several drilling and supply companies, or announcements that this will happen, is also reflected in market pricing.

Overall, the market prices of equity and bonds at end-2015 indicated that the value of assets in the oil industry was considerably lower than what appeared in the companies' reported balance sheets (Chart 16).¹⁶ In the drilling and supply segments, market values were very low. Bank debt in these segments therefore appears to be at greater risk than in the other segments. DNB's risk classification of exposures to the various segments in Section 3 supports the assessment that bank debt is most at risk in the drilling and supply segments (Chart 8).

CHART 16: Book value and market value of the sample of oil service companies

Percentage of reported total assets. At 31 December 2015



Sources: Bloomberg, Nordic Bond Pricing, Stamdata, company annual and quarterly reports and Norges Bank

5 Debt restructuring

Market pricing illustrates that prospects for future earnings in the oil service industry are considerably weakened. This puts pressure on these companies' liquidity. Many companies may experience difficulty meeting their debt obligations, such as principal repayments. Evidence of problems at a company often first emerges when the company is at risk of breaching loan covenants. Loan covenants are often minimum requirements for the company's key ratios, such as the equity ratio and the current ratio.

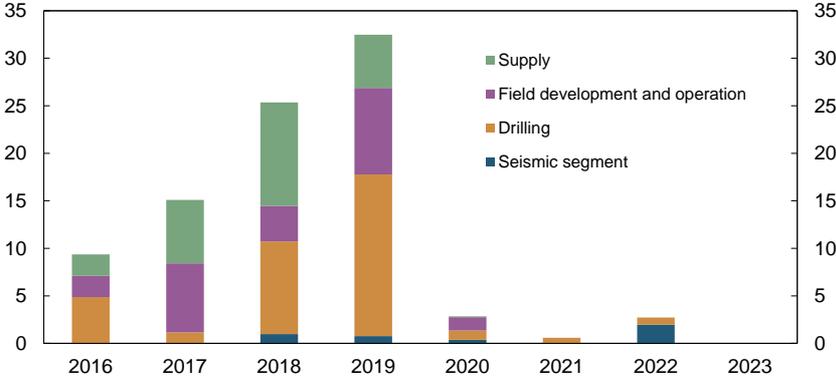
Most of the bond debt in the oil service industry matures in a few years' time. Just under NOK 25 billion will mature in the Norwegian market in 2016 and 2017 (Chart 17). In addition, bank debt will mature. Refinancing maturing debt may be a challenge. The risk premiums on oil service company bonds are now so high, that in practice the market is closed. At the same time, Norges Bank's lending survey shows

¹⁶ For various reasons, the book value of bonds deviates somewhat from the value of bonds outstanding. In the chart, the book value of bonds is used. The market value of the book value of bonds is estimated by using a weighted average of bond prices (value outstanding) at end-2015 for each segment.

that several banks have tightened credit standards for oil-related companies. Sales of assets to repay loans may also prove to be problematic, given the current pricing of these companies' assets.

CHART 17 Bond maturities in the oil service industry

Debt in the Norwegian bond market. In billions of NOK. At 2016 Q1



Source: Stamdata

If there are signs that companies will be unable to meet their debt obligations, contact will be established with creditors to negotiate changes to the loan agreements. This will usually be done in sufficient time before the expected problems materialise. Some oil service companies have already restructured their debt, and a number have initiated negotiations with creditors on changes to loan agreements or have announced that this will happen. Market analysts, banks and the companies themselves expect an increasing need for restructurings ahead.

The outcome of the restructuring processes depends on the challenges facing the individual company and how that company is financed. These processes are therefore complicated. What various creditors risk losing in a bankruptcy is of importance for the strength of their bargaining positions, and thus for how the loans are modified in a restructuring. Bank loans are ordinarily secured by a lien on assets, such as ships, rigs and seismic libraries, while bonds are more often unsecured. For the oil service industry as a whole, around half of bonds outstanding in the Norwegian market are unsecured, but there is variation across segments.

