



Capital Requirements and Bank Behavior

A Case Study of the DNB Bank Group

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Abstract

The Basel III Capital Accord was introduced as a regulatory response to the financial crisis. Lack of sufficient capital requirements for banks was an important lesson learned after several financial institutions went bankrupt. By strengthening the balance sheet of banks, the Basel III Accord aims to prevent future crisis and bank distress.

When banks' regulatory environment is changed through increased capital requirements, they are forced to adapt their behavior. The object of this thesis is to examine how Norwegian banks in general and specifically the DNB Bank Group, has adapted to a situation where its capital ratios are becoming increasingly constrained by regulation. The ultimate aim of the thesis is to study whether the DNB Bank Group is able to fulfill the new capital requirements being introduced gradually towards 1 July 2016 without issuing equity.

An analysis of the Norwegian banks' behavior in the period 2009-2013 indicates that banks have primarily adapted to the increased capital requirements through issuing equity capital or retaining earnings. The analysis shows that Norwegian banks are on the track to fulfilling the capital requirements set by the Norwegian Ministry of Finance.

In order to conduct an in-depth analysis, a case study of the DNB Bank Group was conducted. The bank has implemented several measures which strengthens the balance sheet. Through an analysis of the DNB Bank Group's financials, projected until the second quarter of 2016, I can conclude that given the assumptions applied in the baseline case, the bank is able to fulfill the capital requirements without having to issue equity.

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Introduction

In the fall of 2008 the world witnessed the outbreak of the worst financial crisis since the Great Depression of the 1930s. The collapse of the international financial markets caused a severe cyclical downturn with sharply rising unemployment and significant welfare cuts in many countries. The extensive damage to the global economy brought renewed attention to international banking regulation. In 2010 the Basel Committee on Banking Supervision issued the third Basel Accord as a regulatory response to the financial crisis. The main features of the new international regulatory framework are higher capital requirements and stricter standards for high-quality capital in banks. The Committee aims to improve the loss-absorbing capacity of banks, thereby reducing the risk of spillover effects from the financial sector to the real economy.

When banks' regulatory environment is changed through increased capital requirements, they are forced to adapt their behavior. The approach taken to adjust to capital pressure varies with the business cycle and the banks' financial situation. During booms, banks might find it easy to raise equity capital and potential earnings retentions will be high. During downturns, with declines in credit demand and increased losses, banks may prefer to reduce lending. In general, banks respond to capital ratio pressure in the manner they believe to be most cost effective, which may vary substantially (BIS, 1999).

Norway was among the first countries to introduce the third Basel Accord. Several banks have issued equity after the Norwegian implementation plan was approved in June 2013, with the final date of implementation being July 1st 2016. The new regulatory framework has received ample attention by the media and Norway's largest bank and financial services provider, DNB, has been featured frequently in the newspapers. The bank has been criticized for making its customers pay for the capital build-up through increased interest margins, while investors reap the profits. Furthermore, the bank's CEO has stated that the DNB will not issue equity to fulfill higher capital requirements. Norwegian regulators are concerned that the reluctance to issue equity will result in reduced lending, which could harm economic growth.

In this thesis I will examine the DNB Bank Group, which represents DNB's bank facilities. I will look into how the bank has adapted to a situation where its capital ratios are becoming increasingly constrained by regulation. Moreover, the future development in the capital adequacy of the DNB Bank Group is projected with the aim of analyzing the bank's ability to build required capital. The objective of the research and analysis is ultimately to answer the following research question; *Will the DNB Bank Group be able to meet the capital requirements by July 1st 2016 without issuing equity?*

Limits in scope

An addition to the third Basel Accord is a set of liquidity requirements that complement the capital requirements and aims to strengthen bank's liquidity. For the purpose of answering the research question I find it reasonable to limit the scope of the thesis to the capital requirements of the Basel accords. The liquidity requirements will thus not be evaluated.

It should be noted that the analysis was concluded before the DNB Bank Group's first quarter financials was released on May 8th 2014. The financials for the first quarter of 2014 is thus forecasted as a part of the projection period in the model.

Structure

The thesis consists of three main parts; bank regulation and supervision (part 1), the Norwegian banking sector (part 2) and a case study of the DNB Bank Group (part 3).

Part 1 provides an introduction to the role of banks and why banks are regulated. In addition this section offers a brief overview of the Bank of International Settlements, followed by a more detailed explanation of the three Basel accords, both in an international and Norwegian context.

While the international backdrop is provided in Part 1, Part 2 focuses solely on the Norwegian banking sector and covers the key interest rates, market structure, bank's funding composition and the key drivers of earnings. The development in the capital adequacy of Norwegian banks is studied and evaluated. In order to be able to analyze the adaption to new capital requirements, the DNB Bank Group is chosen for an in-depth case study in part 3.

Part 3 provides an introduction to the DNB Bank Group. The bank's adaption to higher capital requirements is analyzed in a historical context first, followed by a projection of the bank's financial from the fourth quarter of 2013 until the second quarter of 2016 when the capital requirements are introduced in full.

1 Banking and Capital Adequacy

1.1 The Role of Banks

Are banks special? An essay on this question remains as relevant today as when it was written more than three decades ago. Gerald Corrigan (1982), who was then the President of the Federal Reserve Bank of Minneapolis, argued that there are three characteristics that distinguish banks from all other classes of institutions – both financial and nonfinancial; banks offer transaction accounts, banks are the backup source of liquidity for all other institutions and banks are the transmission belt for monetary policy. Additionally, Mishkin (1991) argues that banks play a special role in the financial system because of their function in solving asymmetric information problems in credit markets.

1.1.1 Issuers of Transaction Accounts

A transaction account is a deposit account held by the bank for the purpose of securely and quickly providing frequent access to funds on demand through a variety of different channels. According to Corrigan (1983), the critical difference between banks and other classes of financial institutions rests with the capacity of banks to incur and to create liabilities that are payable on demand and that are readily transferable to third parties. The banks are partly funded by deposits that can be withdrawn instantly, while these deposits are invested in assets with maturity several years ahead. This is called maturity transformation and enables banks to provide long-term lending through short-term borrowing (Norges Bank, 2004).

1.1.2 Backup Sources of Liquidity

The financial markets are dependent on the banking system as their standby or backup source of credit and liquidity (Corrigan, 1983). Banks have the ability to supply credit and liquidity particularly in situations where other institutions or markets may be unwilling or unable to do so. They can carry out this function because the deposit

creating function of banks in tandem with their relationship with a lender of last resort¹ provides an element of credit and liquidity elasticity, which is not immediately available to other institutions. In the normal course and even in periods of stress, individual banks and the banking system as a whole are able to provide necessary liquidity because of their ability to quickly fund loans through a variety of market sources.

1.1.3 Transmission Belt for Monetary Policy

Corrigan (1983) states that the fact that banks are subject to reserve requirements places the banking system in the unique position of being the "transmission belt" through which the actions and policies of the central bank have their effect on market conditions, money and credit creation, and economic conditions generally. Even for banking systems that do not operate with required reserves, the interest payments made by the central banks on the reserve balances of banks, makes the reserves an important part of monetary policy. The reserves in the banking system also serve the complementary purpose of providing the working balances, which permit the financial markets to function and to effect the orderly end-of-day settlement of the transactions that occur over the course of each business day (Corrigan, 1983).

1.1.4 Solution to the Asymmetric Information Problem

According to Mishkin (1991), banks play a special role in the financial system because they are especially well suited to solve asymmetric information problems in credit markets. Borrowers have an informational advantage over lenders because borrowers know more about the investment projects they want to undertake. This informational advantage results in adverse selection and the classic lemons problem, first described by Akerlof (1970). A lemon problem occurs in the debt market because lenders have trouble determining whether a borrower is a good customer, who has good investment opportunities with low risk, or a bad customer who has poorer investment projects with high risk. If the lender cannot distinguish between the borrowers of good quality and those of bad quality, the lemons, loans will only be made with interest rates that reflect

¹ A lender of last resort is a lender, typically a central bank, which provides banks with funds when they cannot borrow from the market. The availability of such lending is intended to prevent systemic problems due to liquidity shortage in individual institutions (OECD, 2013).

the average quality of the good and bad borrowers. Another possible outcome of adverse selection is that the lender wants to cut down the number of loans, which causes the supply of loans to decrease. This could lead to a decline in investment and aggregate economic activity (Mishkin, 1991). Banks are well suited to solve asymmetric information problems inherent in credit markets, as they have the expertise in collecting information about potential customers, and thus are better able to screen good borrowers from bad borrowers at a low cost.

From the above discussion, the answer to Corrigan's question is quite clear: Banks' are special, and the important functions of banks make them essential to the functioning of an efficient financial and economic system.

1.1.5 Why regulate banks?

Bank creditors must have sufficient trust in banks' ability to repay their debts for the banking system to work properly. Without trust, the banking system can go from being stable to becoming unstable in a very short amount of time (Borchgrevink, Søvik, & Vale, 2013). This vulnerability arises because of maturity transformation. Investing short-term deposits in long-term assets makes banks vulnerable to excessive deposit withdrawals, so-called bank runs. Deposit insurance and direct access to the lender of last resort, are regulations that can improve the market outcome. These facilities are uniquely available to banks to reinforce the public confidence (Corrigan, 1983).

Banks are also vulnerable to other banks' distress. When a bank is in the situation of not being able to pay the full amount on its liabilities, the counterparties of the bank incur losses. This is direct contagion of financial distress. Also, if one bank incurs unexpected losses it will tend to reduce lending and hence reduce the supply of funding through the interbank market (Borchgrevink, Søvik, & Vale, 2013). This tightens the funding supply to other banks, and may reduce the lending from these banks as well. The banking sector is interconnected, meaning that banks tend to have many and large exposures to other banks. In order to apply the necessary measures for safety and soundness, regulators must monitor risks at the macro level and implement regulation measures to address vulnerabilities at the system level.

The interconnectedness between bank credit and the real economy strengthens the importance of bank regulation. In the event that large, interconnected banks fail to meet their financial obligations, the consequences on the real economy could be devastating. With increasing losses, banks' ability to provide credit is weakened. Households and businesses postpone investment due to lack of access to credit, and economic activity drops. Lower economic activity and increased unemployment may in turn cause borrowers to have trouble servicing their debt. This further increases bank's losses, and the negative spiral continues.

The likelihood of a government rescue increases with the probability of spillover effects that could damage the real economy. Because of this, banks, and especially large banks, have an implicit government guarantee. Expectations of government support give shareholders, and in turn bank managers, incentives to choose more risky portfolios and higher leverage. With deposit insurance in place, the depositors have weak incentives to monitor their banks. Even more professional creditors might not have full incentive to monitor banks because they expect that the government will guarantee the bank's debt. These moral hazard² issues, deposit insurance and government guarantee, entail higher than optimal risk in banks (Borchgrevink, Søvik, & Vale, 2013). As recently witnessed, banks with risky portfolios and high leverage are the first to experience increasing losses during market downturns.

Banks are special institutions and their importance in society makes the need for regulation evident. The interconnectedness of the banking sector and the risk of spillover effects to the real economy in the event of bank failure point to the necessity of guidelines for banks' risk-taking. Furthermore, it could be argued that the deposit insurance and the government's incentive to keep banks afloat cause moral hazard problems that promote over-leveraged banks.

The capital requirement forms the fundament of financial regulation because capital acts as a cushion to absorb unexpected losses, thereby keeping problems in the financial

² When an agent undertakes actions that cannot be observed by other agents in the economy, and these actions confer risk on these other agents, it is called moral hazard (Borchgrevink, Søvik, & Vale, 2013).

sector from becoming problems in the real economy. Additionally, capital requirements will increase the capital lost in case of failure and are therefore expected to reduce the incentive to take on high risk (Borchgrevink, Søvik, & Vale, 2013). The Basel Committee on Banking Supervision has played a key role in establishing capital requirements for banks on an international level. International banking supervision and regulation will be addressed in the following.

1.2 International Banking Supervision and Regulation

1.2.1 The Bank of International Settlements

The Bank for International Settlements (BIS) serves central banks in their pursuit of monetary and financial stability, encourages international cooperation in those areas and acts as a bank for central banks. Established in May 1930, the BIS is the world's oldest international financial organization (BIS (1), 2013). The BIS arrange regular meetings of Governors and senior officials of member central banks. Held every two months in Basel, these gatherings provide an opportunity for participants to discuss the world economy and financial markets, and to exchange views on topical issues of central bank interest or concern. The main result of these meetings is an improved understanding by participants of the developments, challenges and policies affecting various countries or markets (BIS (1), 2013).

1.2.2 The Basel Committee on Banking Supervision

The Basel Committee on Banking Supervision (BCBS) was created by the G10³ countries at the end of 1974 and is a part of BIS. BCBS consists of central bankers and finance ministers from 27 countries⁴, and provides a forum for international cooperation on banking supervisory matters. Its objective is to enhance understanding of key

³ The Group of Ten is made up of eleven industrial countries (Belgium, Canada, France, Germany, Italy, Japan, the Netherlands, Sweden, Switzerland, the United Kingdom and the United States), which consult and co-operate on economic, monetary and financial matters (BIS (3), 2013).

⁴ Member countries: Argentina, Australia, Belgium, Brazil, Canada, China, France, Germany, Hong Kong SAR, India, Indonesia, Italy, Japan, Korea, Luxembourg, Mexico, the Netherlands, Russia, Saudi Arabia, Singapore, South Africa, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States (BIS (2), 2013).

supervisory issues and improve the quality of banking supervision worldwide (BIS (2), 2013).

John Connolly (2013), senior policy advisor and regulatory capital specialist at the Department of the Treasury in the US, states that the need for international banking regulations came with the internationalization of the financial markets. “An international banking sector needs an international regulatory coordinator, and the Basel Committee carries out that objective”.

Since the first meeting in February 1975, meetings have been held regularly three or four times a year. An important objective of the Committee's work has been to close gaps in international supervisory coverage in pursuit of two basic principles; that no foreign banking establishment should escape supervision and that supervision should be adequate (BIS (2), 2013). The capital accords are the means to achieving this objective. The Committee does not possess any formal supervisory authority, and its conclusions do not have legal force (BIS (2), 2013). Rather, BCBS formulates broad supervisory standards and guidelines and leaves it up to individual authorities to implement them in a way best suited to their national systems.

1.3 The Basel Capital Accords

The Basel Capital Accords are recommended banking regulations, developed by BCBS. Since 1988 the BCBS has issued three capital accords known as Basel I, Basel II and Basel III. Basel I was implemented by member countries by 1992, Basel II is still being implemented in certain countries and Basel III is coming into effect gradually from January 1st 2014 in most member countries.

1.3.1 Basel I

The first Basel Capital Accord, known as Basel I, was introduced in 1988 and was the outcome of BCBS' work over several years to secure international convergence of supervisory regulations governing the capital adequacy of international banks (BCBS,

1988). The objective of the system was to prevent regulatory arbitrage⁵, thereby providing an equitable basis for competition for banking institutions in participating countries (Connolly, 2013). Governments and international regulators were concerned that if countries did not cooperate in implementing standards, banks might prefer to domicile in countries with the most relaxed requirements. This would result in a competitive advantage for these banks, and potentially lead to a race to the bottom⁶ in banking regulation.

Basel I laid out the details of the agreed framework for measuring capital adequacy and the minimum standard to be achieved, which the national supervisory authorities represented on the BCBS agreed to implement in their respective countries (BCBS, 1988)

1.3.1.1 The Constituents of Capital

Tier 1 Capital

Tier 1 (core) capital in Basel I consists of the most liquid and reliable capital on a bank's balance sheet, namely equity capital and disclosed reserves (BCBS, 1988).

Tier 1 capital includes (a) permanent shareholder's equity in the form of common stock, perpetual non-cumulative preferred stock and minority interests in equity accounts of consolidated subsidiaries; (b) disclosed reserves such as retained earnings, share premiums or other surplus and (c) qualifying innovative capital instruments up to a maximum of 15 percent of Tier 1 capital. Goodwill is deducted.

Tier 2 Capital

Tier 2 (supplementary) capital in Basel I consists of less reliable capital than that of Tier 1.

⁵ Regulatory Arbitrage is a practice where firms capitalize on loopholes in regulatory systems in order to circumvent unfavorable regulation, for example through relocation (Investopedia, 2013)

⁶ Race to the Bottom is the idea that if one country provides an advantageous regulatory environment, other countries must weaken their regulation in order to provide a competitive basis for business, which leads to reduced regulation everywhere.

Tier 2 capital includes (a) undisclosed reserves that have been accepted by the bank's supervisory authority; (b) general loan-loss reserves limited to 1.25 percent of risk-weighted assets; (c) hybrid (debt, equity) capital instruments; (d) subordinated debt limited to 50 percent of Tier 1 capital and (e) asset revaluation reserves.

From total capital (Tier 1 + Tier 2) banks deduct investments in unconsolidated subsidiaries and holdings of other banks' capital (at national discretion) (BCBS, 1988).

1.3.1.2 The Risk Weights

BCBS considered that a weighted risk ratio in which capital is related to different categories of asset or off-balance-sheet exposure, weighted according to broad categories of relative riskiness, was the preferred method for assessing the capital adequacy of banks (BCBS, 1988). Risk-weighted assets are asset values multiplied by a factor (risk weight) that is a proxy of the credit risk related to these assets. The Basel I framework was kept as simple as possible and applied only five weights; 0, 10, 20, 50 and 100 percent.

1.3.1.3 A Target Capital Ratio

The capital ratio expresses the relationship between the bank's capital (tier 1 and tier 2 capital) and its risk-weighted assets. To be adequately capitalized, it was agreed that an internationally active bank had to hold a target total capital ratio of minimum 8 percent of its risk-weighted assets, see equation 1. Additionally, the share of the core capital had to be at least 4 percent (BCBS, 1988), see equation 2. The capital requirement framework was designed to establish minimum levels of capital, and national authorities were free to adopt arrangements that set higher levels (BCBS, 1988).

Equation 1, Total Capital Ratio (BCBS, 1988)

$$\text{Total Capital Ratio} = \frac{\text{Tier 1} + \text{Tier 2}}{\text{Risk - Weighted Assets}} > 8,0 \%$$

Equation 2, Total Capital Ratio (BCBS, 1988)

$$\text{Core Capital Ratio} = \frac{\text{Tier 1 capital}}{\text{Risk - weighted assets}} > 4,0 \%$$

Basel I was directed towards assessing capital in relation to credit risk, the risk of counterparty failure. Other risks, notably interest rate risk and the investment risk on securities, needed to be taken into account by supervisors in assessing overall capital adequacy (BCBS, 1988).

Basel I was enforced by law in the G10 countries in 1992. It has been criticized on several grounds, where the main critique was directed at its simplicity. The limited differentiation of credit risk, the lack of recognition of portfolio diversification effects, no recognition of term-structure of credit risk and simplified calculation of potential future counterparty risk, were some pitfalls in the Basel I Capital Accord. Basel II was developed in response to perceived shortcomings in Basel I, in particular with the asset risk-weighting system.

1.3.2 Basel II

Basel II, first published in June 2004, is the second of the capital accords recommended by BCBS. Basel II is based on three mutually reinforcing pillars: minimum capital requirements (Pillar I), the supervisory review process (Pillar II) and market discipline (Pillar III). The new framework was designed to improve the way regulatory capital requirements reflect underlying risks and to better address the financial innovation that has occurred in recent years. The changes aimed at rewarding and encouraging continued improvements in risk measurement and control (BCBS, 2005).

1.3.2.1 Pillar I

Pillar I outlines the specific methodologies and approaches to determine minimum capital requirements based on credit risk, market risk and operational risk. The required level of the minimum capital ratios established in Basel I remain unchanged, but Pillar I in Basel II provides a fundamental update for the calculation of risk weighted assets, the denominator of the capital ratio.

Calculation of risk-weighted assets

With Basel II the banks have a choice between two broad methodologies for calculating their capital requirements for credit risk, namely the standardized approach and the internal ratings based approach (Andersen, 2013).

The Standardized Approach

The standardized approach increases the risk sensitivity of the capital framework by recognizing that different counterparties within the same loan category present far different risks to the financial institution. Thus, instead of placing all commercial loans in the 100 percent risk weight basket, the standardized approach takes into account the credit rating of the borrower. In determining the risk weights in the standardized approach, banks may use assessments by external credit assessment institutions recognized as eligible for capital purposes by national supervisors.

The Internal Ratings Based Approach (IRB)

Subject to certain minimum conditions and disclosure requirements, banks that have received supervisory approval to use the IRB approach may rely on their own internal estimates of risk components in determining the capital requirement for a given exposure (BCBS, 2005). The risk components include measures of the probability of default (PD), loss given default (LGD), the exposure at default (EAD), and effective maturity (M). In some cases, banks may be required to use a supervisory value as opposed to an internal estimate for one or more of the risk components.

The IRB approach allows banks to be more flexible and use formulas developed by BCBS to calculate appropriate risk weights. Equation 3 is the formula for computing the risk-

weight of residential mortgage exposures and serves as an example of the formulas used to calculate different risk-weights using the IRB approach.

Equation 3 Risk-weight of residential mortgage exposures in Basel II (BCBS, 2005)

$$RWA = 12,5 * 1,06 * EAD [LGD * N \left(\frac{G(PD) + \sqrt{R} * G(0,999)}{\sqrt{1 - R}} \right) - (PD * LDG)]$$

where N is the cumulative standard normal distribution and G its inverse. The formula is calibrated to a solvency margin of 99.9 percent, which means that there is a probability of less than 0,1 percent that required capital does not cover the bank's losses over the next year. The formula contains a multiplier, which is set to 1.06 based on the quantitative impact analysis' that BIS has conducted of Basel II. For the mass market, the correlation (R) is set to 0.15. It is only the correlation between each position and a factor for systemic risk that is taken into account. The correlation between the different positions is ignored. The formula thus assumes that all idiosyncratic risk can be diversified away (Andersen, 2013).

When applying the IRB approach, banks can choose the foundation- or the advanced approach. Under the foundation approach, as a general rule, banks provide their own estimates of PD and rely on supervisory estimates for other risk components. Under the advanced approach, banks provide their own estimates of PD, LGD and EAD, and their own calculation of M, subject to meeting minimum standards.

Market risk and operational risk

In addition to the assessment of credit risk, Pillar I requires lenders to assess their market and operational risk and provide capital to cover such risk.

Operational risk is defined as the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events. This definition includes legal risk, but excludes strategic and reputational risk. There are three methods for calculating operational risk capital charges in a continuum of increasing sophistication and risk sensitivity: the basic indicator approach; the standardized approach; and

advanced measurement approaches.

Market risk is defined as the risk of losses in on and off-balance-sheet positions arising from movements in market prices. The risks subject to this requirement are; the risks pertaining to interest rate related instruments and equities in the trading book, foreign exchange risk and commodities risk throughout the bank. There are two alternative approaches to the measurement of market risk, a standardized method and an internal models approach (BCBS, 2005).

The amount of the total risk-weighted assets is determined by the sum of the risk-weighted assets for credit risk, market risk and operational risk (BCBS, 2005).

1.3.2.2 Pillar II

Pillar II provides guidelines for supervisory review by national banking regulators. Banks assess their capital adequacy on the basis of their own internal risk management methodology and supervisors analyze whether a specific bank's capital adequacy assessment is in line with its overall risk profile and business strategies (Dierick, Pires, Scheicher, & Spitzer, 2005).

1.3.2.3 Pillar III

Pillar III outlines the BIS perspective on market discipline, with particular emphasis on core disclosures that participating banks will be required to provide to the market as part of the reinforcement of safety and soundness within the banking industry (Dierick et al., 2005).

Where Basel I only covered minimum capital requirements, the Basel II Framework rests on three complementary pillars and constitutes a further strengthening of the soundness and stability of the international banking system. However, despite the improvements relative to Basel I, the transition to Basel II led to a significant decrease in the risk weights of assets because of the introduction of the IRB approach. The decline in IRB banks' risk weights has been especially large for residential mortgages and certain types of corporate loans. The intention behind the use of the IRB approach was to

improve alignment between capital requirements and banks' risk management, by using more risk-sensitive weights that reflected the individual bank's own assessment of risk. The initial assumption was that the introduction of the IRB approach would not result in a decline in the level of capital, however in several countries it did.

To prevent banks' internal risk weights from reducing risk-weighted assets and thus banks' capital needs too much and too quickly, temporary, lower limits were set for how much capital could be reduced relative to Basel I. The arrangement is referred to as the "Basel I floor", or Basel II transitional rule. The lower limit was initially 95 percent of the value of risk-weighted assets calculated by Basel I. By year-end 2008 the limit was reduced to 80 percent (BCBS, 2005).

1.3.3 Basel III

As the financial markets and the financial services industry evolve, regulations and requirements become outdated. The previous Basel Accords are widely perceived to have had various shortcomings that may have contributed to the financial crisis.

However, even before Lehman Brothers collapsed in September 2008, the need for a fundamental strengthening of the Basel II framework had become apparent.

BCBS believes that the previous frameworks neither adequately accounted for risks posed by exposures to transactions such as securitizations and derivatives nor required institutions to maintain adequate levels of capital. In response to these shortcomings, the third capital adequacy framework was published by BCBS in December 2010. The objective of the reform is to improve the banking sector's ability to absorb shocks arising from financial and economic stress, whatever the source, thus reducing the risk of spillover from the financial sector to the real economy (BCBS, 2011)

The regulatory framework is based upon the three pillars introduced in Basel II.

1.3.3.1 Pillar I

In Basel III the first pillar has been altered and encompasses three parts; capital, risk and leverage.

Capital

Basel III introduces a new definition of capital to increase the quality, consistency and transparency of the capital base. The recent crisis demonstrated that banks were not keeping sufficient levels of capital, when credit losses and write-downs came out of retained earnings. The strengthening of the common equity of banks is an important part of the Basel III Capital Accord. Furthermore, the reform package removes the existing inconsistency in the definition of capital by harmonizing deductions of capital and by increasing transparency through disclosure requirements (BCBS, 2011).