Secured banks and bondholders are often in a better bargaining position in the restructuring process because unsecured bondholders absorb losses first if the parties do not reach agreement. Nevertheless, secured creditors also have incentives to avoid bankruptcy. The value of the company's assets is uncertain and in many cases low. In a bankruptcy, asset values may fall further. One reason is that contracts on vessels may be terminated in the event of bankruptcy, cutting off revenue streams. The fact that a buyer has fewer rights when purchasing assets from a bankruptcy estate reduces the price they are willing to pay. In addition, the time pressure associated with liquidating a bankruptcy estate pushes prices down. In the event of a sharp fall in asset values, secured creditors may also be exposed to losses.

In the restructurings following the fall in oil prices, banks have usually ended up postponing maturity and deferring principal repayments, but less often made changes in the interest conditions. Bondholders have also postponed maturity, ordinarily so

that bond debt matures after bank debt. Changes have more often been made to the interest conditions for bonds, eg whereby interest payments are reduced or accrued for payment at maturity. In some of the restructurings, bond debt has been converted to equity.

In recent years, some companies have restructured debt more than once. In the event of any new round of restructuring, the company's room for manoeuvre is often reduced. The result is a higher risk of losses for creditors higher in priority, such as banks.

6 Prospects for bank losses

This section provides various approaches for determining the size of banks' potential loan losses in the oil-related sector. We examine loan losses to date, loss estimates for the period ahead, various stress tests and historical loan losses. Then we assess the loss-absorbing capacity of banks' earnings and equity capital and banks' loss-absorbing capacity in a scenario of high loan losses.

6.1 How much can banks conceivably lose? Various losses, loss estimates and stress tests

Banks' loan losses are affected by the solvency and debt-servicing capacity of banks' customers and the outcome of restructuring processes, but also by banks' judgements. Finanstilsynet's assessments from recommendations and supervision may also play a role.

DNB has estimated annual loan losses in 2016 and 2017 of up to NOK 6 billion or around 0.4 percent of all loans. SR-Bank has estimated that loan losses on all loans may be between NOK 500–700 million in 2016, corresponding to around 0.3–0.4 percent of all loans. In 2015, total loan losses for DNB and SR-Bank were 0.15 percent and 0.23 percent, respectively.

The Norwegian Export Credit Guarantee Agency (GIEK) often provides guarantees for portions of companies' secured financing. Most of GIEK's exposures are related to the oil service industry. At end-2015, GIEK's cumulative loss provisions as a share of its entire guarantee portfolio were around 5.7 percent. Banks assume a credit risk on the portion of the loans not guaranteed by GIEK. GIEK's loss provisions may therefore provide an indication of banks' credit risk on joint exposures.¹⁷ By comparison, DNB's cumulative loan loss provisions for oil-related loans are NOK 2.1 billion or 2.5 percent of these loans at 2016 Q1.

Finanstilsynet has performed sensitivity analyses of Norwegian banks' potential loan losses related to oil-related credit exposures.¹⁸ The average expected loan loss at seven of the largest banks was estimated at around 7 percent of loans to the oil-related sector. If DNB's loss estimates by end-2017 are to be in line with Finanstilsynet's sensitivity analysis, oil-related loan losses must account for a third of DNB's total

¹⁷ Recognised loss provisions amounted to 4.8 percent of the guarantee liability, but including claims and exposures to GIEK Credit Insurance, loss provisions are around 5.7 percent of the guarantee portfolio. Oil-related exposures accounted for around 87 percent of GIEK's guarantee liability of NOK 100 billion.

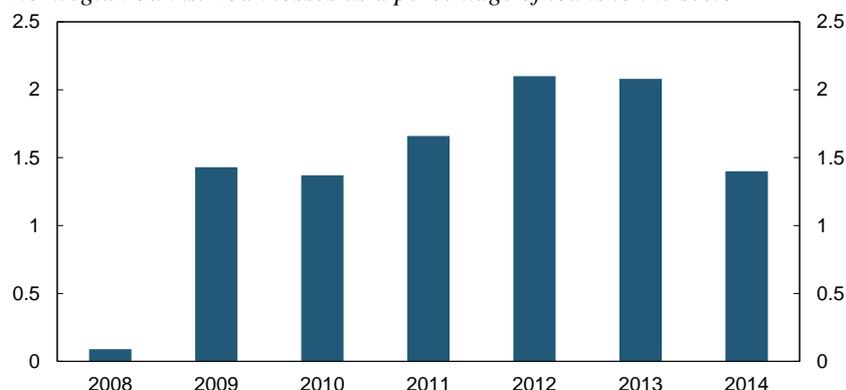
¹⁸ See *Finansielle utviklingstrekk* [Financial Trends] from autumn 2015 (Norwegian only).

estimated loan losses in the period ahead.¹⁹ Oil-related losses may account for more than a third of DNB's estimated loan losses, since oil-related loans appear to be a significant contributor to the bank's expectations of increased loan losses.