There are three categories; common equity tier 1, additional tier 1 and tier 2 capital.

Common Equity Tier 1

Common equity tier 1 (CET 1) consists of the sum of the following elements; (a) common shares issued by the bank that meet the criteria for classification as common shares for regulatory purposes (or the equivalent for non-joint stock companies); (b) stock surplus (share premium) resulting from the issue of instruments included in CET 1; (c) retained earnings; (d) accumulated other comprehensive income and other disclosed reserves; (e) common shares issued by consolidated subsidiaries of the bank and held by third parties that meet the criteria for inclusion in CET 1 capital, see appendix 1 for the relevant criteria; and (f) regulatory adjustments applied in the calculation of CET 1 capital.

Additional Tier 1 Capital

Additional tier 1 capital consists of the sum of the following elements; (a) instruments issued by the bank that meet the criteria for inclusion in additional tier 1 capital (and are not included in CET 1); (b) stock surplus (share premium) resulting from the issue of instruments included in additional tier 1 capital; (c) instruments issued by consolidated subsidiaries of the bank and held by third parties that meet the criteria for inclusion in additional tier 1 capital and are not included in CET 1, see Appendix 1 for the relevant criteria; and (d) regulatory adjustments applied in the calculation of additional tier 1 capital.

Put simply, CET 1 capital is equity capital less goodwill and intangible assets. The

difference between additional tier 1 capital and common equity tier 1 capital comprises roughly speaking hybrid capital (FSAN, 2012).

Tier 2 Capital

Tier 2 capital consists of the sum of the following elements; (a) instruments issued by the bank that meet the criteria for inclusion in tier 2 capital (and are not included in tier 1 capital); (b) stock surplus (share premium) resulting from the issue of instruments included in tier 2 capital; (c) instruments issued by consolidated subsidiaries of the bank and held by third parties that meet certain criteria for inclusion in tier 2 capital and are not included in tier 1 capital; (d) certain loan loss provisions and (e) regulatory adjustments applied in the calculation of tier 2 Capital.

Limits and Minima

According to the BCBS, the global banking system entered the crisis with an insufficient level of high quality capital. The minimum required CET 1 ratio is raised to 4,5 percent of risk-weighted assets, after deductions, see equation 4. Total tier 1 capital (common equity plus additional tier 1 capital) must be minimum 6,0 percent of risk-weighted assets at all times, see equation 5. Total capital (tier 1 plus tier 2 capital) must be at least 8,0 percent of risk-weighted assets at all times, see equation 6.

Equation 4, CET 1 Ratio (BCBS, 2011)

$$CET1\ Ratio = \frac{Common\ Equity\ Tier\ 1}{Risk - Weighted\ Assets} > 4,5\ \%$$

Equation 5, Tier 1 Capital Ratio (BCBS, 2011)

$$Tier\ 1\ Capital\ Ratio = \frac{Common\ Equity\ Tier\ 1 + Additonal\ Tier\ 1\ Capital}{Risk - Weighted\ Assets} > 6,0\ \%$$

Equation 6, Total Capital Ratio (BCBS, 2011)

$$\text{Total Capital Ratio} = \frac{\text{Tier 1} + \text{Tier 2 Capital}}{\text{Risk - Weighted Assets}} > 8,0 \%$$

Equity Buffers

A key element in the new framework is capital buffers that come on top of the minimum common equity requirement and increases banks' loss-absorbing capacity. The capital conservation buffer equals common equity of 2,5 percent of risk-weighted assets, bringing the total common equity standard to 7 percent.

The countercyclical capital buffer will come on top as a capital requirement that can be increased in good times and removed in bad times. The countercyclical buffer is to consist of CET 1 capital and can normally be set between 0 and 2,5 percent of a bank's risk-weighted assets.

In addition to meeting the Basel III requirements, global systemically important financial institutions (SIFIs) must have higher loss absorbency capacity to reflect the greater risks that they pose to the financial system. Systemically important banks are often so big and interconnected with the financial markets that problems in the bank have spillover effects that are of significant harm to society. The additional loss absorbency requirements are to be met with a progressive CET 1 capital requirement ranging from 1 percent to 2,5 percent, depending on a bank's systemic importance. For banks facing the highest surcharge, an additional loss absorbency of 1 percent could be applied as a disincentive to increase materially their global systemic importance in the future (BCBS, 2011).

When buffers have been drawn down, one way banks should look to rebuild them is through reducing discretionary distributions of earnings. This could include reducing dividend payments, share-backs and staff bonus payments. Banks may also choose to raise new capital from the private sector as an alternative to conserving internally generated capital (BCBS, 2011). In the event that a bank has lower than required equity buffers the framework reduces the discretion of banks to further reduce them through generous distributions of earnings.

Risk

During the 2008 crisis, BCBS learned that the risk-weights on certain asset classes, for example those on residential mortgage backed securities⁷, did not reflect reality, leaving banks over-leveraged in the context of the crisis (BCBS, 2011). Basel III strengthens the capital treatment for certain complex securitizations and requires banks to conduct more rigorous credit analyses of externally rated securitization exposures. There is also a substantial strengthening of the counterparty credit risk framework.

Leverage

A non-risk-based leverage ratio is introduced that includes off-balance sheet exposures and will serve as a backstop to the risk-based capital requirement while contributing to containing system wide build-up of leverage.

1.3.3.2 Pillar II

Supplemental Pillar II requirements address firm-wide governance and risk management; capturing the risk of off-balance sheet exposures and securitization activities; managing risk concentrations and providing incentives for banks to better manage risk and returns in the long term (BCBS, 2011).

1.3.3.3 Pillar III

The reformed requirements under Pillar III relate to securitization exposures and sponsorship of off-balance sheet vehicles. Enhanced disclosures on the detail of the components of regulatory capital and their reconciliation to the reported accounts is required, including a comprehensive explanation of how a bank calculates its regulatory capital ratios (BCBS, 2011).

1.3.3.4 Liquidity Requirements

In addition to the three pillars presented above, Basel III introduced liquidity requirements with the aim of ensuring that banks have an adequate stock of high quality

⁷ A Mortgage-Backed Security (MBS) is a type of asset-backed security that uses a single mortgage, or a pool of them, as collateral. Investors receive payments derived from the interest and principal of the underlying mortgages.

liquid assets. While capital requirements protect banks against a sudden drop in the value of their assets, liquidity requirements protect banks against bank runs.

1.3.4 Implementation in EU and Norway

The Basel Capital Accords must be translated into national law and regulation in order to become valid in each country. In the European Union (EU) the Basel rules are translated into EU Capital Requirements Directives (CRD), which are binding instructions upon EU Member States to prepare and implement compliant national legislation (Shearman & Sterling, 2013). These directives are also binding for nations that are a part of the European Economic Area (EEA). The EEA unites the EU Member States, and Iceland, Liechtenstein and Norway, into an internal market governed by the same basic rules (EFTA, 2013).

1.3.4.1 The European Capital Requirement Directives

The previous European directives that covered Basel I and II were repealed by January 1st 2014, when the CRD IV came into effect. The CRD IV was signed into law on July 1st, 2013 and covers the EU's implementation of Basel III. The directive contains proposals addressing prudential supervision and the new capital conservation and countercyclical capital buffer.

The regulatory package also addresses certain areas not covered by Basel III, which the EU nevertheless wishes to implement. One example of a key regulation introduced by the EU that does not have an equivalent rule in Basel III is the systemic risk buffer. The aim is to prevent and mitigate long-term non-cyclical systemic or macro prudential risks, where disruption in the financial system could potentially have serious consequences on the real economy. The buffer is to consist of CET 1 capital and member states will be able to apply systemic risk buffers of 1 percent to 3 percent for all exposures, and up to 5 percent for domestic and third country exposures (The Council of the European Union, 2013).

Furthermore, the CRD IV extends the Basel I floor of 80 percent until 2017 (Borchgrevink, 2012).

1.3.4.2 Banking Regulation in Norway

As part of the EEA, Norway must implement all the rules covered in the CRD IV. The Ministry of Finance has the overall responsibility for ensuring financial stability in Norway, while the Norwegian Central Bank (Norges Bank) has an advisory role in this process. The Financial Supervisory Authority of Norway (FSAN), which is a government agency subject to the Ministry of Finance, is responsible for overseeing the financial institutions in the country with the aim of promoting safety and soundness in the Norwegian financial sector. The FSAN manages the work of translating EU directives and legislation affecting Norwegian financial institutions, into Norwegian regulation (FSAN, 2014).

The financial crisis did not reveal significant inadequacies in the financial market regulation in Norway. The Basel II framework was implemented in January 2007 and in certain key areas, the Norwegian regulation was somewhat stricter than in many other countries and stricter than what have been the minimum requirements in the EU. This contributed to better-capitalized Norwegian financial institutions at the outbreak of the crisis. In addition, financial regulation in Norway was designed to encompass all relevant financial sector entities, strongly limiting the possibility to exploit regulatory differences.

Even though a strong regulatory framework was in place, Norway is a small, open economy that is susceptible to international market turbulence. The international financial crisis did affect Norwegian banks by restricting their access to capital (FSAN, 2009). The Norwegian financial markets were hit by increasingly higher risk premiums in the bond and money markets. Although government measures to improve banks' financing amended the situation, banks found it difficult to obtain long-term market funding. Furthermore, Norwegian banks are heavily exposed to commercial property, which saw a sharp drop in value in 2008.

Basel III and CRD IV

The Ministry of Finance wanted to strengthen the Norwegian regulatory framework, and

the relatively strong position of Norwegian banks made it possible to introduce Basel III requirements earlier in Norway than most other European countries. The Ministry of Finance required all Norwegian credit institutions to keep a CET 1 capital ratio of minimum 9 percent from 30 June 2012, while the final rules were being drafted. On 22nd of March 2013, the Ministry of Finance proposed changes to the Norwegian regulatory framework, which were approved and came into effect on July 1st, 2013 (FSAN (1), 2013). The new capital requirements are gradually being introduced in the period from July 1st 2013 until July 1st 2016.

The regulation concerning equity buffers gives authorities leeway to adjust the size of the buffers based on country-specific factors. The capital conservation buffer is required to be 2.5 percent, but the countercyclical buffer requirement can be set up to 2.5 percent.

Norwegian credit and asset prices have risen over a number of years, and total debt has reached a high level. House prices and debt continue to rise more rapidly than income. Around one tenth of households hold debt equivalent to five times their income and may face problems servicing their debt if interest rates rise or incomes fall. This will affect consumption, which will have ripple effects on the wider economy and banks may face higher losses on corporate lending as a result. The countercyclical capital buffer is intended to counteract the procyclical effects of bank lending and will help contain the degree of deleveraging in bad times (Olsen, 2013). On December 11th 2013 the Minister of Finance, Siv Jensen, announced that banks are required to hold a countercyclical buffer of 1 percent by July 1st, 2015 (Ministry of Finance, 2013).

There is an additional buffer requirement for systemically important institutions. On May 12th 2014, the Ministry of Finance announced that the strictest buffer for systemically important banks set by the EU in CRD IV, of 2 percent should be implemented (Ministry of Finance, 2014). The regulation stipulates that the Ministry of Finance as a general rule will designate financial institutions with total assets corresponding to at least 10 percent of Mainland Norway's GDP, or a share of the Norwegian lending market of at least 5 percent, as systemically important. DNB, Nordea and Kommunalbanken were identified as systemically important in Norway. These banks will therefore be subject to the additional buffer of 1 percent CET 1 capital from

July 1st 2015 and 2 percent CET 1 capital by July 1st 2016 (Ministry of Finance, 2014).

In addition to the capital requirements set out in the Basel III Capital Accord, the systemic risk buffer introduced by the Council of the European Union was adopted in Norway through the EEA and amount to 3 percent additional CET 1 capital.

Chart 1 shows the capital requirements in Basel II and in Basel III when they are fully implemented in Norway July 1st, 2016. There is an especially large increase in the CET 1 capital that banks are required to hold. In addition to the CET 1 capital, there is the requirement of 1.5 percent additional tier 1 capital and 2.0 percent tier 2 capital, making the total capital requirement 16.5 percent for systemically important banks in 2016.

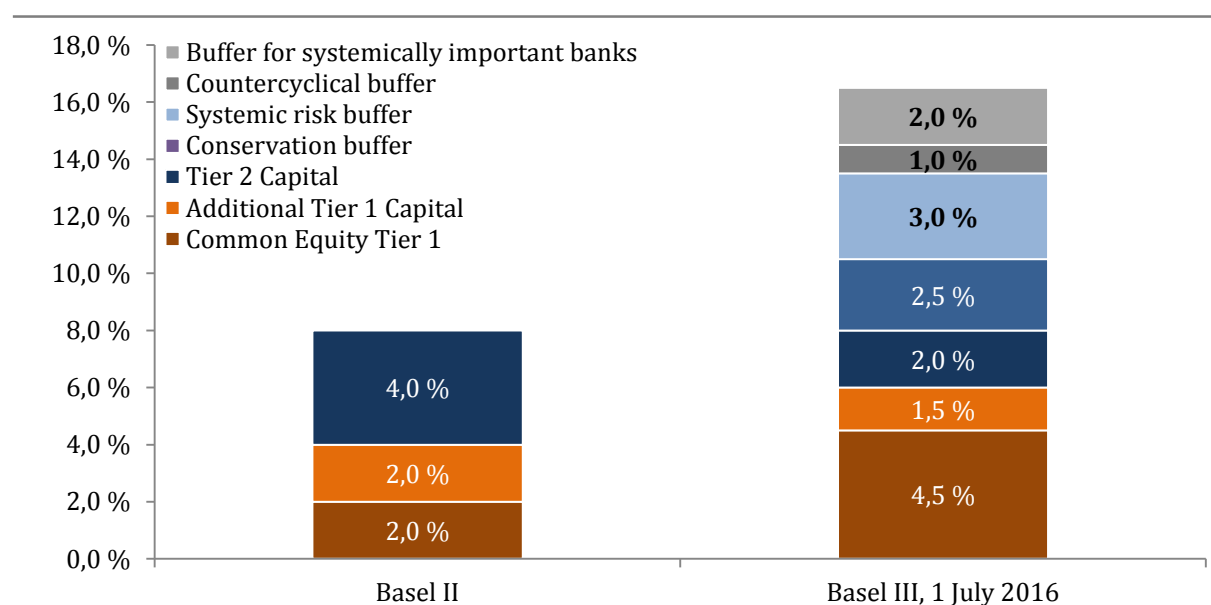


Chart 1 Capital requirements in Basel II compared to the new regulatory framework 1 July 2016 (Norges Bank, 2013 & BCBS, 2005)

Chart 2 below shows the implementation plan for CET 1 capital in Norway. By 1 July 2016 the total requirement of CET 1 is scheduled to be 13 percent for systemically important banks.

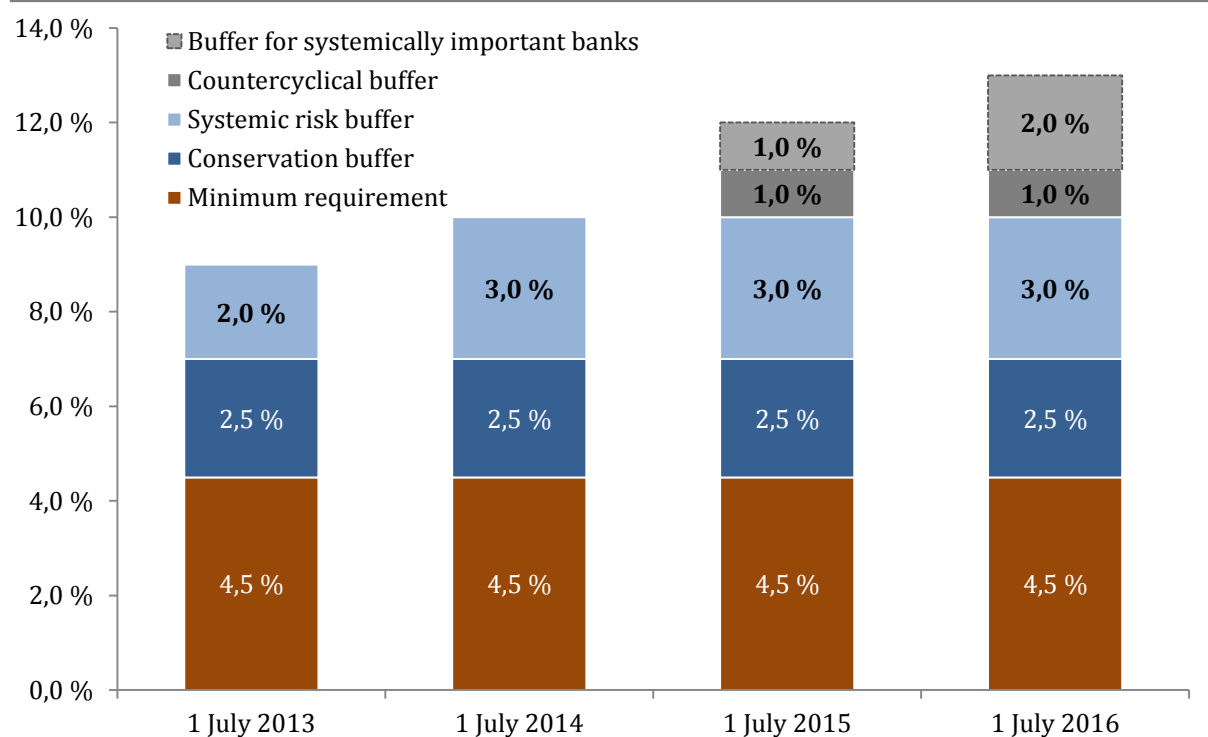


Chart 2 Common Equity Tier 1 capital ratio requirements in the new regulatory framework. 1 July 2013 – 1 July 2016 (Norges Bank (1), 2013)

Higher capital requirements will compel a number of Norwegian banks to strengthen their core capital position in the period ahead. The FSAN's position is that banks must maintain an adequate margin to the regulatory requirements. The Ministry of Finance may impose requirements over and above those in effect for individual institutions or groups of institutions.

Amendments to the CRD IV regarding mortgage assets

On 13 October 2013 the Norwegian Ministry of Finance amended the rules governing risk-weighted assets for capital requirements for banks that use IRB models. To support financial stability the minimum requirement on LGD on mortgage assets was raised from 10 to 20 per cent. The Ministry of Finance claims that an LGD floor of 20 percent will give risk weights on mortgage assets of 20 percent or more in the IRB-models. This represents a substantial increase compared to current and previous levels. Risk-weights per 31 December 2011 are displayed in Chart 3.

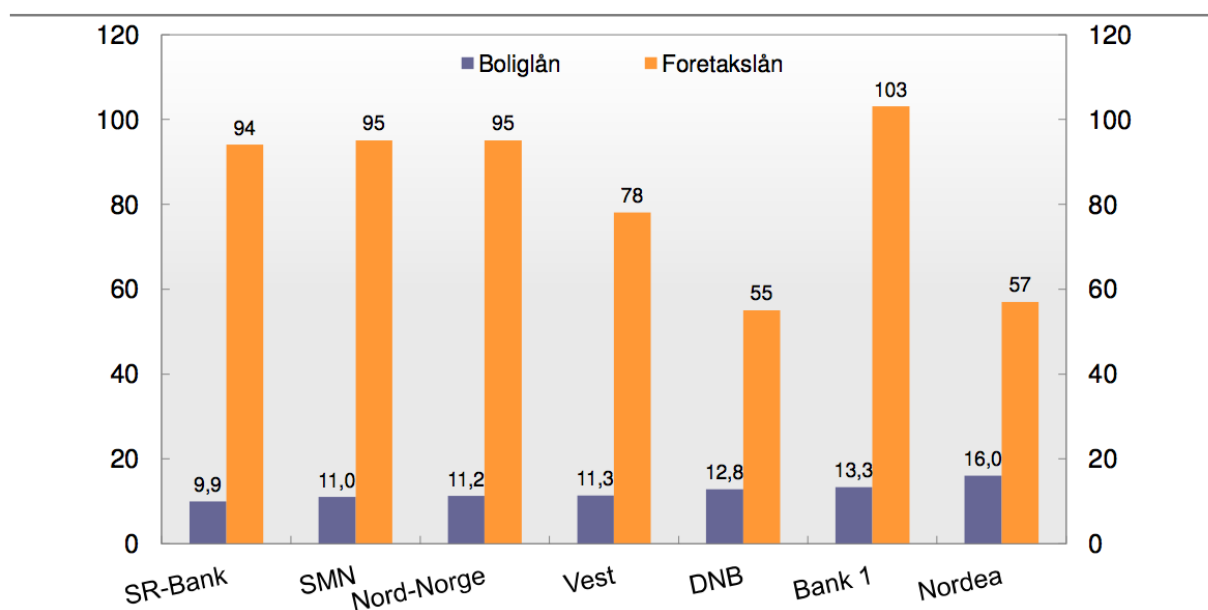


Chart 3 Average risk-weights for mortgage (purple columns) and corporate (orange columns) loans in Norwegian IRB-banks. Percent. Per 31 December 2011 (Syvertsen, 2012)

The new rule came into effect in January 2014. Under CRD IV, yet to be incorporated in the EEA agreement, this requirement also applies to foreign banks' branches (FSAN (1), 2013).

In addition to raising the minimum requirement on LGD, the FSAN is now considering changing the PD calibration and introducing a minimum PD in the IRB models for Norwegian mortgage assets. In a letter dated 21 February 2014 to Finance Norway (FNO), the FSAN suggest introducing a new PD calibration where the PD value is calculated by a weighted average of the average PD level during crisis and the average PD during a normal business cycle. The FSAN proposes a PD value of 4 percent to reflect the crisis estimate, weighted by 20 percent and a PD value representing the normal business cycle estimated by each bank, weighted 80 percent (FSAN, 2014). Additionally, a minimum exposure level PD in the region 0.2 – 0.3 percent is suggested.

The current average risk weight for mortgage exposures is 10.0 per cent. Taking into account a 20% LGD floor and the amendments made to the PD regulation, the estimated new average level of the PD is 22.8 percent. The final rules are expected to be announced during 2014.

As presented, the international rules and regulations of the Basel accords are interpreted and applied differently in different regions and countries. The actual effect that capital requirements have on banks' behavior and decision-making is also depended on the market in which they operate. In the second part of the thesis, the Norwegian banking sector is presented, with emphasis on key characteristics that are relevant for the case study in part 3. The capital adequacy of Norway's five largest banks is also briefly studied in the following part 2.

2 The Norwegian Banking Sector

2.1 Market structure

Compared to other European countries, the banking sector in Norway is small relative to total GDP. The total assets of the Norwegian banking sector are approximately two times GDP. By comparison, the assets of the Swedish banking sector are four times GDP (Norges Bank (3), 2013). If the relative size of the banking sector is viewed as an indicator of systemic risk, then the systemic risk in the Norwegian banking sector might be relatively low.

The Norwegian banking sector is characterized by a relatively high level of concentration and consists of a few large bank groups and numerous small banks. Chart 4 shows the ten largest financial institutions measured by market share of gross loans to customers in 2013 (Finance Norway, 2013). DNB is by far the largest provider of loans in Norway, with a market share of 30.3 percent of gross loans to customers in 2013.

No.	Top 10 banks	2013	
		NOKm	Market share
1	DNB Bank-konsernet	1,050,093	30.27 %
2	Nordea Bank Norge	463,854	13.37 %
3	Handelsbanken	182,800	5.27 %
4	Danske Bank	170,900	4.93 %
5	SpareBank 1 SR-Bank	158,383	4.56 %
6	Mortgage loans by the Norwegian State	141,416	4.08 %
7	Sparebanken Vest	112,937	3.26 %
8	SpareBank 1 SMN	111,875	3.22 %
9	SpareBank 1 Nord-Norge	79,442	2.29 %
10	Sparebanken Hedmark	47,800	1.38 %
	Others	950,019	27.38 %
	Total gross lending	3,469,519	100.00 %

Chart 4, Gross lending in Norway as of December 31, group figures, the ten largest banks (Finance Norway, 2013)

There are two types of banks in Norway; savings banks and commercial banks (Ministry of Finance, 2012). Norwegian savings and commercial banks hold the exclusive right to accept deposits from the public, and deposit and lending activities constitute the core of the banks' activities. The difference between the two types of banks lies in their own capital instruments (Ministry of Finance, 2012).

Commercial banks are organized as limited companies and obtain their capital by issuing shares. There are 16 commercial banks in Norway as of 31 December 2012 (Finance Norway, 2013).

Norwegian savings banks have traditionally been organized as independent foundations whose equity essentially consisted of ownerless capital build-up of retained profits. In 1987 the Savings Banks Act was amended to enable savings banks to bring in capital from the market, by issuing primary capital certificates, from 1 July 2009 termed "Equity Certificates" (ECs)⁸ (The Norwegian Savings Banks Association, 2013). There are currently 109 savings banks in Norway. Out of these, 32 banks have issued ECs.

⁸ New term - new body of rules: Act of 19 June 2009 No. 46 on changes in the Financial Institutions Act and certain other statutes (relating to forms of capital and organization in the savings bank sector etc) came into force on 1 July 2009. On the same date, new regulations on equity certificates came into effect while the old regulations on primary capital certificates were revoked (The Norwegian Savings Banks Association, 2013).

The savings banks have also been given the opportunity to convert to private limited companies, still being savings banks as long as at least 10 percent of the shares are controlled by a savings bank foundation. Currently, three savings banks have converted to private limited companies, including DNB.

Several of the large Scandinavian financial groups are active in the Norwegian market. Nordea's Norwegian subsidiary bank is Norway's second largest bank. Also branches of foreign banks are active and their loans, primarily Handelsbanken and Danske Bank, account for around 11% of total lending (Norges Bank (3), 2013).

Specialized mortgage credit institutions provide loans in addition to banks. These companies raise loans by issuing covered bonds⁹. The Norwegian covered bond legislation was adopted in June 2007, and had just come into effect when the financial crisis hit the international financial markets. In order to provide liquidity to the Norwegian banking market, the authorities opted to swap treasury bills for covered bonds with Norwegian banks and mortgage companies. As treasury bills are considered the safest and most liquid source of funding, this arrangement greatly increased the liquidity of Norwegian credit institutions. However, neither commercial banks nor savings banks are allowed to issue covered bonds. In order to take advantage of the authorities' liquidity window, a large number of banks established mortgage credit institutions as new subsidiaries. Today more than 20 Norwegian specialized credit institutions are licensed to issue covered bonds (Finance Norway, 2013).

2.2 Interest rates

2.2.1 The Key Policy Rate

The key policy rate is the interest rate that banks earn on their overnight deposits in Norges Bank. It is the short-term interest rate benchmark that anchors the broader interest rate structure for the domestic financial system. By changing the key policy rate, the central bank affects the short money market rates, thus affecting the money market

⁹ Obligasjoner med fortrinnsrett – OMF – are equal to covered bonds issued by other European countries and the regulation is adapted to match the directives of the EEA-agreement

rates with longer maturity. These in turn affect the rates on government bonds, private bonds and banks' lending rates.

Banks normally hold deposits of a certain volume in the central bank they can draw on to cover unanticipated payments before they have to borrow from other banks in the market. When these deposits are sufficiently large, short-term money market rates will be pushed down towards the deposit rate. The level of reserves required to achieve this depends on bank demand and can vary over time.

On 3 October 2011 a new system was introduced where only a certain portion of a bank's deposits in the central bank (a quota) bears interest at the key policy rate. Deposits in excess of the quota bears interest at a lower rate, the reserve rate. The quotas are determined by Norges Bank.

Decisions concerning the key policy rate are normally taken at the Norwegian Central Bank Executive Board's monetary policy meeting, which is arranged six times per year (Norges Bank (2), 2013). The key policy rate is set with a view to maintaining inflation of close to 2.5 percent over time without causing excessive fluctuations in output and employment. As Norway is a small, open economy, we are highly influenced by the international interest level, as evidenced by the correlation between foreign money market rates and Norwegian money market rates in Chart 5.

At the Board Meeting on March 26th 2014, the key policy rate was maintained at the low level of 1.5 percent. The analyses in the first monetary policy report of 2014 implies that the key policy rate should be held at the current level in the period until the summer of 2015 and be increased gradually thereafter, see Chart 5.

2.2.2 The Norwegian Inter Bank Offered Rate

The Norwegian money market rate, Nibor (Norwegian Inter Bank Offered Rate), reflects the interest rate that banks in the Nibor panel on average indicate that they require for unsecured lending of Norwegian kroner to other leading banks that are active in the Norwegian money and foreign exchange market for a given period. The panel is made up

of DNB, Danske Bank, Svenska Handelsbanken, Nordea Bank Norge, SEB and Swedbank (Kårvik & Hellum, 2012).

Nibor equals the key policy rate plus a spread, which is referred to as the money market premium and expresses the additional return money market participants require for unsecured interbank loans in relation to the risk-free interest rate in a given period. It represents compensation to the lender for credit risk and the benefit foregone from relinquishing liquidity. The money market premium widens during market turbulence (Hoff, 2011). Prior to the financial crisis money market premiums were low and stable both in Norway and other countries, but in the autumn of 2008 they soared. At the end of 2013, the premium in the three-month Nibor has fallen to about 0.20 percentage points, which is somewhat lower than the pre-crisis level. This could indicate that confidence in the Norwegian money markets is being restored. The first monetary policy report of 2014 maintains that the premium in money market rates is expected to remain around 1/4 percentage point ahead. Bank lending rates are expected to track developments in money market rates in the short term, but Norges Bank estimates that it may rise somewhat less, further out in the projection period, see Chart 5.

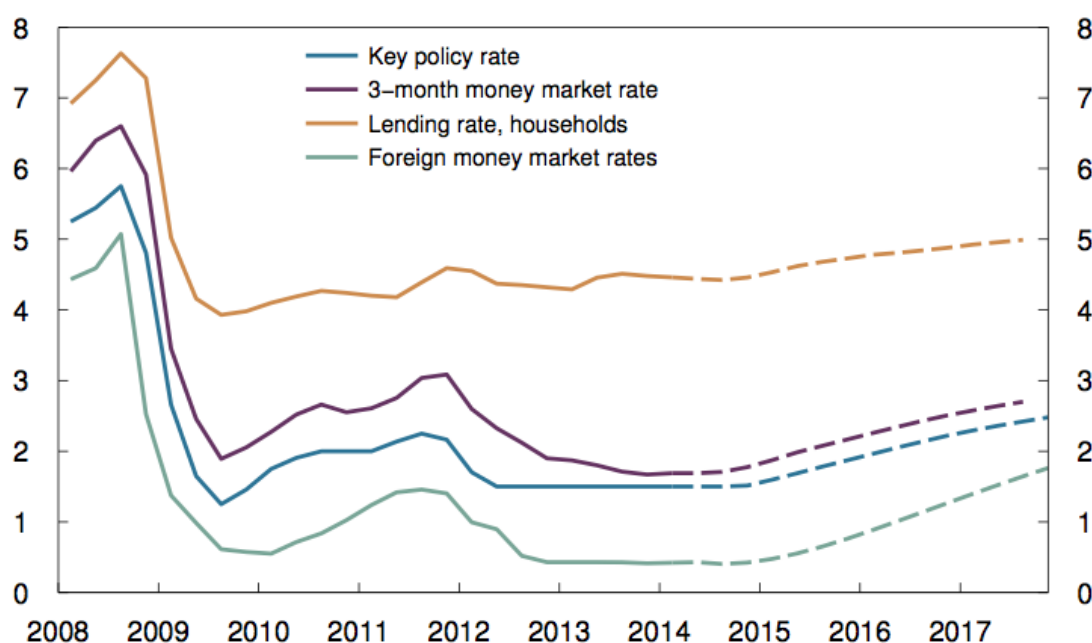


Chart 5 Projected key policy rate, 3-month money market rate¹⁾ and interest rate on loans to households²⁾ and foreign money market rates in the baseline scenario. Percent. 2008 Q1 – 2017 Q4. (Norges Bank (4), 2014)

- 1) Key policy rate in the baseline scenario plus premiums in the Norwegian money market. The calculations are based on the assumption that the announced interest rate changes are priced into the money markets.
- 2) Average interest rate on all loans to households from banks and mortgage companies.

2.3 Funding

When we talk about funding for nonfinancial firms, we talk about debt and equity; a firm raises funds from both equity investors and bondholders (and banks) to fund its investments. The same thinking can be applied to banks, however, when we talk about funding for banks, debt and equity also have a somewhat different connotation. Rather than viewing debt and equity as sources of capital, they can be viewed as raw materials; in the same way that a manufacturing firm needs raw materials for production, debt and equity is the input when the bank “produces” loans to its customers. The composition of the bank’s liabilities determines the cost of input, and is therefore a key determinant of a bank’s profitability.

The bank’s sources of funding and funding cost are further explained in the sections below.

2.3.1 Sources of Funding

The bank’s key sources of funding are deposits from the public and various types of wholesale funding. Chart 6 shows the average balance sheet of Norwegian banks and mortgage companies in 2011, third quarter.

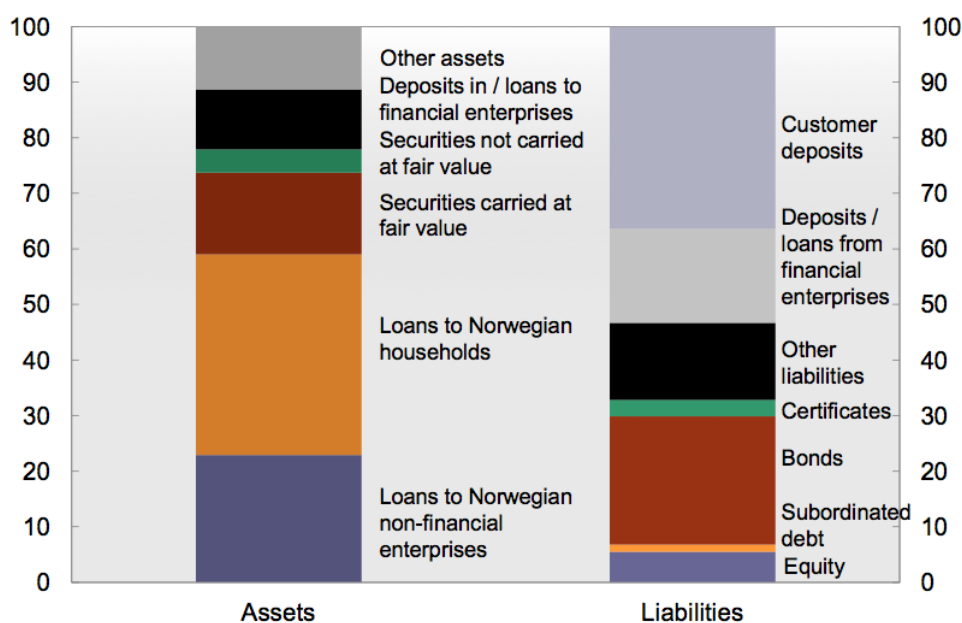


Chart 6, Bank1) assets and liabilities. Percent. 2011 Q3 (Hoff, 2011)

1) All banks and mortgage companies in Norway

Customer deposits have been a stable funding source, also in periods of financial turmoil, partly due to the deposit guarantee scheme. The guarantee given by the Banks' Guarantee Fund covers up to NOK 2 million per depositor per bank, and at the end of 2012 guaranteed deposits accounted for 55 percent of total deposits from customers in Norwegian banks (FSAN (1), 2013).

Wholesale funding is the marginal funding source for loans to households and businesses. Banks may need to raise a large amount of funding over a short period. This cannot be done through raising retail deposits by increasing the deposit rates, because bank customers (households and firms) typically do not react quickly to changes in interest rates (Raknerud, Vatne, & Rakkestad, 2011).

Wholesale funding refers to deposits from financial institutions and securities debt. The largest Norwegian banks rely heavily on foreign markets for both long- and short-term wholesale funding. Certificates and interbank market loans represent the sources of wholesale funding with the shortest maturity. Long-term funding is obtained in the bond market, where the maturity is usually from 3 to 10 years (Hoff, 2011). Long-term

wholesale funding comprises covered bonds and senior bonds.

Banks' wholesale funding has risen markedly since banks were permitted to issue covered bonds through mortgage companies in 2007. Wholesale funding accounted for 45 percent of total funding at the end of 2012, compared to 35 percent in 2004. During 2008 and 2009 a total NOK 230 billion of Norwegian covered bonds was lodged in swap agreements with the Government. These bonds could be refinanced in the market at term, or earlier at the choice of the issuer. As of June 2013 about NOK 94 billion was still outstanding and due for refinanced during 2013 and 2014 (Hoff, 2011).

In 2013, the wholesale funding ratios declined somewhat between Q1 and Q2, see Chart 7 (Norges Bank (1), 2013). During periods of strong lending growth, growth in wholesale funding has outpaced deposit growth. However, solid deposit growth combined with moderate growth in lending is currently limiting the need to increase market funding, see Chart 8 (Norges Bank (1), 2013).

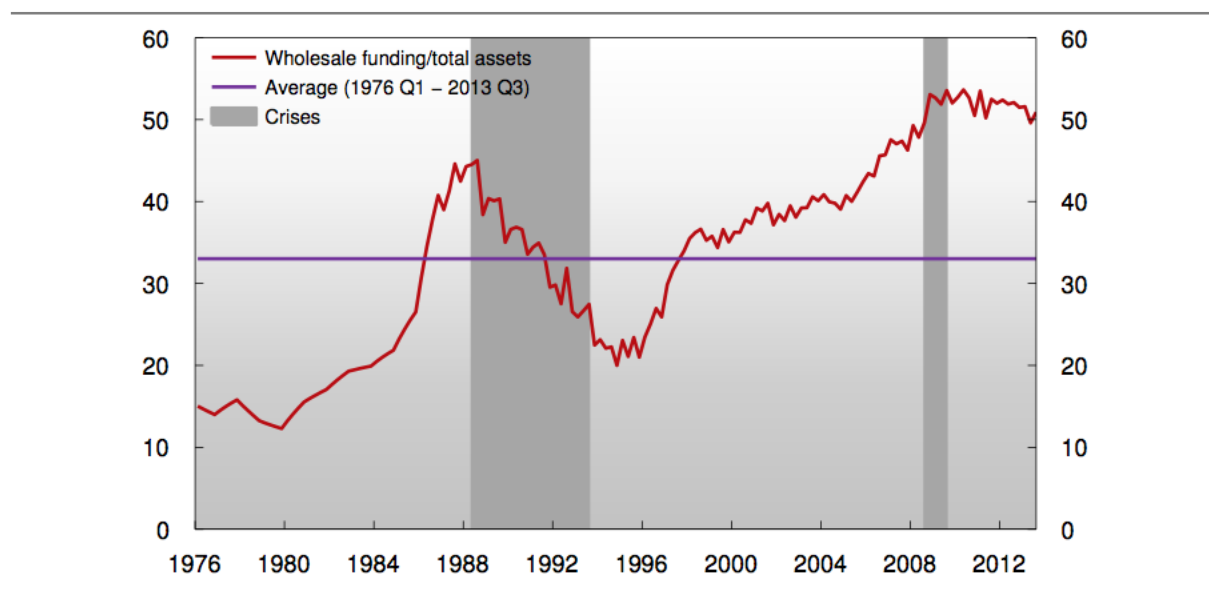


Chart 7, Banks' ¹⁾ wholesale funding as a percentage of total assets ²⁾ (Norges Bank (2), 2013)

1) All banks and covered bond mortgage companies excluding branches and subsidiaries of foreign banks

2) Quarterly figures pre-1989 are calculated by linear interpolation of annual figures

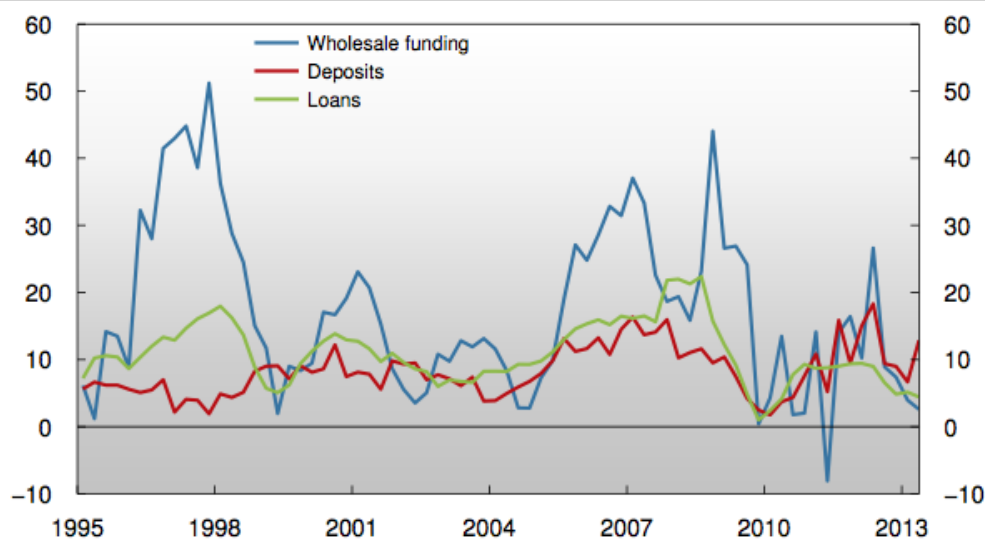


Chart 8, Banks' ¹⁾ wholesale funding, deposits and loans. Four-quarter growth. Percent. Q1 1995 - Q2 2013 (Norges Bank (1), 2013)

1) All banks and covered bond mortgage companies excluding branches and subsidiaries of foreign banks in Norway

Banks can also free up funds by accessing deposits with central banks and other banks, or sell assets. Deposits with central banks and other financial institutions are normally short term and can be released quickly. Norwegian banks have deposited a substantial portion of its securities in Norges Bank to gain access to loans on short notice. The loan amount is determined based on the securities' market value. Additionally, Norges Bank offer standing lending facilities, from which banks are able to receive funding. This is however considered expensive and is rarely used in normal times (Hoff, 2011).

For nonfinancial firms, equity is often a significant part of the firm's capital structure. For banks however, the equity to debt ratio has historically been very low and the bank is mainly funded by debt, illustrated by Chart 6 above. This can be explained in part by the more predictable earnings, fairly stable grounds for income (with a growing economy, there will always be a demand for credit) and the supervision of banks which reduces the risk for bankruptcy (as opposed to nonfinancial firms, banks are monitored by an independent party).

2.3.2 Cost of Funding

A bank's total cost of funding is a function of the composition of liabilities and the costs of raising the different liabilities. By cost I refer to the interest expense that the bank pays on its debt and the dividends paid to equity owners, the shareholders, for their ownership stake in the business.

The right side column in Chart 6 above indicates the relative average expense of different sources of funding for banks in the third quarter of 2011. Generally customer deposits and deposits and loans from financial enterprises are the cheapest form of funding, followed by other liabilities including certificates and bonds. Subordinated debt capital, which qualifies as additional tier 1 capital and tier 2 capital is more expensive than other debt instruments. Finally, there is equity, which is the most expensive source of funding for banks.

Debt is cheaper than equity for two reasons. First, because creditors have a prior claim in the event of bankruptcy and can require covenants, debt is safer than equity and therefore warrants investors a lower return. For the bank this translates into an interest rate that is lower than the expected total shareholder return on equity. Second, the interest that the bank pays on its debt is tax deductible, while dividends are not.

The key policy rate is the primary determinant of a bank's funding cost. The 3-month Nibor can be viewed as the key policy rate plus the market risk premium and the rate on 5-year senior bank bonds can be viewed as a risk premium to the 3-month Nibor. This could be illustrated through Chart 9, which shows the key policy rate and funding costs from 2010 until the first quarter of 2013.

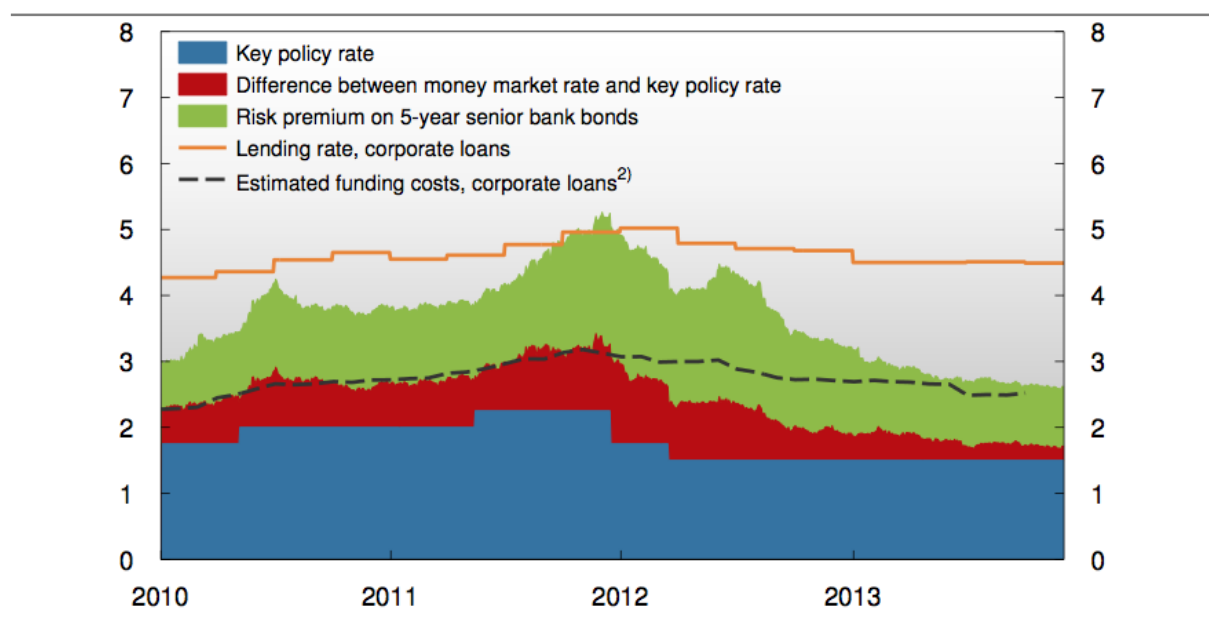


Chart 9, Lending rate on corporate loans¹⁾ and funding costs²⁾ (Vikrøen, 2013)

1) All banks and mortgage companies in Norway

2) Estimated using weighted interest rate on senior bank bonds outstanding and weighted deposit rate

Covered bonds and senior bonds may have fixed or floating interest rates. For fixed-rate loans, mortgage companies and banks will enter into interest rate swap contracts to exchange fixed-rate for floating-rate loans. Ordinarily, the floating rate is the Nibor. The fixed-rate loans are used to fund floating rate loans. The interest rate on a bond can thus be divided in two: the money market rate (Nibor in Norway) and a fixed risk premium. The risk premium banks must pay is determined by both general market conditions and the market's assessment of a particular bank as a borrower (Hoff, 2011).

After having risen since 2008, average risk premiums on bank bonds outstanding have leveled off, see Chart 10. This indicates that investors consider there to be less risk associated with investments in Norwegian banks now relative to a few years back. As Norway is a small open economy, we are heavily influenced by the international market conditions. During the financial crisis in 2008-2009 and the debt crisis in Europe in 2011-2012, the risk premiums increased even though the Norwegian economy was relatively stable and Norwegian banks performed well. Now that the worst of the crisis is over, and investors less anxious about investing in banks, risk premiums are coming down.

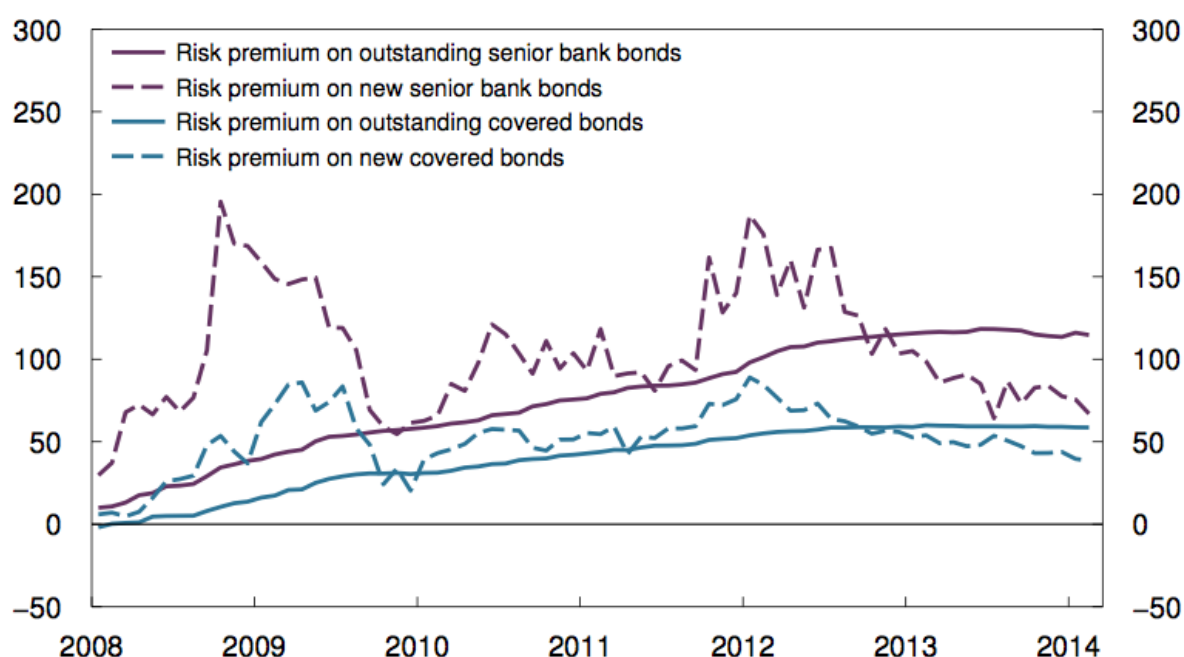


Chart 10, Average risk premium¹⁾ on new and outstanding bond debt for Norwegian banking groups²⁾. Basis points. January 2008-February 2014 (Norges Bank (4), 2014)

1) Difference against 3-month NIBOR

2) All banks and mortgage companies, excluding branches of foreign banks in Norway

Another possible explanation to the lower risk-premiums could be the build-up of capital in Norwegian banks. Goldberg, Kennedy and Miu (2010) linked bank balance sheet strength to the cost of funds during the global financial crisis. They found that stronger banks borrowed Euros during the crisis at lower average costs than medium- or lower-rated banks. The current build-up of capital in banks may reduce bondholders' risk exposure, which suggests lower risk premiums (Norges Bank (1), 2013).

Nevertheless, if premiums on new funding remain at the current level, the average premium on bank bonds outstanding will decline somewhat in the period ahead.

Banks also swap long-term fixed-rate foreign currency funding to floating-rate krone funding. This means that banks' borrowing costs for short- and long-term funding both in foreign currency and in Norwegian kroner is affected by changes in the Nibor.

Deposits

Household deposits are considered to be a very stable source of funding. Increased focus on banks' funding structure and the forthcoming Basel liquidity requirements may have boosted competition among banks for household deposits, which can explain the decline in deposit rates displayed in Chart 11. The average deposit rate increased somewhat in the fourth quarter of 2013.