The current challenges for supply and drilling companies bear similarities with the situation in shipping following the financial crisis in 2008. A large supply of vessels and reduced demand resulted in low freight rates, which weakened shipping companies' debt servicing capacity. For shipping, these years were a serious downturn period. Norwegian banks' cumulative loan losses in international shipping and pipeline transport in the period 2008–2014 were equal to approximately 10 percent of loans to these industries (Chart 18).²⁰ Even though the investor market was worried about high loan losses at Norwegian banks, annual loan losses did not exceed 2.1 percent of shipping loans.

CHART 18 Loan losses in international shipping and pipeline transport

Norwegian banks. Loan losses as a percentage of loans to the sector



Source: Norges Bank

Various stress tests and historical loan losses indicate a broad range for Norwegian banks' losses on loans to oil-related companies (Chart 19). Several large US banks have made substantial cumulative loan loss provisions for their oil exposures. At the same time, these banks may have loans to other segments than Norwegian banks. A stress test run by the US bank JPMorgan Chase resulted in high losses in the oil and gas sector. In a stress scenario with an oil price of USD 25 per barrel for one and a half years ahead, JPMorgan Chase estimates that the cumulative loan loss provisions for their oil and gas exposures may amount to 20 percent of these loans.²¹ From the official banking statistics²² for Norway, only the cumulative industry-specific loan losses in fish farming and hatcheries, of 23 percent of loans in the period 2002–2006, exceed the loan losses in JPMorgan Chase's stress test.

19 Cumulative losses on oil-related loans amount to NOK 2.1 billion or 2.5 percent of these loans for DNB at 2016 Q1. If a stable loan portfolio is assumed, further losses on oil-related loans of 3.8 billion will result in cumulative loan losses of 7 percent of these loans. After 2016 Q1, the remaining estimated loan losses for 2016 and 2017 are up to NOK 10.8 billion. Oil-related loan losses of NOK 3.8 billion represent 35 percent of the remaining NOK 10.8 billion.

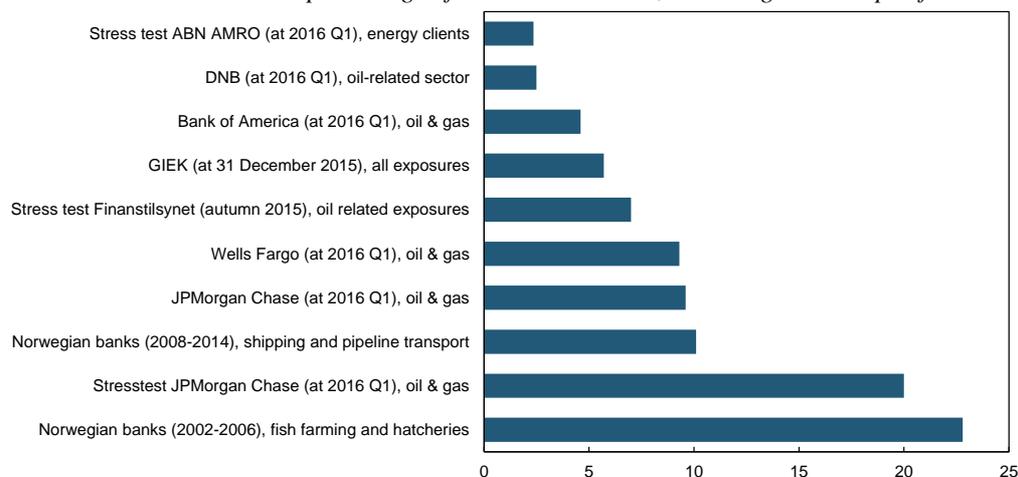
20 At end-2014, these loans amounted to NOK 52 billion, that is less than loans to oil-related activity.

21 From JPMorgan's annual investor day in February 2016, which suggests a total of USD 1.3 billion in cumulative loan loss provisions as at 2016 Q1, and a further USD 1.5 billion with an oil price of USD 25 per barrel for 18 months. Oil and gas sector loans total USD 14 billion.