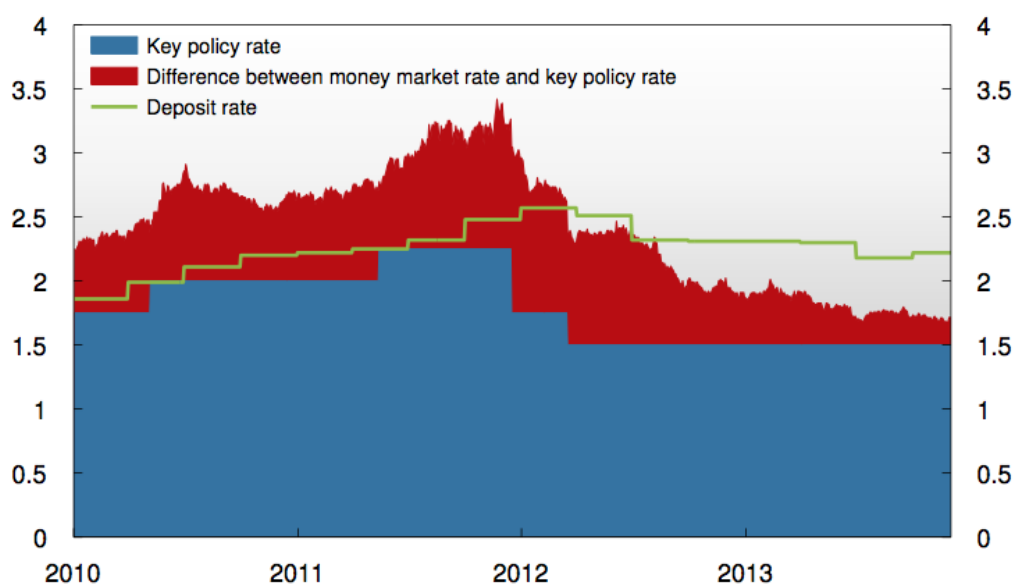


Chart 11, Deposit rate¹⁾ and money market rate. Percent. 1 Jan '10 - 12 Nov '13 (Norges Bank (2), 2013)

1) All banks in Norway

2.4 Earnings

A bank makes money on the spread between the interest it pays to those from whom it raises funds and the interest it charges those who borrow from it, and from other services it offers depositors and its lenders. The primary driver for a bank's earnings is the net interest margin, which is the difference between the interest that a lender receives on all loans and the interest it pays on all funding of those loans divided by total loans (Raknerud, Vatne, & Rakkestad, 2011). Loan losses and the cost of operations are also important drivers for a bank's earnings. Additionally, stricter regulatory requirements have an effect on earnings, through reduced margins.

Norwegian banks have shown sound profits for the last couple of years. CEO of

Sparebank1 SMN, Finn Haugan, believes that Norwegian banks is experiencing a golden age. In an interview with Dagens Næringsliv¹⁰ (1 November, 2013), he stated that all-time high interest margins and all-time low loan losses are the main contributory factors to the high earnings. The increased interest margin on residential mortgage loans is illustrated in Chart 12 (Norges Bank (2), 2013).

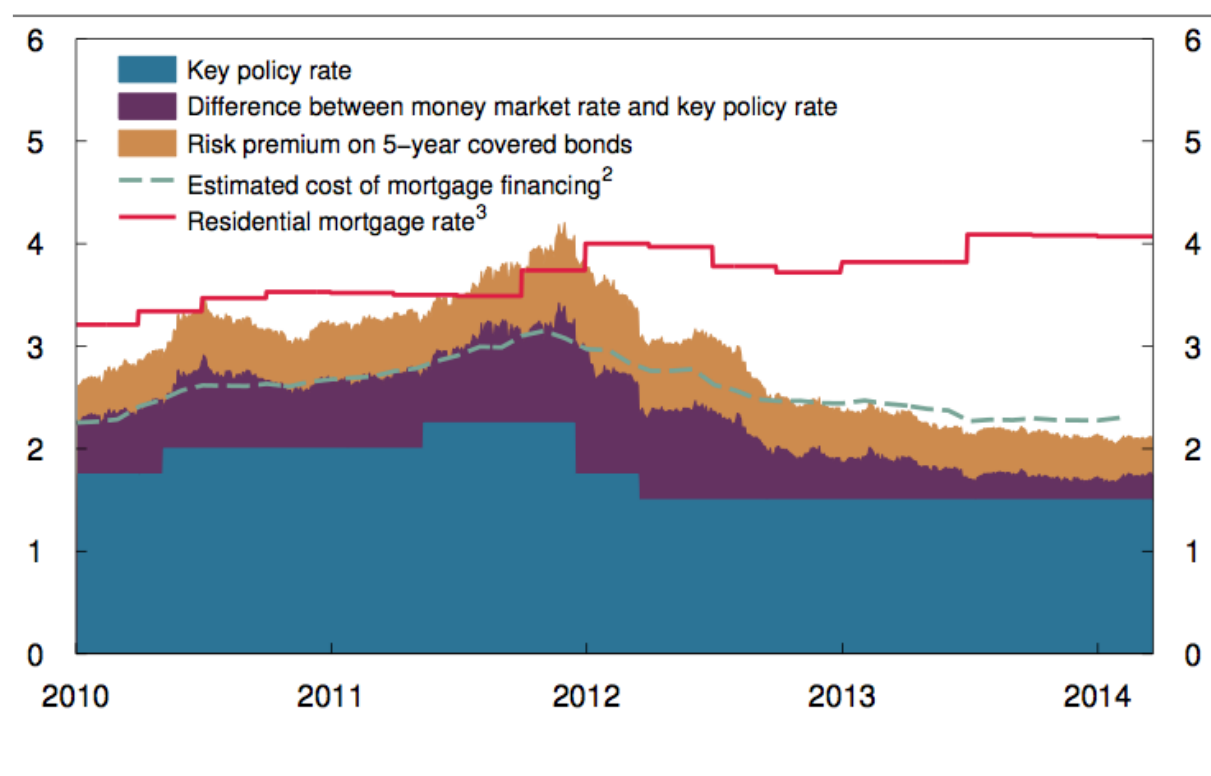


Chart 12, Mortgage lending rates¹⁾ and funding costs. Percent. 1 Jan '10 - 20 Mar '14 (Norges Bank (4), 2014)
1) All banks in Norway

The estimated cost of mortgage financing has decreased and the rates on mortgage loans have increased, causing a significant increase in the interest margin of mortgage loans. Even though the deposit rate has increased somewhat in the second half of 2013, reducing banks' earnings, loans to households are substantially larger than deposits from households and earnings have increased.

Loan losses are of great significance for banks' results as . There was an increase in loan losses after the international financial crisis of 2008, but the increase was temporary. From an already low initial level, banks' loan losses were further reduced in 2012. Loan

¹⁰ The Norwegian Business Daily

defaults also fell, and measured 1.5 percent of outstanding loans in 2012. In the end of 2013 losses was somewhat higher than the previous year, but are still at a low level (FSAN (1), 2013). Low loan losses boosts earnings.

Banks have reduced their costs substantially in order to maintain satisfactory profits. The average cost/income ratio was reduced by 3 percent in 2012, to 53 per cent. Banks have continued their drive to improve cost efficiency in 2013 (FSAN (1), 2013). This has contributed to the increased earnings.

The increased interest on rate mortgage loans and the reduction of operational costs are efforts made by banks mainly to adapt to the higher capital requirements that have been introduced and will continue to be gradually introduced until July 1st 2016. In the following I will address the capital adequacy of Norwegian banks.

2.5 Capital Adequacy

Norwegian banks have focused on improving their capital adequacy since 2008, when the FSAN asked several banks to raise their capital adequacy targets and some of the larger banks to start building capital (Steffensen, 2009). Also international regulatory bodies highlighted the need for increased capital requirements before any formal requirements were approved; In a press release on March 12th 2009, the Basel Committee wrote that ".....the regulatory minimum level of capital will be reviewed in 2010, taking into account relevant factors to arrive at a total level and quality of capital that is higher than the current Basel II framework". Partly due to market expectations and partly due to the communicated increase in capital requirements both on a national and international level, Norwegian banks improved their solidity in 2009 (FSAN, 2010). With the continued strengthening of the regulatory framework since then, banks' have maintained a focus on solidification.

Chart 13 shows the development in CET 1 capital from 2011 to 2013 for the five largest Norwegian banks, excluding bank branches and subsidiaries of foreign banks. The dotted line represents the expected CET 1 ratio requirement for Norwegian systemically

important banks as of 1 July 2016, and the other line represents the requirement as of 1 July 2013.

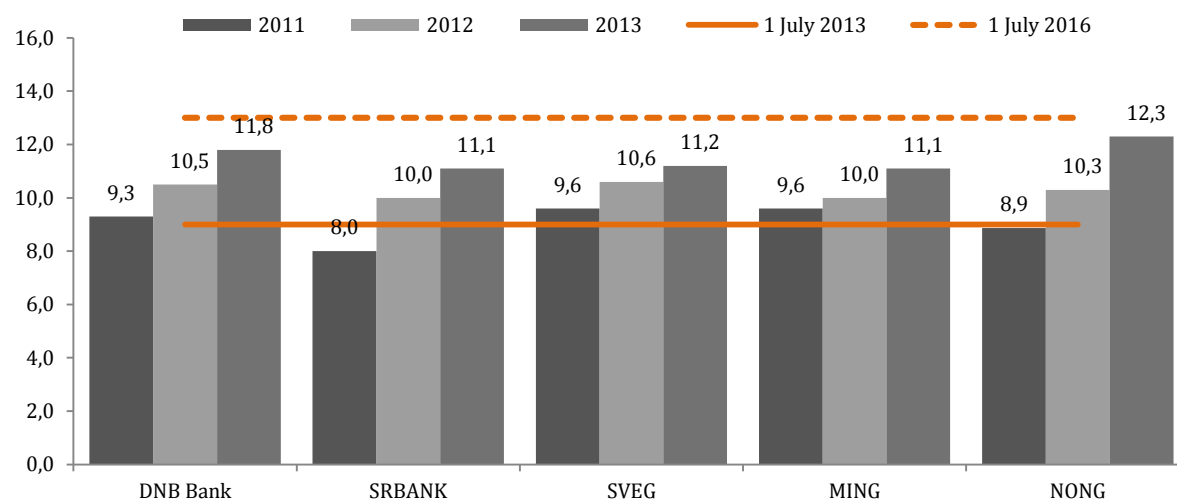


Chart 13 CET 1 Ratio for the five largest Norwegian banks. Percent. Year-end 2013 (Annual and quarterly reports)

Only one of Norway's five largest banks is considered systemically important, however the Ministry of Finance has indicated that somewhat stricter requirements could also be applied to the large regional banks as they are important in their region, if not on a country-wide basis.

The large Norwegian banks meet the core capital requirements of 9 percent CET 1 capital to risk-weighted assets. Both the DNB Bank Group and Sparebank 1 SMN have had sufficient levels of CET 1 capital since 2011. From the chart it is shown that banks have been building common equity in recent years, and are therefore significantly better capitalized in 2013 compared to 2011. Sparebank 1 Nord-Norge issued equity capital certificates in Q3 2013. Norne Securities (2013) estimated that NONG through issuing capital improved the bank's CET 1 ratio by 1.3 percent. As of the end of 2013, NONG is the best capitalized bank by the CET 1 ratio.

Chart 14 shows the total capital ratio for the five largest banks from 2011 until 2013.

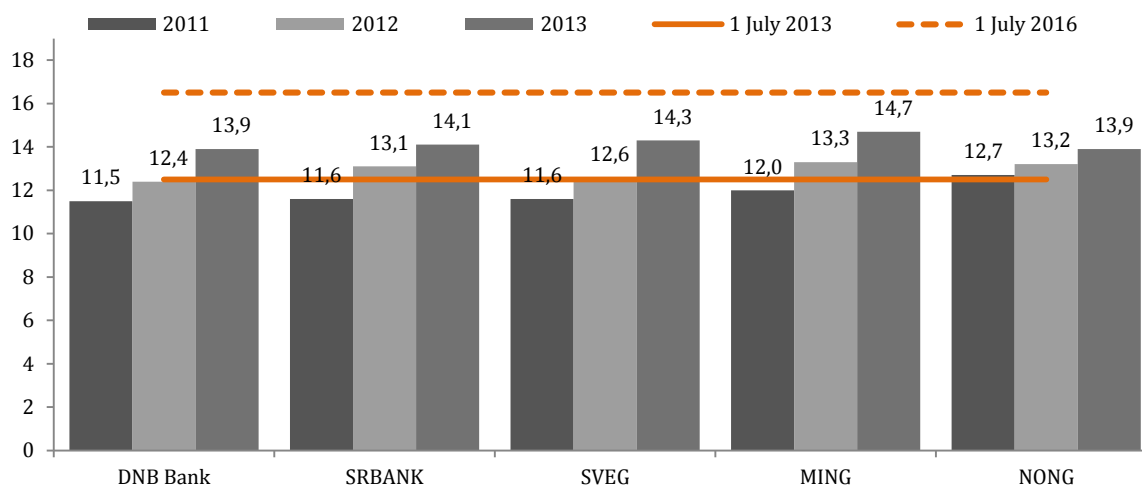


Chart 14 Total capital ratio for the five largest Norwegian banks. Percent. Year-end 2013 (Annual reports)

NONG is the only bank that satisfied the required ratio of 12.5 percent already in 2011. The DNB Bank Group did not reach the sufficient level of total capital by July 1st 2013, when the requirement came into effect. However, in the third quarter of 2013, the five largest Norwegian banks could all report that they are adequately capitalized in compliance with current requirements.

The historical development in the banks' capital adequacy speaks to their ability to adapt to and fulfill regulatory requirements. So far, the transition to higher capital requirements have been made primarily through retained earnings and equity issues.

Chart 15 shows the contribution to changes in the CET 1 ratio from 2009 until 2013, from changes in risk-weighted assets and changes in CET 1 capital. The column farthest to the right shows the total contribution, where it is evident that increase in the CET 1 capital represents the majority, approximately 90 percent.

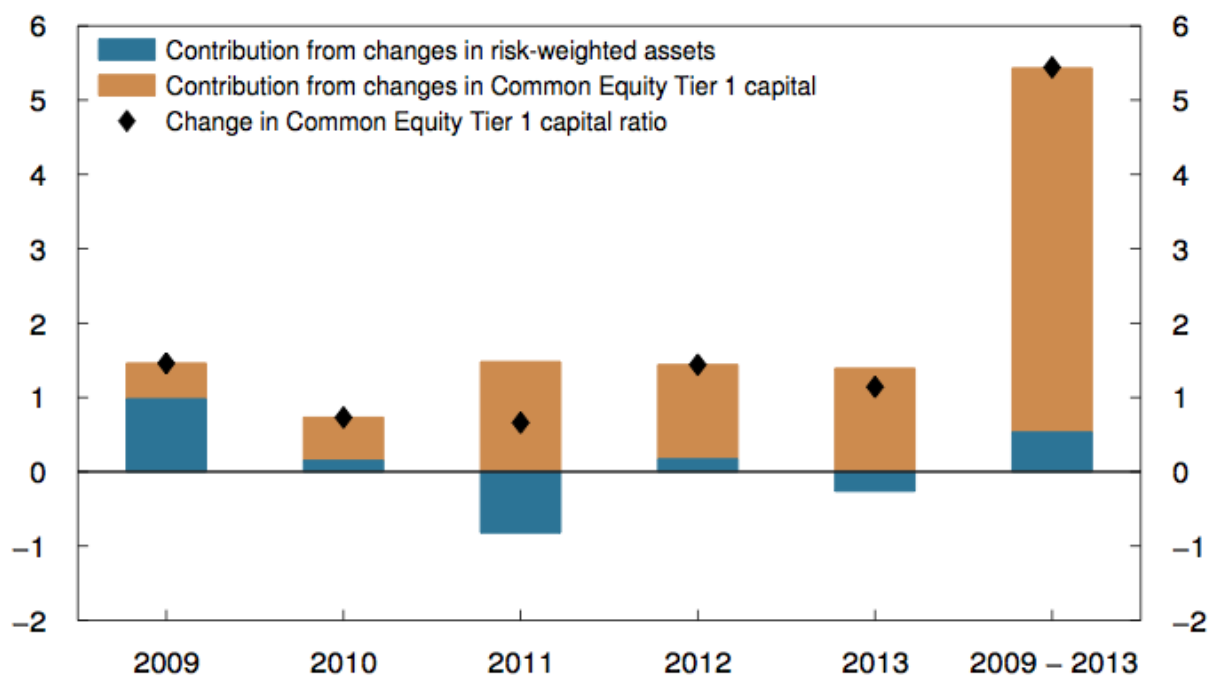


Chart 15 CET 1 Contribution to changes in banks' ¹⁾ CET 1 capital ratio. Percentage points 2009-2013 (Norges Bank (4), 2014)

1) Weighted average for the six largest Norwegian banking groups: DNB Bank, Nordea Bank Norge, Sparebank 1 SR-Bank, Sparebanken Vest, Sparebank 1 SMN and Sparebank 1 Nord-Norge.

FSAN anticipate banks, in the future as previously, to retain significant portions of their profits. Norges Bank (2013) expects that banks can increase their core tier capital-coverage by up to 1 percentage point per year while maintaining lending, using retained earnings to build capital.

Bank's adaption to higher capital requirements has received much attention in the media. The newspapers have been writing about how the banks' customers pay higher interest rates on their mortgages, while the investors continue to gain dividend payments and the management is paid significant bonuses. Customers complain that banks are using the regulatory tightening as an excuse to raise interest rates. The banks on the other hand criticize Norway's regulatory scheme which they state is stricter than that of our neighboring countries and makes the cross-country competition unfavorable for Norwegian banks.

As Norway's largest bank, the DNB Bank Group has been featured in the news frequently. DNB's CEO has stated that an equity issue is out of the question, and that retaining earnings is the only way for the bank to increase its capital adequacy. In the following part 3 of the thesis, I conduct a case study of DNB and look into how the bank has adapted to the new capital requirements. Furthermore, I use a financial model to project the capital adequacy of the bank until 1 July 2016, when all the changes to the capital regulatory framework have come into effect.

3 Case study – The DNB Bank Group

The DNB Group is Norway's largest financial services group and one of the largest in the Nordic region in terms of market capitalization. The DNB Group offers a full range of financial services, including loans, savings and advisory services, insurance and pension products for retail and corporate customers and the public sector. See Chart 16 (DNB Group, 2012).

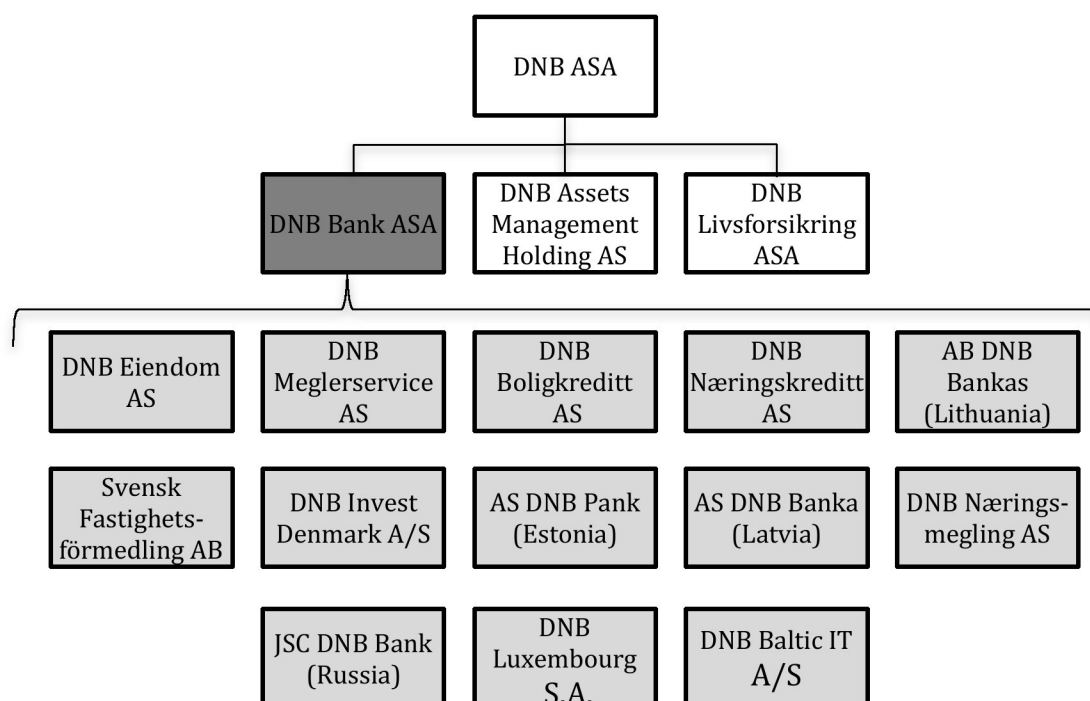


Chart 16 DNB legal structure as of year-end 2012, (DNB Group, 2012 and Kristiansen, 2013)

This case study is limited to the DNB Bank Group, which comprises the parent company DNB Bank ASA and its subsidiaries, marked in the grey boxes in Chart 16 above. Other companies owned by DNB ASA, including DNB Livsforsikring and DNB Asset Management, are not part of the banking group and are thus not a part of the analysis.

3.1 The DNB Bank Group

DNB Bank ASA is a subsidiary of DNB ASA and part of the DNB Group. DNB Bank ASA and its subsidiaries, together labeled the DNB Bank Group, comprise DNB ASA's Norwegian and international banking activities (DNB Bank Group, 2012). The same capital adequacy requirements from the Norwegian authorities apply to the banking group and to the entire DNB Group.

I have chosen to base my analysis on the consolidated financials of the DNB Bank Group, in order to capture the assets in the subsidiaries of DNB Bank ASA. DNB Boligkreditt and DNB Næringskreditt are two subsidiaries that are especially important for the analysis, as the residential mortgages and corporate loans of the bank are mainly kept on the books of these specialized credit institutions.

Specialized credit institutions

In anticipation of the favorable legal framework for Norwegian covered bonds, DNB Boligkreditt was established as a subsidiary of DNB Bank ASA in 2005. The subsidiary operated as a financial company until it applied for permission to operate as a mortgage institution when the final rules came into effect in 2007. Based on developments in international capital markets, DNB Boligkreditt has come to play a key role in ensuring long-term favorable funding for the Group (DNB Boligkreditt, 2013). At end-September 2013, DNB Boligkreditt had total assets of NOK 570.2 billion under management.

DNB Næringskreditt is the DNB Group's vehicle for the issue of covered bonds based on commercial mortgages. In 2009, the company was granted a concession pursuant to the Financial Institutions Act, which governs the issue of covered bonds, and initiated operations in the third quarter of the same year. At end-September 2013, the company's loan portfolio totaled NOK 22.1 billion.

The main difference between the financial statements of DNB Bank ASA and the consolidated financial statements of the banking group is the size of the risk-weighted assets. As the financials of DNB Bank ASA do not include the assets of the subsidiaries, the risk-weighted assets are much lower and the capital adequacy therefore substantially higher. In the fourth quarter of 2013 the total capital ratio of DNB Bank ASA was 1.6 percentage points higher than that of the DNB Bank group. For the purpose of evaluating capital adequacy it is imperative to include the subsidiaries' assets.

Even though the consolidated financial statements of the banking group are used as basis for the analysis, it is the overall strategy of DNB ASA that determines the development of DNB Bank ASA and its subsidiaries. When I address strategic factors, it is assumed that the banking group assumes the same corporate strategic goals as communicated by DNB ASA.

In the following, DNB refers to the DNB Bank Group.

3.2 Adaption to higher capital requirements

In the Basel III capital framework there are three capital ratios that DNB must calculate and report to the FSAN; the CET 1 capital ratio, the Tier 1 capital ratio and the Total capital ratio, see equation 4, 5 and 6 respectively.

Equation 4, CET 1 capital ratio (BCBS, 2010)

$$CET1\ Ratio = \frac{CET1}{Risk - Weighted\ Assets}$$

Equation 5, Tier 1 capital ratio (BCBS, 2010)

$$Tier\ 1\ Ratio = \frac{CET1 + Additional\ tier\ 1}{Risk - Weighted\ Assets}$$

Equation 6, Total capital ratio (BCBS, 2010)

$$\text{Total Capital Ratio} = \frac{\text{Tier 1} + \text{Tier 2}}{\text{Risk - Weighted Assets}}$$

There are roughly two ways for DNB to boost the capital ratios; 1) increase the numerator or 2) decrease the denominator of the capital ratio (Vikrøen, 2013). The denominator is the size of the risk-weighted assets, which is the same for all three equations, while the numerator changes as it consists of different categories of capital.

In the following, different methods for adjusting to higher capital requirements will be presented, and I will look into how DNB has adapted its behavior in order to build capital.

3.2.1 Increasing the numerator

The numerator can be increased through an equity issue, decreasing dividend payout and increasing earnings (Vikrøen, 2013). This will raise the amount of CET 1 capital that the bank holds, thereby increasing both equation 4, 5 and 6, assuming that risk-weighted assets are kept fixed. Equation 5 and 6 can further be increased through issuing subordinated debt capital that qualifies as Additional Tier 1 capital or Tier 2 capital.

Chart 17 shows the development in the different categories of capital of DNB Bank Group, in NOK million.

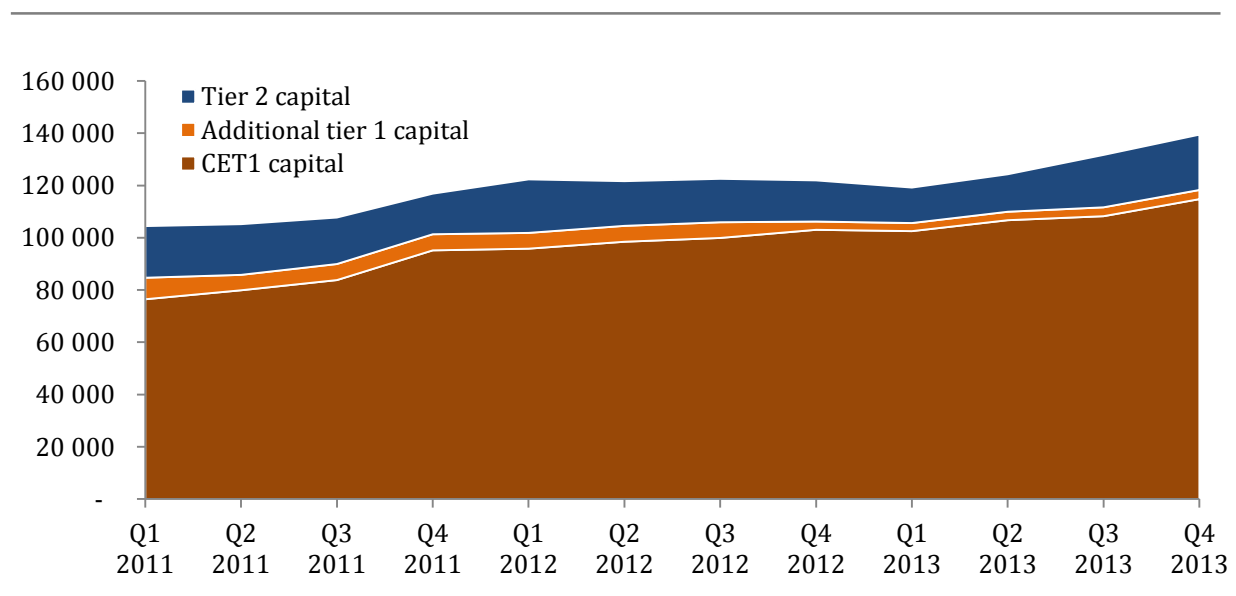


Chart 17 CET 1¹⁾, additional tier 1 and tier 2 capital. DNB Bank Group. NOK million. Q4 2010–Q4 2013
(Quarterly reports DNB Bank Group, Kristiansen)

1) Capital for Q1, Q2 and Q3 includes 50 percent of profits for the year. Q4 includes 100 percent of annual profits.

The CET 1 capital represents the majority of the total capital of the bank. From Chart 17 it can be shown that the level of the CET 1 capital in DNB has increased from Q4 2010 to Q4 2013. In the same time period, the additional Tier 1 capital has been reduced while the amount of Tier 2 capital is about the same in Q4 2013 as in Q4 2010. This development could indicate that DNB Bank Group has focused primarily on building CET 1 capital, and that issuance of subordinated debt capital has not been used to build capital up until this point. In the following, I will therefore look into how the CET 1 capital has been increased.

3.2.1.1 Equity issue

It could be argued that issuing stock or equity capital certificates is the most efficient way of increasing the capital adequacy of a bank, as equity issuance makes it possible for banks to rapidly satisfy increased capital requirements without having to reduce lending (Norges Bank (2), 2013). DNB strengthened its capital base by NOK 13.9 billion through an equity issue in the fourth quarter of 2009. The banking group had a Tier 1 capital ratio of 8.4 percent and a capital adequacy ratio of 11.4 percent at year-end 2009, compared with 6.9 and 9.9 percent, respectively in 2008. However, since the new Basel III capital framework has been introduced and the plan for increasing the CET 1 ratio requirement in Norway was approved, the bank has not issued additional equity and is not planning to do so.

DNB is both a savings bank and a private limited company, hence minimum 10 per cent of the banks stock must be owned by a savings bank foundation. In the case of an equity issue, the DNB savings bank foundation has to buy shares amounting to its initial ownership ratio of 10 percent in order to avoid being diluted. If the foundation's ownership is diluted, DNB loses its status as a savings bank. The foundation has a clear strategy for their ownership, and states that share placements should only be used in the case of extraordinary capital needs, such as specific growth initiatives or major structural changes (Sparebankstiftelsen, 2013). As savings banks are subject to specific

requirements regarding ownership structure, one can claim that it could be more difficult to raise capital through an equity issue, compared to other companies. A list of the twenty largest shareholders of the DNB Group is found in appendix

DNB is by far the largest bank in Norway, and the third largest company on the Oslo Stock exchange, measured by market capitalization (Oslo Børs, 2013). The bank does not only compete for investors in the Norwegian banking sector; because of its size and scope, DNB's primary competitors for investors are major Nordic bank groups. Rune Bjerke, CEO of the DNB Group, is concerned that the bank will lose investors to Swedish bank groups with more relaxed capital requirements, if the bank issues equity (Haugen, 2013). On a press conference in March 2013 the bank's CFO, Bjørn Erik Næss, claimed there would be a drop in the share price if the bank were to ask investors for more equity (TDN Finans, 2012).

According to the Pecking Order theory¹¹ a share price drop is to be expected when a company announces an equity issue. However, the situation of a bank issuing equity to fulfill capital requirements is rather specific as issuing debt capital is not an option. Furthermore, the capital raised is retained at low interest rates rather than invested in future growth prospects. From a shareholder's point of view, an equity issue could mean that investors contribute with more capital without receiving increased returns, which implies that current shareholders will not participate in an equity issue unless it is done at a substantial discount.

As outlined in the discussion above, there are several factors for DNB to take into account when evaluating whether to do an equity issue or raise capital by other means. DNB has made the decision to communicate that there will not be an equity issue in the period ahead. The bank maintains that the responsibility it has towards its investors makes it difficult to issue equity.

¹¹ The Pecking Order theory is a generic theory in finance, which seeks to explain the share price drop on the announcement of an equity issue. It is presumed that managers know more about the value of the firm than potential new investors do. Asymmetric information creates an adverse selection problem that can explain the existence of a price drop when an equity issue is announced. Since managers act in the interests of existing shareholders, there is an incentive to sell new equity when it is overvalued. Thus, selling equity on average conveys negative information about the firm, and the stock price drops at the equity issue announcement (KILDE?)

3.2.1.2 Payout policy

DNB ASA receives group contributions from DNB Bank Group and DNB Bank ASA, and dividends are distributed to shareholders by the parent company, DNB ASA. In the analysis of the dividends, it is therefore relevant to look at the dividend policy of the parent.

The long-term payout ratio target in the DNB Group is 50 percent of net profits (DNB Group, 2012). However, in order to increase its capital adequacy the DNB Group has decreased its payout ratio. In 2009, 2011 and 2012 the shareholders have had to accept significantly lower payouts. In 2010, the bank paid a dividend of 46.2 percent, but because of the new regulatory requirements, the Board of Directors reduced the proposed dividend to 25 per cent in 2011, see Chart 18.

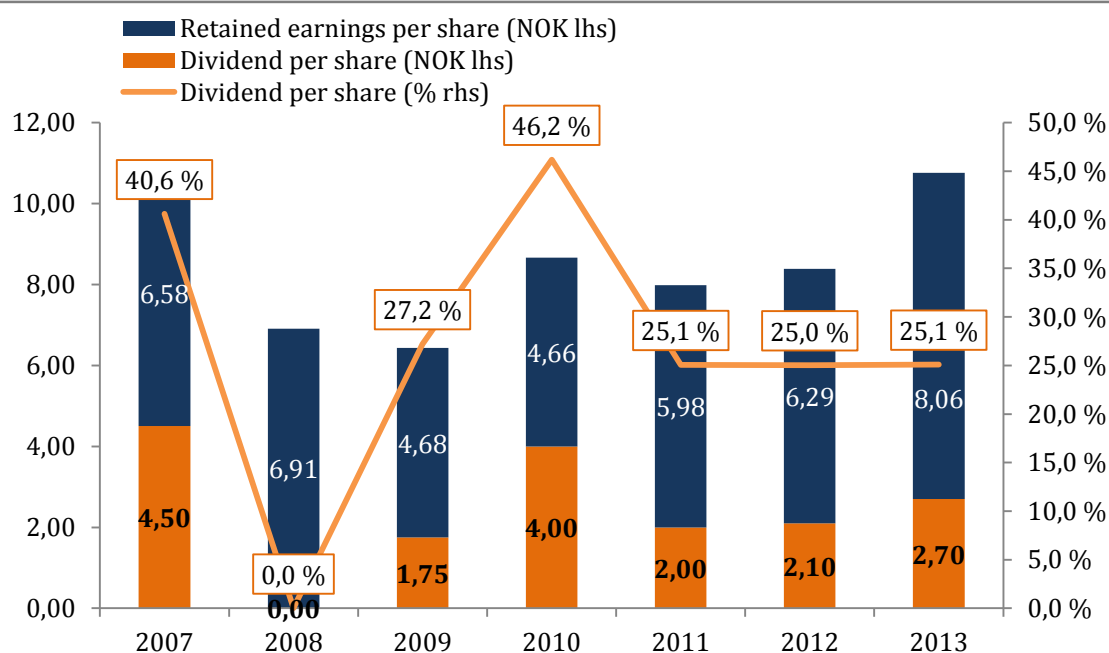


Chart 18, EPS for the entire DNB Group divided into retained earnings and dividends in NOK (Annual reports)

In order to strengthen the CET 1 capital, the dividend payout ratio is expected to be kept below the long-term payout target for a period up to and including 2016. Rune Bjerke has been criticized for not reducing the dividends payout ratio below 25 per cent, as there is a need to build equity capital. Critics argue that the customers are paying for the capital build-up through higher mortgage rates, and that investors should contribute to

a larger extent. However, Bjerke highlights the importance of maintaining a certain percentage of payout.

“If you compare our dividends to selected Swedish banks, you will find that they pay three times as much as we do. People must not forget that we are not only competing for the same customers, but also for the same investors”, says Rune Bjerke to E24 (Framstad, 2013)

This was also highlighted when the bank presented the fourth quarter results for 2013, and Rune Bjerke indicated that there would be increased dividend payouts in 2014.

3.2.1.3 Increase earnings

In order to strengthen capital adequacy and meet current and future capital requirements, the DNB Bank Group has raised lending rates. As described earlier, the Norwegian banking sector has seen an extraordinary increase in earnings in the past year. A low key policy rate and ample access to market funding has made it possible For DNB to increase the net interest margin, see Chart 19.

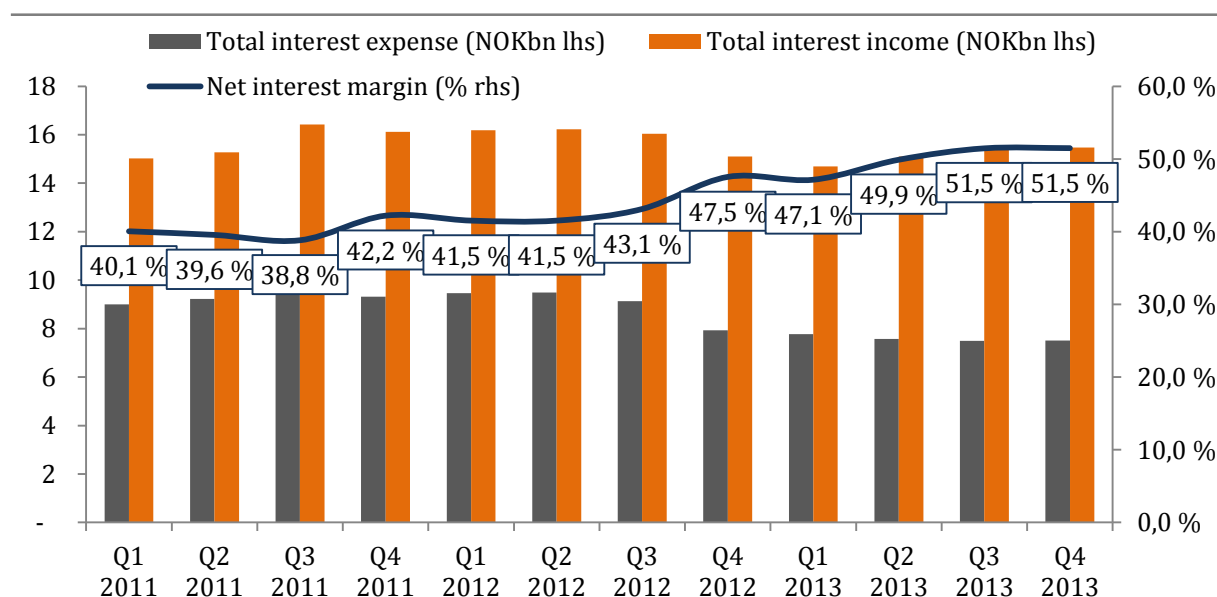


Chart 19 Total interest income and expense in NOK million and the net interest margin in percent. DNB Bank Group Q3 2010 - Q4 2013 (Quarterly reports, DNB Bank Group)

In addition to increasing the net interest margin, the banking group has reduced the

number of full-time positions in DNB by more than 1 000, since the second quarter of 2012. This is an important contribution to bringing down costs and meeting the capital requirements through an increase in profits. DNB states that the downsizing will continue, with an aim to reduce staff by an additional 500 full-time positions by 2015. Additionally, DNB has reduced the number of branch offices and concentrated the business to fewer geographical locations.

At the Capital Markets Day in London November 21st 2013, DNB's CEO reported to the market that the bank is on track to meet previously announced cost initiatives and sees even further potential for cost savings. "Due to the new banking reality and regulatory environment, every manager and employee in DNB is working to optimize our use of capital and increase our profitability" Rune Bjerke said (DNB Group, 2013).

3.2.2 Reducing the denominator

In order for a bank to increase its capital adequacy it can also reduce the denominator of the capital ratio, namely risk-weighted assets. The level of the risk-weighted assets in DNB has remained relatively stable the last three years. In the same period, total assets have increased by roughly 33 percent, which means that the ratio of risk-weighted assets to total assets has decreased in the period. This could indicate that DNB has increased lending to customers groups that are considered less risky. See Chart 20.

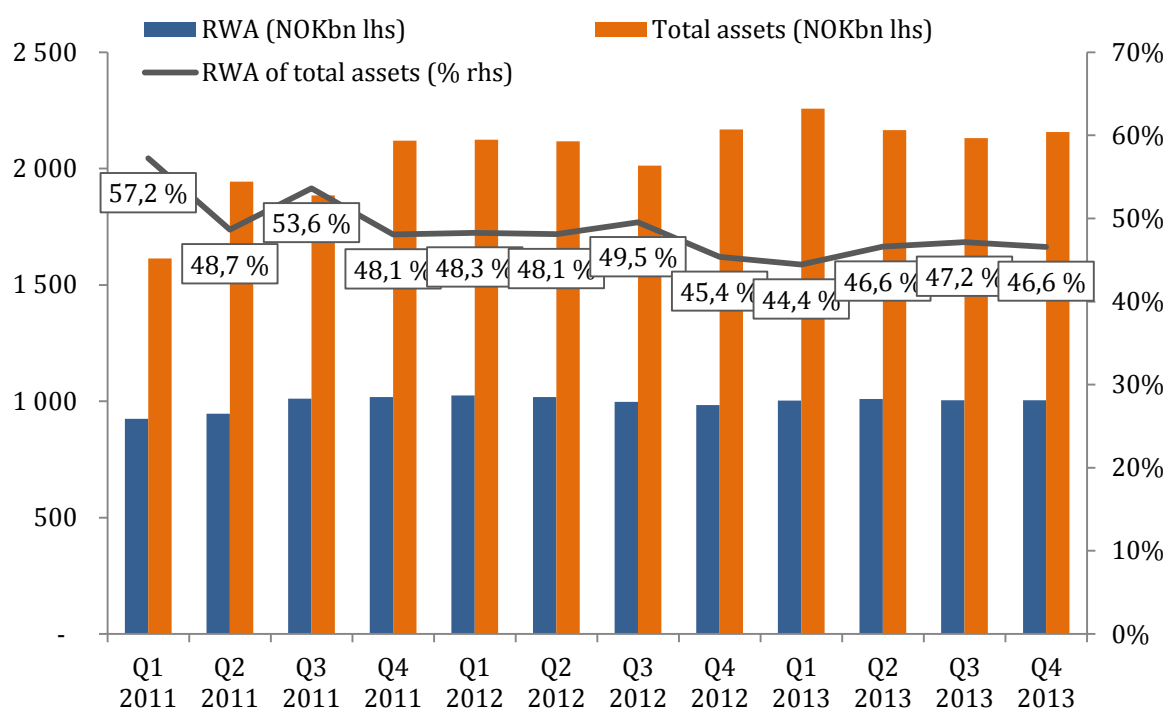


Chart 20 Risk-weighted assets and total assets in NOK billion, and risk-weighted assets to total assets in percent Q1 2011 – Q4 2013 (Quarterly reports, DNB Bank Group)

3.2.2.1 Reduce lending

By reducing overall lending growth, the bank can reduce the level of the risk-weighted assets. From Q1 2011 to Q1 2013, the compound quarterly growth rate in loans to customers was 1.40 percent. This rate has been more than cut in half the last year (Q1 2013- Q4 2013) to a quarterly growth rate in loans to customers of 0.61 percent. This could be an indication of a reduction in overall lending from DNB Bank.

A portion of this decrease in lending growth can probably be explained by a somewhat reduction in credit demand in 2013 (FSAN, 2013). But, as DNB's market share in the credit market has decreased during the period, it could be reasonably assumed that the bank has reduced the lending growth. At year-end 2012, DNB had a 31.4 percent market share of total gross lending in Norway, while at year-end 2013 the marked share had decreased to 30.3 percent, see table 1.

No.	Top 5 banks	2013		2012	
		NOKm	Market share	NOKm	Market share
1	DNB Bank Group	1,050,093	30.27 %	1,035,316	31.39 %
2	Nordea Bank Norge	463,854	13.37 %	455,538	13.81 %
3	Handelsbanken	182,800	5.27 %	179,450	5.44 %
4	Danske Bank	170,900	4.93 %	175,226	5.31 %
5	SpareBank 1 SR-Bank	158,383	4.56 %	157,468	4.77 %
	Total	2,026,030	58.4 %	2,002,998	60.7 %

Table 1 Gross lending in Norway as of December 31, group figures, the five largest banks (Finance Norway, 2013)

Banks can also reduce the value of risk-weighted assets by decreasing lending in the loan categories with higher risk weights. If the bank at the same time increases lending to the loan categories where the risk weights are lower, the total volume of lending will not have to decline substantially even though the value of the risk-weighted assets do.

The risk weights applied to the different loan categories are not made public, but DNB reports the non-performing and doubtful loans and guarantees per loan category. For the purpose of a back-of-the-envelope analysis, the ratio of non-performing and doubtful loans and guarantees to the total value of loans per category could serve as an indication of risk for each loan category. Table 2 displays this ratio per loan category and the growth in total lending per growth category.

Loan category	Bad to total loans Q4'13	Credit growth Q4'12-Q4'13	Share of total lending Q4'13
Private individuals	1,0 %	3,9 %	50,2 %
Transportation by sea and pipelines and vessel construction	4,8 %	-2,6 %	9,2 %
Real estate	2,9 %	2,0 %	14,1 %
Manufacturing	4,1 %	24,4 %	4,3 %
Services	1,5 %	-3,9 %	5,3 %
Trade	2,1 %	-3,9 %	2,5 %
Oil and gas	0,4 %	11,7 %	1,9 %
Transportation and communication	3,6 %	1,8 %	2,5 %
Building and construction	3,1 %	9,6 %	3,5 %
Power and water supply	0,3 %	-0,4 %	2,2 %
Seafood	0,5 %	2,5 %	1,4 %
Hotels and restaurants	3,4 %	41,1 %	0,7 %
Agriculture and forestry	2,1 %	-12,6 %	0,6 %
Central and local government	0,0 %	13,1 %	0,6 %
Other sectors	0,4 %	-2,8 %	0,8 %

Table 2 Gross non-performing and doubtful loans and guarantees ("bad loans") to total amount of loans and guarantees ("total loans") per loan category, and growth in total lending (DNB Group, 2014)

The category "Transportation by sea and pipelines and vessel construction", which is mainly shipping related and "Manufacturing" both have a ratio of bad loans to total loans to the category above 4 percent. The large differences in the volume of loans per category makes it difficult to compare these ratios, however they do provide an indication of the risk. DNB has stated that the bank will aim to reduce exposure to the shipping segment as a step towards reducing the risk-weighted assets. From Table 2 it can be shown that lending to this category has decreased in the period Q4 2012-Q4 2013, which supports the statement made by DNB.

It could be reasonably assumed that DNB has both reduced the overall lending growth as well as making an effort to reduce new lending to the customer categories that represent a greater risk of default.

3.2.2.2 Sell assets

By selling assets, the bank can both decrease the value of the risk-weighted assets and increase earnings, both of which increase the capital adequacy of the bank.

As a large financial services group, DNB will engage in M&A activities regardless of the regulatory regime. Table 3 shows an overview of the M&A activities of the bank in the period 2012-2014 year-to-date.

Year	M&A activity
2012	DNB Bank Group entered into an agreement to sell the branch network in Poland
2012	DNB Bank Group entered into an agreement to sell its wholly-owned Swedish subsidiary SalusAnsvar AB
2012	DNB Bank Group's shares in Nordisk Tekstil Holding AS, which were acquired in 2009, were sold at a profit after a successful restructuring process
2013	The Swedish real estate broking company Svensk Fastighetsförmedling AB was sold in December 2013
2014	DNB has entered into an agreement to sell its shares in Nets Holding A/S to a consortium of Advent International, ATP and Bain Capital.

Table 3 DNB Bank's M&A activities 2012-2014 ytd (annual reports)

It seems like the bank has been selling off assets rather than making new investments in more recent time. Although the capital adequacy requirements might not be the reason behind the sale of these assets, it could probably be an explanation of the lack of expansionary investments by the bank. As there is a need for capital build up, and dividend payments already have been cut in half, it could be reasonably assumed that the banks investors would not appreciate investments that would directly influence the bank's ability to distribute earnings.

In the pursuit of higher capital ratios, and a higher CET 1 capital ratio in particular, DNB has adapted its behavior and made strategic changes. The bank has reduced dividend payout below the long-term goal, which enables DNB to retain more earnings. Furthermore, the bank has made efforts to reduce the operational costs by reducing the number of employees and branches. In order to reduce the growth in risk-weighted assets, the bank has reduced lending growth and adjusted its loan portfolio towards loan

categories with lower risk weights. Additionally, the financials indicate that DNB has been selling assets where the profits have been used to boost capital adequacy.

Based on the above discussion and analysis, DNB have made several adjustments in order to build the required capital. However, the bank's CEO maintains that an equity issue is not an option. In the following section I project the financials of DNB Bank Group with the objective of answering the research question;

Will DNB be able to meet the capital requirements by July 1st 2016 without issuing equity?

3.3 Projected Capital Adequacy

3.3.1 Time Horizon

In order to analyze the development in the capital adequacy of the DNB Bank Group, I have built a model that I use to predict the future development in the income statement, balance sheet and risk-weighted assets from Q1 2014 until Q2 2016. DNB reports its financials quarterly, which makes quarterly data easily accessible. The analysis becomes more detailed by applying quarterly data instead of annual data, and makes it easier to analyze the development in capital adequacy up until the date when the last scheduled capital requirement is introduced, namely July 1st 2016.

When projecting financials it is customary to use a longer period of historical data. If there is not a known exit date when the firm is being sold or dissolved, the trends applied in the financial projections should be representative of the development with an infinite time horizon, which makes it important to use historical data that is normalized and represents ordinary operational activities.

In this analysis however, the ordinary operational activities are not the objective for analysis; it is the recent changes made by DNB that are relevant.

After the Norwegian Banking sector was hit by the international financial crisis in 2009, banks have had to make major changes in order to ensure a functioning market. The

uncertainty about international and Norwegian banking regulation has affected banks' behavior in general and DNB specifically, as Norway's largest bank. DNB has worked continuously to adapt to the frequent speculation about, and introduction of, new capital requirements and regulations. Because of this, the bank's financials from some years back do not provide relevant information about the future. Changes with long-term effects have been made, that make financials from five years back outdated. Normalized data that portray the historical "ordinary operational activities" are not relevant for the analysis in this thesis.

When projecting the future development of DNB Bank Group I believe it to be more accurate to base my assumptions on more recent data, especially as the projection period is only two and a half years ahead rather than indefinite. I have therefore chosen to use the last three years as a historical basis for the projection.

Due to the short projection period from Q4 2013 until Q2 2016 and the clearly stated regulatory changes to be implemented during that period, I find it reasonable to assume that DNB's market conditions will not change significantly during the projection period.

As the DNB Bank Group has had knowledge about the capital requirements before they came into effect and knows about the scheduled further tightening of the regulation, it is assumed that there is no sudden drop in credit supply as a response to the new requirements being phased in.

3.3.2 Customer base

The DNB Bank Group divides its customers into four main customer segments; personal customers, small and medium-sized enterprises, large corporate and international customers, and trading (DNB Bank Group, 2013).

Personal Customers is a segment that comprises a wide range of products to private customers sold through the distribution network in Norway.

Small and Medium-sized Enterprises comprise product sales and advisory services to small and medium-sized enterprises in Norway.

The segment of Large Corporate and International Customers includes both Norwegian and international corporate customers as well as all customers served by DNB's subsidiary banks in the Baltics, Poland and Russia. In May 2013, the portfolio in Poland comprising personal customers and small and medium-sized enterprises was transferred to a Polish bank. The transaction also entailed the transfer of 38 branch offices and approximately 250 employees. The transfer is a consequence of the decision to focus on the largest corporate customers in the Polish market.

Finally, Trading includes market making and other trading activities in fixed income, currencies and commodities as well as equities.

Chart 21 shows the net loans (to the left) and deposits (to the right) divided by segment for 2013.