22 Public reporting of financial statements from banks and finance companies (ORBOF).

CHART 19: Stress tests for oil-related loans, high historical loan losses and GIEK's provisions

Cumulative loan losses as a percentage of loans to the sector, EAD or guarantee portfolio



Sources: DNB, Finanstilsynet, GIEK, Bank of America, JPMorgan Chase, Wells Fargo, ABN AMRO and Norges Bank

6.2 What is the extent of losses that banks can absorb? Loss-absorbing capacity of earnings and equity capital

Banks' profitability functions as a first-line buffer in the event of higher loan losses. Norwegian banks' profitability is solid. During the financial crisis and the banking crisis in the 1990s, profitability before loan losses was largely maintained. The high percentage of floating-rate loans in Norwegian banks' portfolios enables them to pass higher costs onto borrowers. Nevertheless, individual banks' profitability may weaken if their funding costs are higher than the funding costs of the other banks in the Norwegian market. Negative lending growth may also put pressure on earnings.

For DNB Bank Group and SR-Bank, earnings before tax can cover an annual loss of around 16 percent of the exposure at default (EAD) to oil-related activity. If earnings are measured relative to loans rather than to EAD, the loss-absorbing capacity of earnings will amount to 21 percent of loans.²³ The loss-absorbing capacity is substantially higher than the extent of losses in shipping over the past decade. Norwegian banks' earnings are therefore an important buffer against higher oil-related loan losses.

In the event of an operating loss, capital beyond the minimum requirement may be used to absorb loan losses. Norwegian banks have built up capital for several years and their leverage ratios are higher than in most other countries. Exposure (EAD) to oil-related activity is approximately equal to the entire equity capital of DNB Bank Group and SR-Bank, 88 percent and 102 percent, respectively. Cumulative industry-specific loan losses rarely exceed 10–20 percent of loans (Chart 19).

In a scenario, we assume that loans to oil-related activity account for 75 percent of EAD²⁴ and that losses amount to 25 percent of oil-related loans over five years, which

²³ If the loans represent 75 percent of EAD (otherwise see footnote 24).

²⁴ In 2015 Q4, DNB had corporate loans that represented around 75.5 percent of relevant EAD. Loans as a percentage of EAD may increase in a downturn. Such an increase is not assumed in the scenario here, in the interest of optimal comparability with the loan losses in fish farming and hatcheries, and JPMorgan Chase's stress test.

is equivalent to the share of losses in fish farming. Annual loan losses in excess of normal levels in this period will then be around NOK 700 million for SR-Bank and NOK 5.8 billion for DNB. For the average of SR-Bank and DNB, the losses in this scenario amount to approximately 25 percent of profit before tax in 2015. These banks thus have the capacity to deal with the historically high loan losses in this scenario without reducing the banks' capital ratios.

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If the loan loss of 25 percent of loans to oil-related activity had to be absorbed over one year, rather than over five years, this would amount to an average of 124 percent of profit before tax. This would then result in a reduction of a few tenths in the banks' capital ratios, which would also be manageable.

Overall, exposure to oil-related activity is not high compared with the loss-absorbing capacity of banks' earnings and equity capital.

7 Conclusions

The outlook for the oil-service industry is uncertain. So far, the decline in debt-servicing capacity has been moderate. This may be one reason banks' loan losses are still low. Market pricing suggests that companies in the supply and drilling segments, which hold the most debt, may experience considerable problems with servicing debt in the period ahead. The seismic segment may face further challenges. This may result in higher losses on banks' loans to the oil-related sector. Even in the event of a moderate increase in oil prices and oil investment, the large overcapacity of vessels may have a dampening effect on debt-servicing capacity also in the period ahead.

After having built up capital over several years, Norwegian banks are solid. Norwegian banks' leverage ratios are high compared with banks in most other countries. The profitability of Norwegian banks is also good. Norwegian banks appear to be well-positioned to deal with a scenario of oil-related losses on a par with their highest losses in an individual industry over the past 20 years.

Challenges for banks overall might probably first arise if there are substantial spillovers from the oil-related sector downturn to other parts of the economy. Such spillover effects have not been assessed in this commentary.