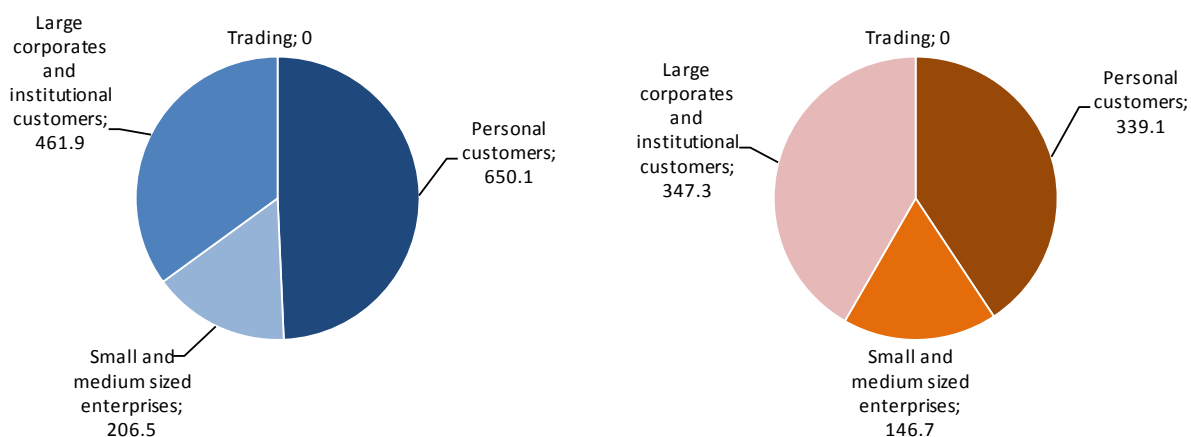


Chart 21 Net loans (to the left) and deposits (to the right) the DNB Bank Group year-end 2013, by segments (DNB Bank Group, 2013)

The segment mix has been relatively stable over the past few years. DNB has not communicated any change in the overall strategy that would imply a different mix in the years to come. In the model it is assumed that the ratio of each segment to the total customer base remains fixed throughout the projection period.

I base the financial projections on the notion that the financials from the historical period of 2011 until 2013 forms a good basis for making assumptions about the future development of the DNB Bank Group.

3.3.3 Projected Balance Sheet

Chart 22 shows the summarized balance sheet of DNB Bank Group as of year-end 2013. Loans to customers make up the majority of the bank's assets with roughly 63 percent of total assets. On the liabilities side, 'customer deposits' is a major item representing roughly 42 percent of total liabilities in Q4 2013. 'Debt securities' is another major item, representing 34 percent of total liabilities. In the projection model, these major items are key drivers of the growth of the bank's balance sheet as they represent the majority of the total. They are also key drivers for the bank's net interest income.

The smaller balance sheet items on both the asset and liabilities side have been summed up into two items; other assets and other liabilities respectively. The summarized version of the balance sheet shown in Chart 22 forms the basis for the projected financials.

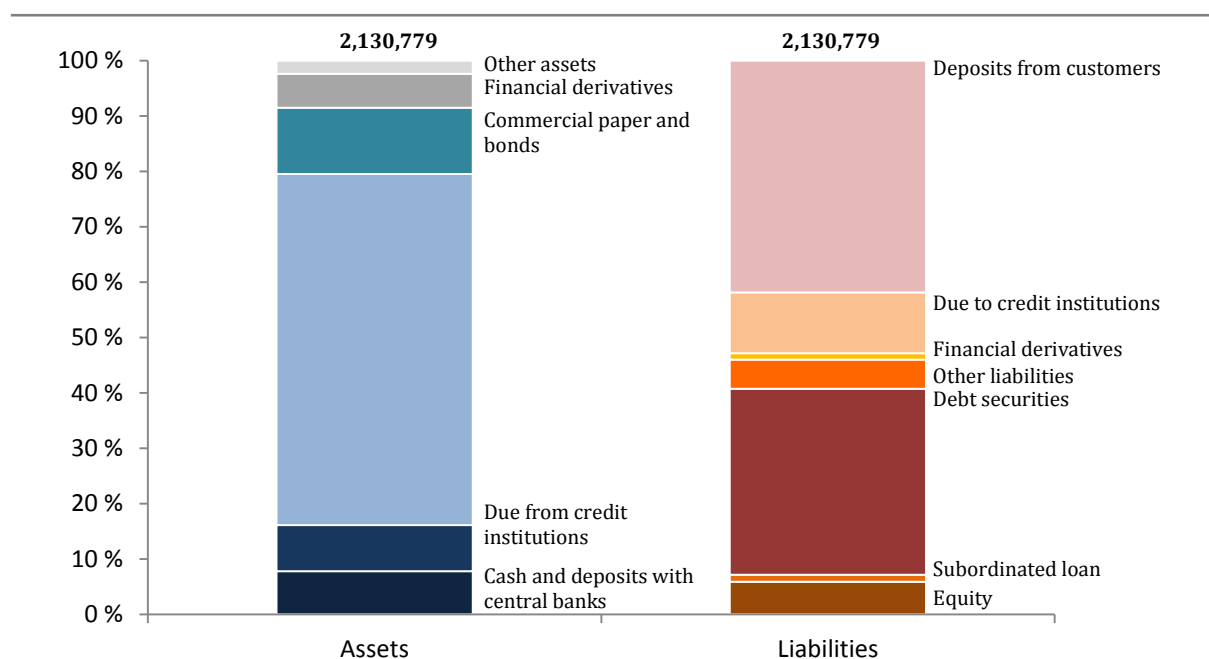


Chart 22 DNB Bank Group's balance sheet as of year-end 2013, summarized version (Q4 financial report), Other assets include shareholdings, investment property, investment in associated companies, intangible assets, deferred tax assets, assets held for sale and other assets. Other liabilities include payable taxes, deferred taxes, other liabilities, liabilities held for sale, provisions and pension commitments.

Table 4 below shows the assumptions applied for the projection of the balance sheet. These assumptions will be explained further in the following sections.

Assets	Projection method	Liabilities and equity	Projection method
Cash and deposits with central banks	Fixed avg 1Q11-4Q13	Due to credit institutions	Fixed 4Q13
Due from credit institutions	Fixed avg 1Q11-4Q13	Deposits from customers	1,10 %
Loans to customers	1,10 %	Financial derivatives	Avg 1Q11-4Q13
Commercial paper and bonds	Fixed 4Q13	Debt securities issued	0,13 %
Financial derivatives	Avg 1Q11-4Q13	Other liabilities	5,48 %
Other assets	1,85 %		
Additional cash	Residual	Subordinated loan capital	Target: 3.5% of RWA
		Share capital	Fixed
		Share premium reserve	Fixed
			Other equity OB
			+ Profit
			- dividends
		Other equity	= Other equity CB
Total assets	0,91 %	Total liabilities and equity	0,91 %

Table 4 Assumptions about the future development in DNB Bank Group's balance sheet. Figures in percent represent the compound quarterly growth rate in these items from Q1 2011 until Q4 2013.

A complete overview of the forecasted balance sheet can be found in the appendix.

3.3.3.1 Assets

Cash and deposits with central banks

Cash and deposits with central banks include cash and deposits with Norges Bank and central banks outside Norway, mainly in OECD countries (DNB Bank Group, 2013).

At year-end 2013 the amount held at Norges Bank totaled NOK 7,365 million.

In the historical period of 2011-2013, the item cash and deposits with central banks, has been fluctuating in a range from NOK 16 to 433 billion. For the projection period I have assumed a fixed amount going forward, equal to the average size of the bank's cash and deposits with central banks in the historical period.

Due from credit institutions

This item includes short term lending in the interbank market in addition to the bank's deposits with credit institutions with no agreed period of notice. Like the cash and deposits with central banks, the amount due from credit institutions is an item that has

fluctuated quite a lot historically. For the projection period I have assumed a fixed amount going forward, equal to the historical average size of this balance sheet item.

Loans to customers

Loans to customers is a major item on the bank's balance sheet, and consist of the bank's lending to all customer groups, as presented in Table 2. On average in the historical period, roughly 65 percent of DNB's assets consist of loans to customers. The growth in total assets is therefore closely linked to the growth in DNB's lending, which is affected by the overall credit growth in the economy and the loan losses and impairment.

Credit growth

Overall credit growth in Norway was reduced somewhat through 2013, but it still remains higher than growth in the mainland economy, see K2 in Chart 23. Household debt accounts for 58 percent of domestic debt, and since 2011 the credit growth has remained steady at about 7 percent on an annual basis (FSAN (1), 2013), see Chart 24. Although the growth in house prices is expected to decline somewhat in the period to 2016, dwellings will probably continue to sell at higher prices, contributing to prolonged growth in household indebtedness. However, the introduction of tighter home mortgage lending practice, through the increased LGD ratio for mortgage assets pulls in the opposite direction.

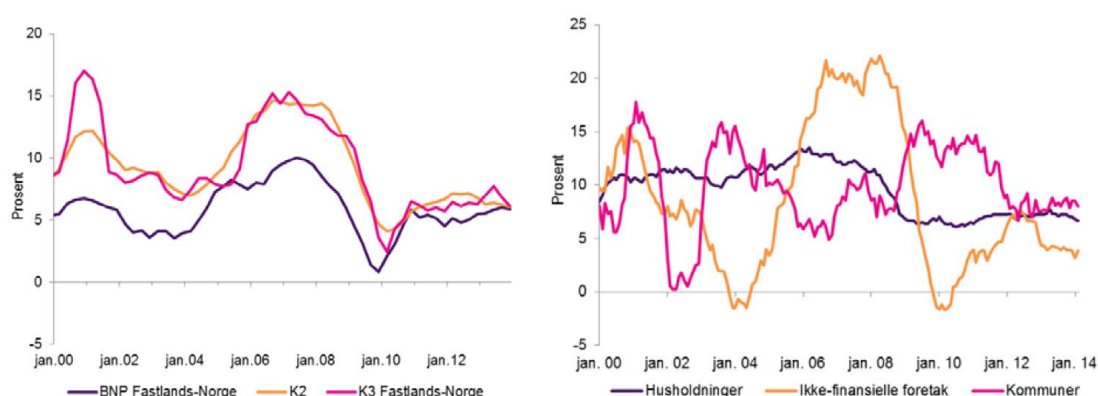


Chart 23 (to the left), twelve-month growth in; the general public's gross domestic debt (yellow line), the debt of mainland Norway (pink line) and the GDP of mainland Norway (purple line). Chart 24 (to the right), twelve-month growth of debt to; municipalities (pink line), non-financial corporations (yellow line) and households (purple line) (FSAN, 2014)

Norges Bank projects a slight decrease in household credit demand in the near future, see Chart 25.

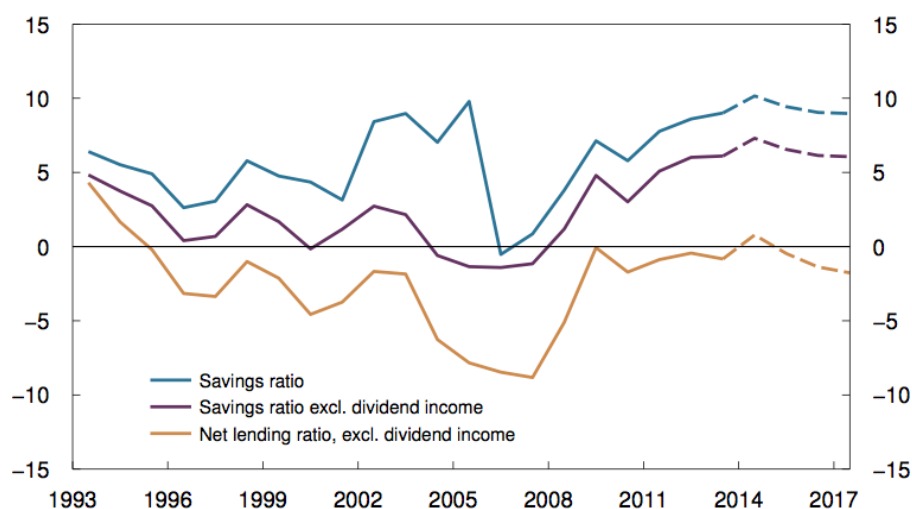


Chart 25, Household saving and net lending as a share of disposable income, percent, 1993-2017¹

1) Projections for 2014-2017 (broken lines) (Norges Bank, 2014)

The growth in credit to enterprises has also come down since the first quarter of 2012, see Chart 22. The fourth Monetary Policy Report issued by Norges Bank in 2013 point to weak, but somewhat higher growth in investment in Mainland Norway in the next couple of years. The increased activity could bring continued growth in credit to firms. However, enterprises have, to a greater degree than previously, obtained funding in the bond markets. While Norwegian enterprises mainly obtained bank financing in previous years, there was a clear shift in 2013 towards Norwegian and foreign bond markets. Risk premiums in the markets have fallen, thus it has been more beneficial for some companies to use these sources. If this trend continues, it could imply a further reduction in the growth in bank lending to enterprises.

Loan losses and impairment

Another key factor in the projection of the value of loans to customers is loan impairment. A loan is impaired when it is not likely that the borrower will be able to repay the full value of the loan. All banks must register loan impairment to account for future losses on loan defaults. The impairment is subtracted from the value of the bank's loans, thus reducing the balance sheet value.

The impairment amount is estimated by the bank according to regulatory guidelines. The rules for impairment registration have become stricter following the financial crisis, when many banks experienced financial distress. Unexpectedly high loan losses with insufficient funds to cover them, caused trouble for many banks. Chart 26 displays DNB's impaired loans from 2002 until 2013.

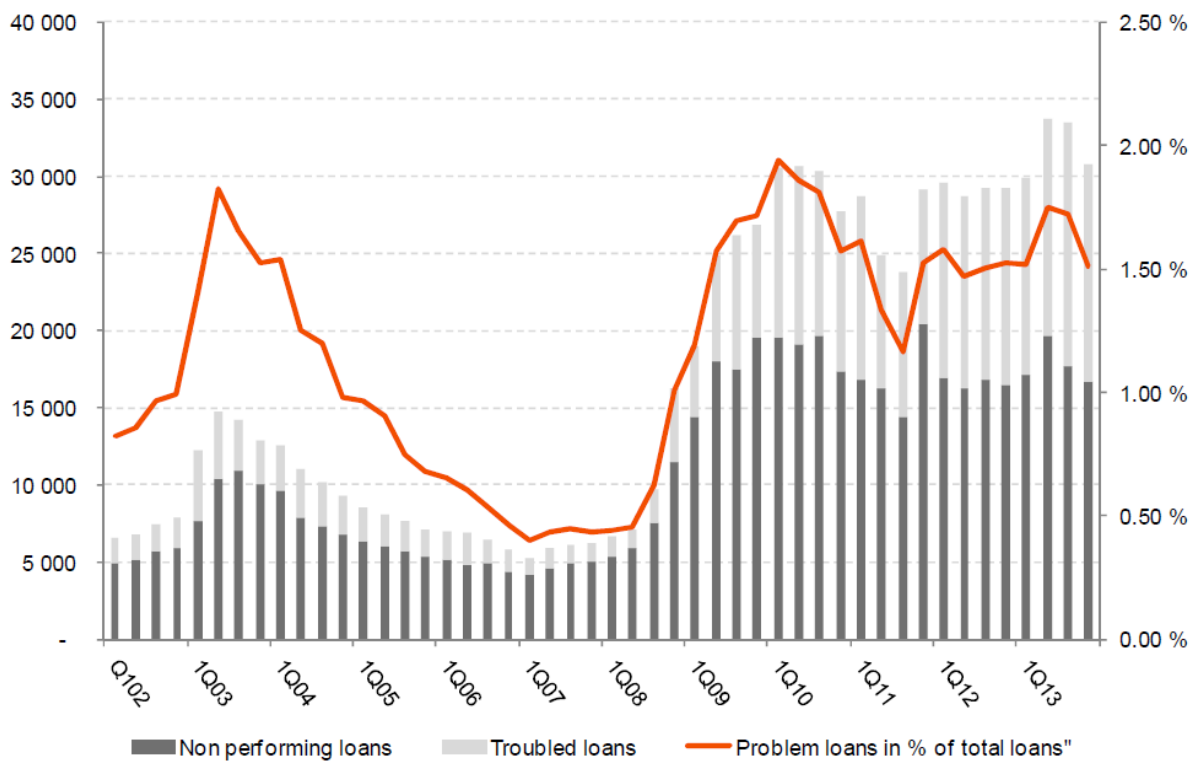


Chart 26, Impaired loans (NOKm) (DNB Bank Group, 2013)

In the period 2005-2008, the ratio of DNB's problem loans to total loans was especially low, however the financial crisis caused a new wave of loan losses. The ratio has come somewhat down since then, and the high activity levels in the Norwegian economy have supported a good income trend and relatively low loan losses in 2011-2013, compared to the high levels in 2010.

Projection of loans to customers

Loans to customers before accounting for the impairment, has seen a quarterly average

growth of 1.18 percent from Q1 2011 until Q4 2013. Due to the expected reduction in credit growth, I have reduced this growth to 1.10 percent, applying a precautionary approach.

Much of DNB's lending goes to non-financial firms, and a substantial portion of this lending is to commercial property and shipping segments. Both these industries carry high risk, as previously mentioned. Risk is also high in the case of bank lending to other industries. Historically banks have incurred substantially higher losses on loans to firms than on loans to households. A weaker international trend, reduced oil prices, higher interest rates and increased unemployment could feed through to higher loan losses in banks' corporate portfolios. DNB has enjoyed low loan losses in the past but there is a possibility for increased loan losses in the period ahead. However, as the bank has a strategy of decreasing its exposure towards the riskier asset classes, the effect of a somewhat increase in overall loan losses is assumed neutralized by recoveries on loans previously written off in the riskier segments.

Historically (2011-2013), impaired loans have amounted to 1.29 percent of loans before impairment. This ratio is applied in the projection period. I estimated the ratio of impaired loans, because new impairment that is not covered by the already impaired amount or neutralized by recoveries of loans previously written off, is registered as an expense in the bank's profit and loss statement. This is elaborated in the section on the income statement below.

Loans to customers equal loans to customers before impairment minus the impaired loans for the period.

Commercial paper and bonds

This item includes both commercial paper and bonds at fair value and commercial paper and bonds held to maturity, and represents the bank's wholesale funding. The average quarterly growth rate is -0.45 percent, which indicates that the growth in this item is almost zero. Comparing the value of commercial paper and bonds in the first quarter of 2011 and the fourth quarter of 2013, I find that the value is virtually unchanged. I

therefore find it reasonable to project this item as a fixed amount equal to the Q4 2013 amount going forward.

Financial derivatives

Financial derivatives are contracts stipulating financial values in the form of interest rate terms, exchange rates and the value of equity instruments for fixed periods of time. Corresponding contracts stipulating prices on commodities and indexes are also defined as financial derivatives. Derivatives include swaps, forward contracts and options as well as combinations thereof, including forward rate agreements (FRAs), financial futures and agreements on the transfer of securities. Financial derivatives in the DNB Bank Group are traded to manage liquidity and market risk arising from the banking group's ordinary operations. In addition, the banking group employs financial derivatives in its own account trading (DNB Bank Group, 2013).

Financial derivatives are presented as an asset if the market value is positive and as a liability if there is a negative market value.

The amount has varied substantially in the historical period, and there is no obvious growth trend. The use of a projection that is based on a quarterly growth is therefore not a good approach, thus I have kept this item fixed at the historical average in the projection period.

Other assets

Other assets consists of a bulk of items, including shareholdings, investment property, investment in associated companies, intangible assets, deferred tax assets, assets held for sale and other assets. The average growth rate of this bulk item is 1.9 percent, which I find to be a sensible assumed growth rate in the projection period.

Additional cash

I have added an additional item to the bank's assets, which can be viewed as an addition to the item cash and deposits with central banks. For modelling purposes, the additional cash item is projected as a residual that balances the total assets and total liabilities and equity. I used the Solver function in excel in order to derive at the value of this item that

balanced the assets and liabilities and equity. In the model it is assumed that the bank does not earn any interest on this amount.

3.3.3.2 Total Liabilities and Equity

Due to credit institutions

This balance sheet item includes short term debt due to credit institutions and borrowings from Norges Bank in connection with the Norwegian government's covered bonds exchange scheme in relation to the financial crisis. The funding obtained By DNB through this scheme totaled NOK 50.0 billion at year-end 2012.

The amount due to credit institutions has remained fairly stable during the historical period, with some fluctuations around the period average. For the projection period the item is assumed fixed at the average amount for the period 2011-2013.

Deposits from customers

Customer deposits are the bank's largest liability, representing more than 40 percent of total liabilities and equity and an important part of the bank's funding. Historically, there has been a consistent growth in deposits. While the growth was substantial in 2011-2012 at 4.65 percent it has stagnated in 2013 to 2.45 percent. The fact that the growth in deposits has decreased could be explained by the decrease in the deposit rates offered by DNB.

The general interest level is expected to increase in the projection period. However, if a precautionary interpretation is applied, it is sensible to project a lower growth rate in deposits in the future period. Additionally, the amount of customer deposits has been kept fairly stable at a level slightly below NOK 1,000 billion for the period 2012-2013. Projecting further quarterly growth in deposits equal to the growth in lending at 1.10 percent maintains the amount of deposits from customers close to NOK 1,000 billion during the projection period, which I believe to be a decent estimate.

Financial derivatives

On the liability side, the value of financial derivatives has been increasing in the historical period, which indicates that the bank holds an increasing amount of negative financial derivatives. Even though there has been a growth trend historically, there is no indication that this might be the case in future. As the financial derivatives are recorded at fair value, meaning that if the market value increases and become positive, that would result in the financial derivative becoming an asset, and the liability item would decrease correspondingly.

As there has been almost consistent growth in this item historically, projecting the item as an average of the entire period would be somewhat misleading. Also, the value financial derivatives liabilities increased significantly in Q4 2013, so keeping it fixed at that value would not make for a good projection. I therefore assume that the value of the item is kept fixed at the average for Q1 2013 to Q4 2013.

See financial derivatives assets, for a detailed description of the item.

Debt securities issued

Debt securities issued consists of commercial papers and bonds issued by DNB. The item increased at a relatively high growth rate in 2011-2012, but the growth has stagnated and the average quarterly growth in this item in 2013 was 0.13 percent. I assume that the growth recorded in 2013 is more appropriate in projection of the future development in the value of debt securities issued.

Other liabilities

Other liabilities is a bulk item that include payable taxes, deferred taxes, liabilities held for sale, provisions, other liabilities and pension commitments. These items collectively have seen an average quarterly growth of 5.5 percent from 2011-2013. It is assumed that other liabilities will continue to grow at this rate in the projection period.

Subordinated loan capital

Subordinated loan capital is determined by calculating the target ratio for the subordinated capital to total risk-weighted assets in the projection period. A detailed

explanation of the computation of this item is given in the capital adequacy section of the paper.

Equity

DNB Bank Group's share capital and share premium reserve is kept fixed at current levels as it is assumed that the bank will not be issuing equity in the time ahead. Other equity is determined by taking the opening balance, adding the period's profits and subtracting the period's dividends.

The DNB Bank Group pays group contribution to DNB Bank ASA every other year, while the DNB Group pays out dividends to the shareholders annually. However, in the analysis of the capital adequacy of DNB Bank Group I have chosen to assume a quarterly dividend payout equal to the DNB Group's dividend payout ratio of 25 percent, from the DNB Bank Group. The long-term payout strategy is 50 percent of earnings per share, but I assume that the payout ratio will be 25 percent for the projection period, in order for the bank to build equity capital. This has also been communicated by the CEO on several occasions, even though he did indicate a possible increase in dividends payouts in 2014. As the objective of this thesis is to examine whether the bank will be able to fulfill the capital requirements by the second quarter of 2016, I assume the minimum payout ratio stated by the CEO of 25 percent.

When banks report capital adequacy quarterly, the FSAN states that only 50 percent of the interim profits for the year up until that time can be included in the calculation of the capital ratios. Since taxes and dividends are paid annually, as opposed to quarterly, banks have to make adjustments in their calculations in order to present representative quarterly capital ratios. The FSAN has decided that 50 percent of the interim profits can be included in the quarterly capital adequacy calculations if estimated tax charges and dividend payout is less than 50 percent. However, if foreseeable tax and dividend amount to more than 50 percent of profits, then the interim profits cannot be included in the calculation of capital ratios at all (FSAN, 2009).

The full interim profits can only be included in the calculation of capital ratios if they are proved to the satisfaction of the competent authorities that the amount has been

evaluated and is net of any foreseeable charge or dividend. The model is built under the assumption that DNB will obtain the necessary approval to include the full profits of each period, adjusted for the tax and dividends, in the calculation of the capital adequacy.

3.3.4 The Income Statement

A bank's profits are hugely dependent on the overall interest level in the economy. For the DNB Bank Group, net interest income represents about 80 percent of the bank's total income. This makes the projections for interest income and interest expenses an important part of projecting the income statement of the DNB Bank Group.

The fact that the DNB Bank Group has customers in other countries complicates the projection of interest income and expenses. In the model I have chosen to use the Norwegian 3-month interbank rate, Nibor, as the main driver for the net interest income of the banking group. However, the interest levels in other countries are based on these countries' money market rates, and not the Norwegian. Since more than 80 percent of the bank's lending, deposits and interest income stems from Norway, it could be argued that the bank's substantial Norwegian presence makes the simplifying assumption reasonable.

3.3.4.1 Interest Income

The interest income is the interest earned on the bank's lending activities, defined as the interest rate achieved multiplied with the value of the loans. In the model, the interest that the bank charges is calculated by a spread to the 3-month Nibor for three main categories of loans provided by the bank; amounts due from credit institutions (including interest earned on cash and deposits with central banks), commercial paper and bonds, and loans to customers.

I project the development in the interest rate charged on these loan categories by 1) determining the average interest rate per loan category in 2013, 2) computing the average spread of the average interest rate per loan category to the 3-month Nibor and 3) assuming that the average interest rate will develop with the 3-month Nibor in the projection period.

1) Approximation of the average interest rate charged

The interest income for each category is provided in DNB's historical income statement. The average interest rate per loan category is computed by dividing the total annual interest income per category in 2013 by the average value of the corresponding balance sheet items, representing the average book value of the loan category in 2013, see equation 7.

Equation 7 Estimated average interest rate

$$= \frac{\text{Annual interest income for loan category 1 in 2013}}{\text{Average value of balance sheet items for loan category 1 in 2013}}$$

This estimate of the average interest rate charged per loan category does not reflect the interest rate actually charged on new loans provided, as the value of the balance sheet items are made up of the sum of massive amounts of individual loan contracts. These contracts vary in length, and most importantly they vary in the interest rate charged. Additionally, a smaller percentage of the total value of the balance sheet items are loans provided by the foreign branches of DNB where the interest level would be different from the Norwegian interest rates. This means that the approximation of the average interest rate charged is mainly purposeful for projection, and will provide any grounds for comparison with the interest level in the economy at present or with DNB's own statements of the interest rates charged on new loans provided.

2) Average spread to the 3-month Nibor

The spread is determined by subtracting the average 3-month Nibor from the average interest rate computed per loan category in step 1) above.

For amounts due from credit institutions and commercial paper and bonds, the interest spread to the 3-month Nibor is kept constant through the projection period.

For loans to customers, the calculated spread is steadily reduced. This reduction reflects the banks' adaption to the somewhat reduced credit demand. Furthermore, it is

assumed that the net interest margin decreases with the level of the market rate, as there is an incomplete pass-through from the market rate to retail rates. This assumption is supported by the fact that the interest margins on loans to customers in the Norwegian banking sector have been exceptionally high for some time now. Most banks, including DNB, have increased the interest on loans to customers in order to strengthen capital adequacy.

Norges Bank does not believe that the widened interest margins can be maintained in the period ahead, without curbing overall credit growth substantially. As shown through Chart 5 the difference between the projected interest rate on household credit and projected the 3-month Nibor decreases as the projected key policy rate increases. I have chosen to use the projected decrease in this spread as a basis for the decrease in DNB Bank Group's interest rate spread on loans to customers.

3) Projection of the average interest rate by the expected development in the 3-month Nibor
Finally, the average interest rate for the projection period is estimated as the spread computed in step 2) plus the baseline scenario projection of the 3-month Nibor provided by Norges Bank in the first Monetary Policy Report of 2014 (as presented in Chart 5).

In reality, only a fraction of DNB's loans contracts are directly influenced by the fluctuations in the money market rate. This is due to the fact that a substantial amount of the loans provided are fixed-rate loans, meaning that DNB earns a fixed interest rate independently of the changes in the 3-month Nibor. The percentage of fixed rate loans of total lending in DNB is not made publically available.

For modeling purposes, it is assumed that the entire loan portfolio consists of floating rate loans, and that changes in the 3-month Nibor in one quarter affects the average interest rate on these loans in the same quarter. There is thus an assumption of zero time lag between the changes in the 3-month Nibor and the changes in the average interest rate charged per loan category. For some short-term loan contracts, this is an assumption close to reality. However, for floating rate mortgage loans, there is a

regulated time lag which prevents DNB from increasing the rate charged without due notice in advance.

The average interest rates computed are denoted annually, and divided by four when calculation the interest income per quarter.

Other interest income

Other interest income is projected as a bulk item that consists of interest on impaired loans and guarantees, front-end fees and other interest income, and make up about 3 percent of total interest income. Other interest income is kept constant through the projection period equal to the value of the item in the fourth quarter of 2013.

3.3.4.2 Interest Expenses

I have used the same method for estimating the interest expenses as for the interest income and estimated a spread to the 3-month Nibor. As with the interest income, a certain portion of the interest expense will not change with changes in the 3-month Nibor because the bank has entered into long-term wholesale funding contracts with fixed rates. However, in the model it is assumed that all contracts are affected by changes in the interest rate.

Spreads to the 3-month Nibor have been calculated for amounts due to credit institutions, debt securities issued, subordinated loan capital and deposits from customers. The spreads for the first three categories are held constant, but the interest spread on deposits from customers is increased during the projection period. The spread estimated in the model is negative (meaning that the computed average interest rate is lower than the average 3-month Nibor in 2013). This negative spread is increased, which translates into a slower increase in the deposit rate than the increase in the 3-month Nibor.

As the general interest rate level increase and the bank's market funding becomes more expensive, it is assumed that the bank will have a higher demand for deposits, thus raising the rate on deposits. However, given the assumption that income is reduced due to the reduced spread on loans to customers, it is reasonable to expect that DNB Bank

Group will wish to neutralize the lost income through reducing the funding cost of deposits.

With the increased capital adequacy, DNB should theoretically be able to obtain cheaper wholesale funding, and the positive spread to Nibor should therefore decrease (and not held constant as assumed in the model). This is due to the reduced risk associated with the bank when the balance sheet is solidified. With a more solid balance sheet, there is less risk for the creditors and they should be willing to offer funding at a lower rate. However, looking at Chart 27, which shows the estimated difference in investors perception of the risk associated with DNB compared to Swedish peers with lower capital adequacy requirements (and therefore lower capital adequacy), and there is hardly any difference. The risk difference is estimated by the spreads on Credit Default Swaps (CDS's). The CDS spreads will reflect the likelihood that an individual bank might experience financial distress.

A possible reason for this observation is the relatively stable and sound market conditions at the moment. There is generally little risk in lending funds to Nordic banks. The difference in solidity would probably materialize if the market conditions worsened. In the model it is assumed that it will not do so in the projection period.

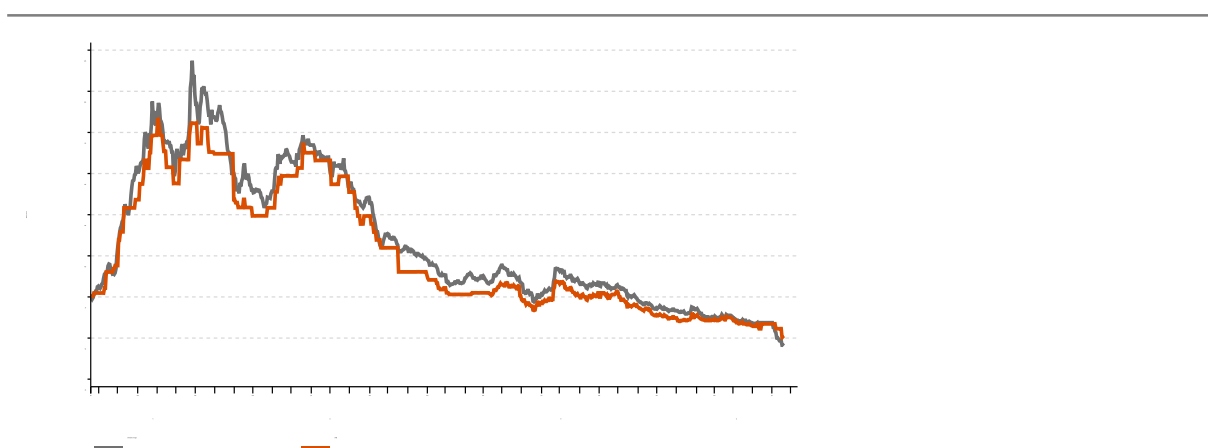


Chart 27, DNB funding cost compared to Swedish peers (Data series extracted from Reuters Ecowin, Swedish average is calculated by the CDS spreads for SEB Bank, Nordea Bank and Svenska Handelsbanken)

Other interest expenses

Other interest expenses is projected as a bulk item that consists of expenses to the guarantee fund levy and interest rate adjustments resulting from interest rate swaps entered into. This expense item is kept constant through the projection period at the amount of the fourth quarter in 2013.

3.3.4.3 Net interest Income

Lending margins on loans to customers

Rune Bjerke has presented quarterly profits that greatly exceeded expectations for several periods in a row, and both bankers and financial analysts are calling it the golden age of banking. The recent earnings in the Norwegian banking sector have been astonishing, and above the normal level. All-time high interest margins in DNB Bank Group, indicates that the margin has to be normalized in the years to come.

The competition in the mortgage lending market and the small to medium enterprises segments is intensifying and lending margins are under pressure. In April DNB announced both mortgage rate and deposit reductions. Financial analysts estimate that the reduction will have a neutral effect on the net interest income of the bank. Reductions in both the average interest rate on loans to customers and the average deposit rate is included in the projection period in the model, as specified in section 3.3.4.1 and 3.3.4.2 above.

In the projection period, the lending margin is kept constant. This assumption is supported by the findings in a working paper for Norges Bank by Raknerud, Vatne and Rakkestad (2011). They find that banks are facing a downward-sloping demand curve for loans and an upward-sloping supply curve for customer deposits. In a perfectly competitive market, any increase in marginal funding cost, represented by the 3-month Nibor, should be passed through to all retail rates. However, faced with a downward-sloping demand curve for loans, banks' balance the positive price effect and the negative effect on the demand for loans when increasing their loan rates. Similarly, when faced with an upward-sloping supply curve for deposits, banks will take into consideration that deposits will decrease when the deposit rate is lowered.

Raknerud, Vatne and Rakkestad (2011) find that when the Nibor increases, the margin between loan and deposit rates remains unchanged while the spread between the loan rate and the Nibor rate decreases. This is line with the assumptions made in the model.

Chart 28 below shows an illustration of the principle applied in the projection model. As previously explained, the average interest rates applied in the model are for modeling purposes only and provides little value as a basis for comparison with historical data. In order to show the above-mentioned changes in the interest margin and spread to the 3-month Nibor, I have made Chart 28 for illustrative purposes only.

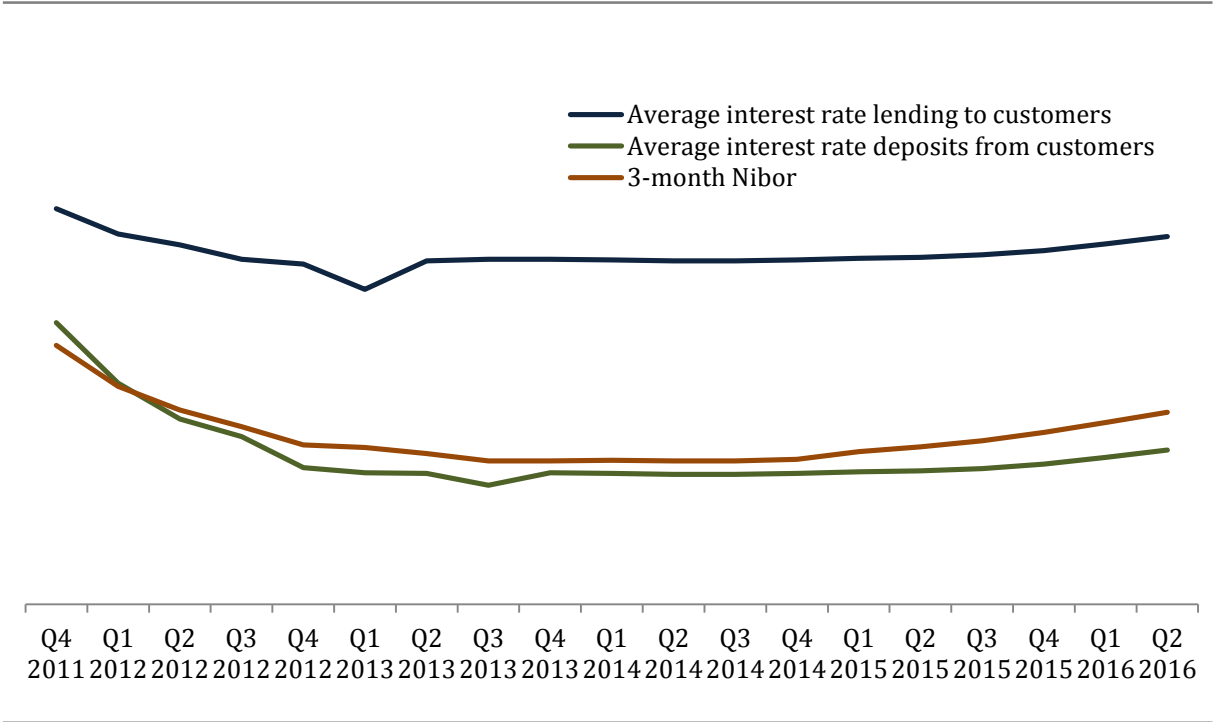


Chart 28 Illustration of the historical (Q4 2011 – Q4 2013) and projected (Q1 2014 – Q2 2016) average interest rate on lending to customers, deposits from customers and the 3-month Nibor. Note: for illustrative purposes only (percent)

Net interest income

Chart 29 shows the actual interest income margin from Q1 2011 to Q4 2013, and the projected interest income margin from Q1 2014 to Q2 2016.

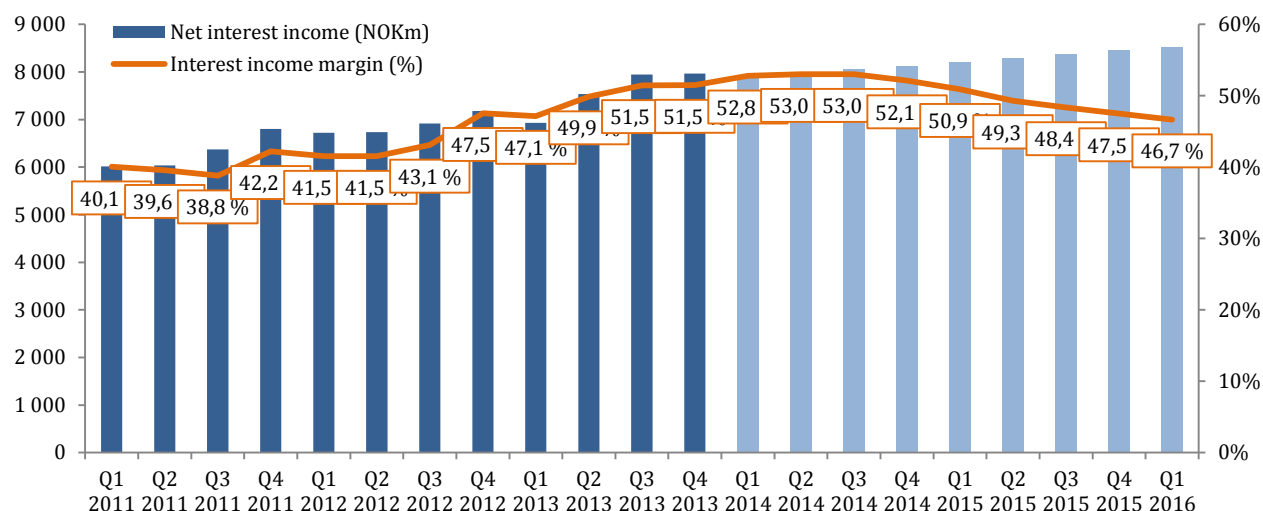


Chart 29, Historical (dark blue) and projected (light blue) net interest income and interest income margin

From Chart 29 the historical increase in both the net interest income and interest income margin is shown. In the projected period the net interest income continues to increase as the balance sheet expands, and the interest rates are increased. However, the interest income margin is reduced from Q3 2014 and during the remainder of the projection period to a more “normalized” level.

3.3.4.4 Net commission and fee income and other income and expenses

Net commission and fee income is projected as a ratio to total interest income equal to 6.8 percent, which is the average ratio to total interest income in the historical period, 2011-2013.

In the model, net gains on financial instruments, profit from companies, net gains on investment property and other income are summed up and labeled total other income. This item is projected as a ratio to total interest income. Based on the average of historical data from 2011 until 2013, the ratio is projected at 14.4 percent.

Net gains on financial instruments at fair value

During the first quarter of 2014, an agreement to sell the Group’s shareholding in Nets was signed. The transaction is expected to be completed in the second quarter of 2014.

Following the agreement, the value of the shareholding in Nets was increased by NOK 913 million. The increased value of this shareholding was recorded as net gains on financial instruments at fair value for Q1 2014 in the projected income statement. In the balance sheet the shareholdings item, included in other assets, was reduced by the book value of holding at NOK 2,634 million and additional cash was increased by the same amount.

Other expenses

Other expenses are also projected as a bulk item including salaries and other personnel expenses, other expenses and depreciation and impairment of fixed and tangible assets. This item is also projected as a ratio to total interest income of 31.4 percent, which is the historical average of the period from 2011 to 2013.

3.3.4.5 Impairment of loans and guarantees

The quarterly average impairment cost in DNB's income statement has been 4.51 percent of impaired loans historically. It is assumed that the historical average is a decent approximation in the future development in the cost of impairment of loans and guarantee, and I therefore project this income statement item as 4.51 percent of impaired loans in the projection period.

3.3.4.6 Tax

The Bank Group has operations in a number of countries whose tax rates are different from that in Norway. According to Norwegian tax legislation, external interest expenses shall be distributed proportionally among operations in Norway and international branches based on the respective units' total assets. This could result in additions or deductions from income in Norway.

The nominal tax rate in Norway is 27 percent. Business operations outside Norway are subject to varying income tax rates depending on local tax regulations in the relevant country. DNB's operations outside Norway are subject to effective tax rates ranging from 12 percent to 55 percent. Tax-exempt income from share investments contributes to a

lower expected tax rate. In the longer term, the effective tax rate is expected to be approximately 26 per cent (DNB Bank Group, 2013).

The effective tax rate is therefore projected at 26 percent in the projection period.

The complete projected income statement can be found in appendix.

3.3.5 Risk-weighted Assets

The total risk-weighted volume will be affected by the overall expansion in the balance sheet, which again is largely determined by credit growth. However, the effect of an extended asset base on the value of the risk-weighted assets depends on how the growth is distributed across various segments in the portfolio and on the risk weights used to compute capital charges per segment. For example, the balance sheet could be expanding and the value of the risk-weighted assets could still decrease; if DNB reduced exposure to the riskier asset classes, like shipping and replaced them with less risky assets like mortgages. This was actually the case in Q2 2012, when the balance sheet grew by 0.21 percent and the risk-weighted assets decreased by 0.71 percent.

The calculation of risk-weighted assets is an extensive and complicated process. Additionally, it requires more information than what is made publically available. In a simplified approach, I have assumed a future growth in risk-weighted assets equal to the historical average quarterly growth of 0.79 percent.

A key factor in the calculation of risk-weighted assets is the method used. The calculation of the DNB Bank Group's risk-weighted volume is based on a combination of the standardized approach and the IRB approach. The majority of the credit portfolios are reported according to the IRB approach, which allows DNB to use the bank's own estimates of risk weights. These are lower than the risk-weights in the standardized model. DNB estimates that if the IRB approach had been applied to the entire loan portfolio it would have given a reduction in risk-weighted volume of approximately 11 percent at year-end 2012. However, the Basel I floor rule would have prevented risk-weighted assets from being reduced below 80 percent of the Basel I level. DNB has

applied to the FSAN for permission to use the IRB approach on additional portfolios. However, the CRD IV will keep the Basel I floor rule in effect until 2017. It is therefore assumed that the bank's risk-weighted volume not will be reduced by extensive use of the IRB approach in the projection period.

The new rule introduced by the Ministry of Finance for the weighting of banks' residential mortgages in capital adequacy calculations implies that the average risk weight on these mortgages will increase from 11.3 to 17.8 percent when applying the IRB approach (DNB Bank Group, 2013). The change entered into force on 1 January 2014. It is assumed that DNB does not change the composition of its loan portfolio due to the new rule, as the bank has been given notice in advance and therefore has been able to adjust over a long period of time.

In an attempt to estimate the effect of the rule on the value of risk-weighted assets, I have applied the new risk-weight of 17.8 percent for residential mortgages in the IRB model, and used the financials from the fourth quarter of 2013. I find that the new rules cause the banking group's total risk-weighted volume to increase by 5 percent, see table 5.

SPECIFICATION OF RISK-WEIGHTED VOLUME	Nominal exposure 31 Dec 2013	Exposure at default 31 Dec 2013	Risk-weighted volume 31 Dec. 2013	Average risk weights 31 Dec 2013	New risk weight residential mortgages	Risk-weighted volume with new rule
Credit risk						
IRB approach						
Corporate	904,597	732,381	379,528	51.8 %		379,528
Specialised Lending (SL)	3,865	3,832	1,915	50.0 %		1,915
Retail - mortgage loans	619,414	619,414	61,048	9.9 %	17.8 %	110,256
Retail - other exposures	106,641	87,694	24,800	28.3 %		24,800
Securitisation	63,087	63,087	29,749	47.2 %		29,749
Total credit risk, IRB approach	1,697,604	1,506,408	497,040			546,248
Standardized approach						
Central government	137,581	160,021	44	0.0 %		44
Institutions	247,382	102,099	25,456	24.9 %		25,456
Corporate	292,719	227,767	212,452	93.3 %		212,452
Retail - mortgage loans	45,128	42,996	23,331	54.3 %		23,331
Retail - other exposures	69,139	35,931	28,119	78.3 %		28,119
Equity positions	3,630	3,630	3,855	106.2 %		3,855
Securitisation	3,048	3,048	550	18.0 %		550
Other assets	12,650	12,650	12,650	100.0 %		12,650
Total credit risk, stadarized approach	811,277	588,142	306,457			306,457
Total credit risk	2,508,881	2,094,550	803,497			852,705
Market risk						
Position risk, debt instruments			32,619			32,619
Position risk, equity instruments			1,280			1,280
Currency risk			2,577			2,577
Commodity risk			51			51
Total market risk			36,527			36,527
Operational risk						
			71,753			71,753
Deductions		-	703		-	703
Total risk-weighted volume and capital requirements before transitional rule			911,074			960,282
Additional capital requirements according to transitional rule			70,547			70,547
Total risk-weighted volume			981,621			1,030,829
Increase in total risk-wighted volume due to new rules %						5.0 %

Table 5 Estimated increase in risk-weighted volume of DNB Bank Group (NOKm and %, (DNB Bank Group (2), 2013)

For the calculation of credit risk, the risk-weighted volume for each asset category is found by multiplying the average risk weight by the value of assets at default (Exposure At Default, EAD). Adding the market risk and the operational risk to the credit risk gives us the total risk-weighted volume of the banking group. The value of the risk-weighted volume increases by about NOK 50 billion, which translates into a 5 percent increase.

On the basis of these calculations, it is assumed that the new rules will cause the risk-weighted volume to increase permanently by 5 percent in Q1 2014, which implies an assumption that DNB Bank Group does not decrease its lending in order to counter the effect of the new rule. From Q1 2014, the risk-weighted volume of DNB Bank Group is assumed to be percent of total assets.

3.3.6 Capital Adequacy

The capital adequacy of the banking group is calculated by dividing common equity capital, tier 1 capital and total capital respectively by risk-weighted assets.

3.3.6.1 Common Equity Tier 1 Capital

The common equity tier 1 capital is calculated by adding the group's share capital and other equity and subtracting certain deductions.

The share capital is kept fixed in the projection period, as DNB has expressed that the bank will not be raising equity in the period ahead. Other equity is the sum of the share premium reserve capital and other equity on the balance sheet, adjusted for profits and dividend payments. When DNB calculate the capital adequacy of the banking group for the first three quarters of the year, the CET 1 capital is estimated by including 50 percent of interim profits. In this analysis, however, I have chosen to include 100 percent of the profits in each quarter and consequently deduct estimated tax and assumed a dividend of 25 percent for each period. By applying this calculation I reduce fluctuations in the capital ratios, which makes it easier to see the development in the capital adequacy of the banking group.

The following items must be subtracted from total equity in order to arrive at equity tier 1 capital: (a) pension funds above pension commitments, (b) deferred tax assets, (c) goodwill and other intangible assets, (d) unrealized gains on fixed assets, (e) 50 percent of investments in other financial institutions, (f) 50 percent of expected losses exceeding actual losses in IRB portfolios, (g) adjustments for unrealized losses/(gains) on the debt recorded at fair value, and finally (h) group contribution, payable.

The computation of some of these deductions is very specific, which makes it difficult to estimate them when projecting the capital adequacy. Certain simplifications are made in order to arrive at the CET 1 capital. The deductions above are kept constant for the projection period. There is no observable growth trend in these items historically, which supports the simplified assumption.

Quarterly dividends are not subtracted as they are assumed paid in every quarter. Dividends are only deducted from the CET 1 capital if they have been estimated by year-end, and are not actually paid yet.

3.3.6.2 Additional Tier 1 and Tier 2 Capital

The CFO of the DNB Group has expressed that the bank will continue to issue additional capital instruments in the period ahead in order to optimize the capital structure (Næss, 2013). An optimal capital structure means that additional tier 1 capital is increased to 1.5 percent of risk-weighted assets, while tier 2 subordinated loan capital is increased to 2.0 percent of risk-weighted assets.

In the projection model it is assumed that the banking group will increase the perpetual subordinated loan capital securities that qualify as additional Tier 1 capital to 1.5 percent of risk-weighted by Q2 2015. July 1st 2015 is the date when the capital requirements are really starting to increase, and the CET 1 capital no longer covers the total capital requirements. In order for the additional tier 1 capital to become 1.5 percent of risk-weighted assets, it has to increase by 29,8 percent each quarter (a compound quarterly growth rate). From Q2 2015 until Q2 2016, it is assumed that the ratio is kept steady at 1.5 percent.

In the projection model I assume that the DNB Bank Group increase tier 2 subordinated capital at a rate that ensures a value of total subordinated capital (additional tier 1 capital and tier 2 capital) of 3.5 percent of total risk-weighted assets by July 1st 2015. In order to reach that target ratio, it is calculated that the quarterly growth in total subordinated capital is 8.3 percent. From Q2 2015 until Q2 2016, the ratio is kept at 3.5 percent.

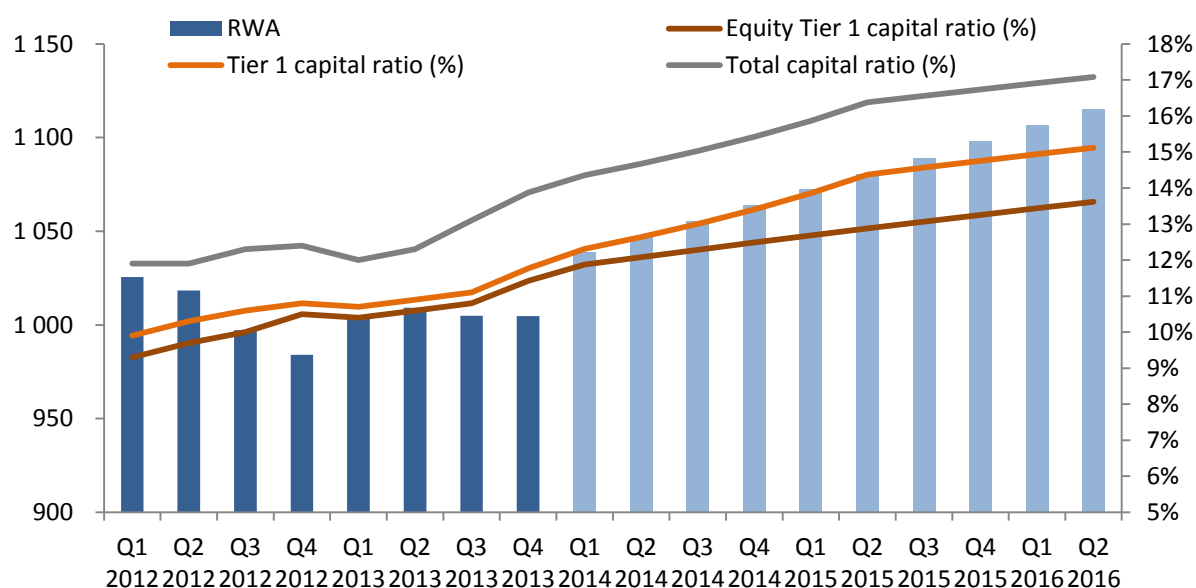
I have used the capital adequacy strategy as a basis for determining the amount of total subordinated capital that the DNB Bank Group holds on its balance sheet. In order to arrive at the balance sheet value, I have to add-back some deductions. There are certain adjustments that are made to the subordinated capital in order to arrive at the regulatory tier 2 capital. The adjustments are as follows: (a) 50 percent of investments in other financial institutions and (b) 50 percent of expected losses exceeding actual losses in IRB portfolios are withdrawn, while (c) 45 percent of unrealized gains on fixed assets are added.

These items are kept fixed in the projection period.

The CFO of the DNB Group expects that with the current price level of DNB's funding, subordinated debt and hybrid capital, the positive effects from lower long-term funding costs will partly compensate for the negative effects of the higher cost level for additional capital instruments. However, as subordinated capital increases so does the overall funding cost as this capital is more expensive. In the analysis I assume that the average spread to the 3-month Nibor for subordinated debt instruments is kept constant in the projection period, which means that the funding cost is determined by the development in Nibor. This assumption represents a simplification as the additional tier 1 capital is more costly than the tier 2 subordinated capital. When the additional tier 1 capital is increased relative to the tier 2 capital, the total average spread to Nibor should increase.

3.3.6.3 Projected capital adequacy of the DNB Bank Group

The capital adequacy of the DNB Bank Group was projected based on the above specified assumptions and analysis. The result is shown in Chart 30 below, which also displays the historical capital adequacy of the bank. Note that the historical numbers include only 50 percent of interim profits for the first three quarters of each year, while the fourth quarter of each year includes full profits for the year. This results in a more volatile graph historically. The forecast include 100 percent of interim profits each quarter and is therefore a smoother line.



HISTORICAL									
	Q1 2012	Q2 2012	Q3 2012	Q4 2012	Q1 2013	Q2 2013	Q3 2013	Q4 2013	
CET1(%)	9.30 %	9.70 %	10.00 %	10.50 %	10.40 %	10.60 %	10.80 %	11.42 %	
Tier 1 (%)	9.90 %	10.30 %	10.60 %	10.80 %	10.70 %	10.90 %	11.10 %	11.77 %	
Total capital (%)	11.90 %	11.90 %	12.30 %	12.40 %	12.00 %	12.30 %	13.10 %	13.88 %	
RWA (NOKm)	1,025,601	1,018,316	997,151	984,137	1,003,301	1,009,228	1,004,909	1,004,716	

PROJECTION									
	Q1 2014	Q2 2014	Q3 2014	Q4 2014	Q1 2015	Q2 2015	Q3 2015	Q4 2015	Q1 2016
CET1(%)	11.88 %	12.08 %	12.29 %	12.49 %	12.68 %	12.88 %	13.07 %	13.26 %	13.44 %
Tier 1 (%)	12.31 %	12.64 %	13.00 %	13.40 %	13.86 %	14.38 %	14.57 %	14.76 %	14.94 %
Total capital (%)	14.36 %	14.68 %	15.03 %	15.42 %	15.86 %	16.38 %	16.56 %	16.74 %	16.91 %
RWA (NOKm)	1,038,971	1,047,177	1,055,449	1,063,786	1,072,188	1,080,657	1,089,193	1,097,796	1,106,467
									1,115,207

Chart 30, Historical and projected capital adequacy ratios (%) and risk-weighted assets, NOKm (annual reports)

Given the assumption that DNB will issue the full volume of additional tier 1 capital and tier 2 capital which corresponds to 1.5 and 2.0 percent of risk-weighted assets, respectively, the bank will have a CET 1 capital ratio of 13.6 percent, a tier 1 capital ratio of 15.1 percent and a total capital ratio of 17.1 percent in the second quarter of 2016, which is significantly above the regulatory limit.

On the basis of the baseline assumptions presented in this thesis it can be concluded that the DNB Bank group will be able to reach the capital requirements of 1 July 2016, without having to issue equity capital.

3.3.6.4 Sensitivity analysis

DNB is able to fulfill the regulatory requirements based on a wide range of assumptions. It is valuable to reflect on the impact of different assumptions with regards to the final outcome and conclusion of the analysis. Some factors will have a bigger impact than others, and I have chosen to look at the following factors in a sensitivity analysis:

- The projected 3-month Nibor
- The share of impaired loans to total loans to customers
- The growth in the risk-weighted assets
- The dividend payout ratio

Chart 31 shows the input for the sensitivity analysis and the corresponding CET 1 capital ratio in the second quarter of 2016.

Sensitivity input			
	High	Baseline	Low
3-month Nibor	- 10%	Norges Bank projection	+ 10%
Impaired loans	- 1%	1.29 %	+ 1%
Risk-weighted assets	- 0.5%	0.79 %	+ 0.5%
Dividend payout ratio	- 10%	25 %	+ 10%
CET 1 ratio output 2Q 2016			
	High	Baseline	Low
3-month Nibor	13.74 %	13.62 %	13.50 %
Impaired loans	14.01 %	13.62 %	13.23 %
Risk-weighted assets	14.32 %	13.62 %	12.96 %
Dividend payout ratio	14.00 %	13.62 %	13.24 %

Chart 31, Historical and projected capital adequacy ratios (%) and risk-weighted assets, NOKm (annual reports)

Changes in the forecasted 3-month Nibor

A 10 percent reduction or increase in the Norges Bank's projection curve for the 3-month Nibor, results in a 0.12 percent increase or reduction in DNB's CET 1 ratio. When the market rate increases the market funding for the bank becomes more expensive. Additionally, the interest margin on loans to customers does not follow the increase in the Nibor which makes the income increase on loans to customers less than the interest

expense on the market funding, resulting in less retained income and therefore a lower CET 1 ratio. The opposite effect occurs in the event of lowered interest rates.

Changes in the level of impaired loans

If the share of impaired loans to total loans to customers increases, the expense of impaired loans in the bank's income statement increases, and the bank is able to retain less profit which reduces the CET 1 ratio. 1 percent increase in impaired loans to total loans to customers translates into a 0.39 percent lower CET 1 ratio. If the level of impaired loans decreases, then the bank will register recoveries of loans previously written off which reduces the expenses of impaired loans and increases profits and the CET 1 ratio.

Changes in the growth of risk-weighted assets

The capital ratios are very sensitive to changes in the risk-weighted assets. A 0.5 percent increase in the quarterly growth of the risk-weighted assets translated into a decrease in the CET 1 ratio of 0.66 percent. If the quarterly growth in risk-weighted assets decreases by 0.5 percent, this results in a 0.7 percent increase in the CET 1 ratio. The increase in the CET ratio is larger than the reduction followed by reduced growth of the percent (0.5 percent). The reason for this is that lower growth in risk weighted assets not only has the effect of reducing the denominator in the equation and thus increasing the ratio. There is also an income effect of the reduced subordinated capital issued, which is relatively more expensive compared to other market funding alternatives. As a limit is set for the subordinated loan capital of 3.5 percent of risk-weighted assets, an increased growth rate will not increase the amount more than this limit. However, there is no lower limit, meaning that decrease in the subordinated loan capital with reduced growth is bigger than the increase in subordinated loan capital with increased growth.

Changes in the payout ratio

When the dividend payout ratio is increased to 35 percent of net income, the CET 1 ratio increases by 0.38 percent and a decrease of to 15 percent consequently increase the CET 1 ratio by the same percentage.

Small changes in each individual factor have relatively large impact on the bank's CET 1 ratio. The risk-weighted assets have an especially large effect of the capital ratio of the bank, and is a key factor for the bank when evaluation how to adapt to increased capital requirements. The sensitivity analysis is conducted with the assumption that all other factors in the model are kept constant, and I look at changes in only one factor at the time. This is an extremely simplified version of reality. However, these factors are connected and in a scenario where impaired loans would increase significantly, the risk-weighted assets would probably increase with the increased overall risk for default. If the increase in impaired loans came unexpected, the banks might react by charging each other higher interest rates on interbank loans, and the 3-month Nibor would increase. In such an event, the dividend payout rate could decrease. It is not likely that there would be a significant change in any of the mentioned parameters without this being translated into changes in the other parameters.

This interconnectedness between the key drivers for the bank's earnings is one of the reasons for the increased capital requirements. A shock in only one factor would probably not be an issue for a large bank, however trouble seldom comes alone in the interconnected international financial markets, as we all witnessed during the global financial crisis.

4 Conclusion

The Basel III Capital Accord was introduced as a regulatory response to the financial crisis. Lack of sufficient capital requirements for banks was an important lesson learned after several financial institutions went bankrupt. The main features of the new international regulatory framework, introduced by the Basel Committee on Banking Supervision in 2010, are higher capital requirements and stricter standards for high-quality capital in banks.

In the first part of this thesis, the third Basel Accord was presented both in an international and Norwegian context. Norway was among the first countries to introduce the third Basel Accord, and Norwegian banks have been adapting to the higher regulatory standards since 2009.

Part 2 of the thesis addressed the Norwegian Banking Sector and studied how Norwegian Banks have adapted to the increased capital requirements. Several banks have issued equity after the Norwegian implementation plan was approved in June 2013, with the final date of implementation being July 1st 2016. It was shown that roughly 90 percent of the increased CET 1 capital ratio of Norwegian banks was due to increased CET 1 capital relative to reduced risk-weighted assets. Part 2 provided the necessary backdrop for the case study of the DNB Bank Group in part 3 of the thesis.

As Norway's largest bank and financial services provider, DNB ASA has been featured frequently in the newspapers in connection to the new capital requirements. In part 3, I analyzed how the DNB Bank Group has adapted to the new requirements. The analysis indicated that the bank has decreased the payout ratio in the short term below the long-term payout ratio target, the net interest margin has been increased, certain subsidiaries have been sold and a number of cost reducing measures have been implemented. Additionally, the analysis indicates that the bank has reduced the overall lending in addition to limiting exposure towards the riskier asset classes in order to reduce the growth in the risk-weighted assets. In other words, the DNB Bank Group made use of

every other measure other than issuing equity. This is in line with the statements made by the bank's CEO who has stated that DNB ASA will not issue equity to fulfill higher capital requirements.

The ultimate aim of this master thesis has been to answer the following research question; *Will the DNB Bank Group be able to meet the capital requirements by July 1st 2016 without issuing equity?*

After having projected the financials of the DNB Bank Group based on a wide set of well assessed assumptions, I am able to conclude that the DNB Bank Group in fact is able to meet the required capital ratios implemented in full in 1 July 2016 without issuing equity capital. The wide set of measures implemented by the bank in recent year have built a fundament from which the bank is able to build CET 1 capital and increase the CET 1 capital ratio, as well as the tier 1 capital ratio and the total capital ratio, without issuing equity. Given the assumption that DNB will issue the full volume of additional tier 1 capital and tier 2 capital which corresponds to 1.5 and 2.0 percent of risk-weighted assets, respectively, the bank will have a CET 1 capital ratio of 13.6 percent, a tier 1 capital ratio of 15.1 percent and a total capital ratio of 17.1 percent in the second quarter of 2016, which is significantly above the regulatory limit.

The sensitivity analysis shows that small changes in key assumptions have great impact on the result. The conclusion is based upon baseline assumptions, where some reduction in credit demand and a reduced net interest margin is accounted for. However, if the market conditions change considerably beyond the factors taken into account in the analysis, there will also be a significant change in the capital ratios. The sensitivity analysis shed light on the vulnerability of banks when several factors worsen simultaneously, which is the main reason for the increased capital requirements. The interconnectedness of the financial markets was not sufficiently taken into account in the regulatory regime prior to the financial crisis; however the lessons learned have been implemented through the Basel III Accord and the CRD IV. I can conclude that based on the analysis conducted in this paper, Norwegian banks seem solid and prepared for any financial turmoil that the future might hold.

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6 Appendix

1. Historical Income Statement Q1 2011 until Q4 2013
2. Projected Income Statement Q1 2014 until Q2 2016
3. Historical Balance Sheet Q1 2011 until Q4 2013
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1. Historical Income Statement Q1 2011 until Q4 2013 (NOKm)

	2011				HISTORICAL PERIOD				2013			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Total interest income	15,020	15,268	16,417	16,124	16,187	16,221	16,045	15,107	14,695	15,107	15,436	15,475
Interest on amounts due from credit institutions	309	298	388	453	358	372	289	177	283	306	362	346
Interest on loans to customers	11,622	12,076	12,241	13,512	13,619	13,355	13,290	12,999	12,658	13,089	13,307	13,324
Interest on commercial paper and bonds	2,388	2,171	2,470	1,336	1,278	1,317	1,202	1,147	1,342	1,286	1,296	1,343
Other interest income	699	724	1,319	823	932	1,177	1,264	785	412	425	471	462
Total interest expenses	9,004	9,229	10,044	9,319	9,466	9,486	9,126	7,926	7,767	7,569	7,492	7,507
Interest on amounts due to credit institutions	1,204	1,149	1,115	958	892	868	831	673	647	647	535	545
Interest on deposits from customers	3,212	3,405	3,786	4,048	4,090	4,056	3,952	3,894	3,798	3,672	3,670	3,616
Interest on debt securities issued	3,483	3,622	3,962	3,315	3,433	3,477	3,257	2,968	2,963	2,989	3,053	3,125
Interest on subordinated loan capital	154	156	156	143	160	194	179	143	104	102	105	141
Other interest expenses	951	897	1,023	247	891	891	906	247	254	160	128	80
Net interest income	6,016	6,039	6,373	6,805	6,721	6,735	6,919	7,181	6,928	7,538	7,944	7,968
Commission and fee income etc.	1,548	1,583	1,641	1,461	1,528	1,638	1,522	1,613	1,445	1,670	1,662	1,674
Commission and fee expenses etc.	466	487	525	536	541	518	516	507	492	512	546	565
Net commission and fees	1,082	1,096	1,116	925	987	1,120	1,006	1,106	953	1,158	1,116	1,109
Net gains on financial instruments at fair value	662	1,332	2,265	3,369	1,009	2,627	933	1,348	1,067	1,345	1,249	1,348
Profit from companies accounted for by the equity method	72	-	28	79	111	225	141	246	74	70	99	118
Net gains on investment property	-	-	-	132	144	184	4	16	12	4	23	79
Other income	616	749	761	795	798	905	783	795	819	913	849	952
Total other income	1,350	2,053	2,947	4,143	130	3,489	1,966	2,304	1,972	2,332	2,174	2,339
Net other operating income	2,432	3,149	4,063	5,068	857	4,609	2,972	3,410	2,925	3,490	3,290	3,448
Total income	8,448	9,188	10,436	11,873	7,578	11,344	9,891	10,591	9,853	11,028	11,234	11,416
Salaries and personnel expenses	2,136	2,246	2,329	2,361	2,413	2,474	2,525	2,504	2,364	2,951	2,566	2,465
Other expenses	1,858	1,806	1,778	2,033	1,812	1,826	1,771	1,934	2,299	1,851	1,941	1,736
Depreciation and impairment of fixed and intangible assets	391	416	411	843	406	470	521	592	498	563	479	1,058
Total operating expenses	4,385	4,468	4,518	5,237	4,631	4,770	4,817	5,030	5,161	5,365	4,986	5,259
Pre-tax operating profit before impairment	4,063	4,720	5,918	6,636	2,947	6,574	5,074	5,561	4,692	5,663	6,248	6,157
Net gains on fixed and intangible assets	5	8	6	1	7	37	20	65	4	10	2	153
Impairment of loans and guarantees	892	457	1,170	926	784	685	521	1,190	737	937	475	36
Pre-tax operating profit	3,176	4,271	4,754	5,709	2,170	5,926	4,573	4,306	3,959	4,716	5,775	6,274
Taxes	889	1,168	1,210	2,040	586	1,582	1,253	1,084	1,121	1,335	1,375	1,212
Profit from operations held for sales, after taxes	-	41	11	25	-	92	-	4	10	-	7	9
Profit for the period	2,246	3,114	3,569	3,669	1,584	4,436	3,320	3,226	2,848	3,374	4,393	5,071

2. Projected Income Statement Q1 2014 until Q2 2016 (NOKm)

	PROJECTION PERIOD									
	2014				2015				2016	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Total interest income	15,025	15,099	15,205	15,599	16,135	16,797	17,312	17,797	18,288	18,709
Interest on amounts due from credit institutions	213	213	231	294	375	484	565	646	728	809
Interest on loans to customers	13,040	13,114	13,189	13,475	13,873	14,350	14,726	15,073	15,425	15,707
Interest on commercial paper and bonds	1,311	1,311	1,324	1,368	1,425	1,502	1,559	1,616	1,674	1,731
Other interest income	462	462	462	462	462	462	462	462	462	462
Total interest expenses	7,097	7,099	7,155	7,483	7,941	8,537	8,968	9,379	9,793	10,162
Interest on amounts due to credit institutions	570	570	584	636	703	793	860	927	994	1,061
Interest on deposits from customers	3,364	3,355	3,346	3,476	3,679	3,934	4,121	4,288	4,458	4,582
Interest on debt securities issued	2,962	2,965	3,005	3,135	3,301	3,521	3,688	3,856	4,023	4,192
Interest on subordinated loan capital	122	129	139	156	178	209	219	228	238	248
Other interest expenses	80	80	80	80	80	80	80	80	80	80
Net interest income	7,928	8,000	8,050	8,116	8,194	8,260	8,344	8,418	8,495	8,547
Commission and fee income etc.										
Commission and fee expenses etc.										
Net commission and fees	1,027	1,033	1,040	1,067	1,103	1,149	1,184	1,217	1,251	1,279
Net gains on financial instruments at fair value	913									
Profit from companies accounted for by the equity method										
Net gains on investment property										
Other income										
Total other income	3,071	2,169	2,184	2,240	2,317	2,412	2,486	2,556	2,626	2,687
Net other operating income	4,098	3,201	3,223	3,307	3,421	3,561	3,670	3,773	3,877	3,966
Total income	12,026	11,201	11,273	11,423	11,615	11,821	12,015	12,191	12,372	12,514
Salaries and personnel expenses										
Other expenses										
Depreciation and impairment of fixed and intangible assets										
Total operating expenses	4,717	4,740	4,773	4,897	5,065	5,273	5,435	5,587	5,741	5,873
Pre-tax operating profit before impairment	7,309	6,461	6,500	6,526	6,549	6,548	6,580	6,604	6,631	6,640
Net gains on fixed and intangible assets										
Impairment of loans and guarantees	805	813	822	831	841	850	859	869	878	888
Pre-tax operating profit	6,505	5,648	5,678	5,695	5,709	5,699	5,721	5,736	5,752	5,753
Taxes	1,691	1,468	1,476	1,481	1,484	1,482	1,487	1,491	1,496	1,496
Profit from operations held for sales, after taxes										
Profit for the period	4,814	4,179	4,202	4,214	4,225	4,217	4,233	4,245	4,257	4,257

3. Historical Balance Sheet Q1 2011 until Q4 2013 (NOKm)

	HISTORICAL PERIOD											
	2011				2012				2013			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
ASSETS												
Additional cash (residual)												
Cash and deposits with central banks	242,242	15,828	276,593	224,581	433,396	410,135	367,409	298,892	397,835	481,844	401,560	167,171
Due from credit institutions	69,633	35,431	49,515	25,105	29,847	28,746	38,933	33,373	57,569	48,453	25,928	176,796
Loans to customers	1,187,026	1,215,365	1,260,993	1,291,660	1,296,842	1,320,587	1,319,229	1,308,864	1,326,159	1,339,427	1,342,531	1,350,656
Commercial paper and bonds	253,209	237,517	204,851	202,042	221,843	223,185	241,717	231,952	242,577	244,155	252,574	254,550
Financial derivatives	70,063	66,243	110,341	96,264	80,805	89,859	100,636	95,890	142,072	95,247	89,335	130,775
Other assets	40,514	43,965	42,265	45,296	56,800	51,567	48,960	44,436	50,557	48,314	53,776	50,830
Total assets	1,862,687	1,614,349	1,944,558	1,884,948	2,119,533	2,124,079	2,116,884	2,013,407	2,216,769	2,257,440	2,165,704	2,130,778
LIABILITIES AND EQUITY												
Due to credit institutions												
Deposits from customers	384,704	207,494	356,347	279,553	353,396	294,126	293,530	251,388	336,528	318,504	260,903	234,218
Financial derivatives	698,441	668,506	773,334	750,102	815,244	861,104	850,652	819,945	897,124	1,005,181	934,477	891,256
Debt securities issued	59,147	51,016	74,789	63,130	55,352	60,292	65,928	63,193	112,341	70,461	63,744	111,242
Other liabilities	574,744	543,181	601,114	640,277	722,773	734,868	733,194	713,273	694,807	700,252	722,891	716,192
Subordinated loan capital	23,236	27,562	19,911	23,426	41,011	40,501	37,335	27,923	38,236	26,948	36,704	25,188
	30,498	27,697	26,476	24,156	29,021	25,968	25,799	21,090	18,610	19,118	25,827	26,276
Total liabilities	1,770,770	1,525,456	1,851,971	1,780,644	2,016,797	2,016,859	2,006,438	1,896,812	2,097,646	2,140,464	2,044,546	2,004,372
Share capital												
Share premium reserve	17,514	17,514	17,514	18,314	18,314	18,314	18,314	18,314	18,314	18,314	18,314	18,314
Other equity	13,411	13,411	13,411	20,611	20,611	20,611	20,611	20,611	20,611	20,611	20,611	20,611
	60,993	57,967	61,659	65,378	66,819	68,294	71,521	77,668	80,198	78,051	82,232	87,482
Total equity	91,919	88,892	92,585	104,304	102,735	107,219	110,446	116,594	119,123	116,977	121,157	126,407
Total liabilities and equity	1,862,687	1,614,349	1,944,558	1,884,948	2,119,533	2,124,079	2,116,884	2,013,407	2,216,769	2,257,440	2,165,704	2,130,778

4. Projected Balance Sheet Q1 2014 until Q2 2016 (NOKm)

	PROJECTION PERIOD							
	2014				2015			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
ASSETS								
Additional cash (residual)	48,243	49,054	50,270	51,999	54,386	57,605	57,341	57,114
Cash and deposits with central banks	309,791	309,791	309,791	309,791	309,791	309,791	309,791	309,791
Due from credit institutions	51,611	51,611	51,611	51,611	51,611	51,611	51,611	51,611
Loans to customers	1,365,513	1,380,534	1,395,720	1,411,073	1,426,594	1,442,287	1,458,152	1,474,192
Commercial paper and bonds	254,550	254,550	254,550	254,550	254,550	254,550	254,550	254,550
Financial derivatives	93,280	93,280	93,280	93,280	93,280	93,280	93,280	93,280
Other assets	51,772	52,731	53,708	54,704	55,717	56,750	57,802	58,873
Total assets	2,174,759	2,191,550	2,208,930	2,227,007	2,245,929	2,265,873	2,282,527	2,299,410
LIABILITIES AND EQUITY								
Due to credit institutions	297,558	297,558	297,558	297,558	297,558	297,558	297,558	297,558
Deposits from customers	901,060	910,971	920,992	931,123	941,365	951,720	962,189	972,773
Financial derivatives	77,405	77,405	77,405	77,405	77,405	77,405	77,405	77,405
Debt securities issued	717,089	717,987	718,887	719,787	720,689	721,592	722,495	723,400
Other liabilities	26,569	28,025	29,561	31,181	32,890	34,693	36,594	38,600
Subordinated loan capital	25,062	26,452	28,224	30,489	33,390	37,111	37,315	37,520
Total liabilities	2,044,742	2,058,399	2,072,627	2,087,543	2,103,297	2,120,079	2,133,557	2,147,256
Share capital	18,314	18,314	18,314	18,314	18,314	18,314	18,314	18,314
Share premium reserve	20,611	20,611	20,611	20,611	20,611	20,611	20,611	20,611
Other equity	91,092	94,227	97,378	100,539	103,707	106,870	110,045	113,228
Total equity	130,017	133,152	136,303	139,464	142,632	145,795	148,970	152,153
Total liabilities and equity	2,174,759	2,191,550	2,208,930	2,227,007	2,245,929	2,265,873	2,282,527	2,299,410
								2,316,531
								2,333,888

5. Projected Statement of changes in equity (NOKm)

	PROJECTION PERIOD									
	2014				2015				2016	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Total equity opening balance	126,407	130,017	133,152	136,303	139,464	142,632	145,795	148,970	152,153	155,346
Profit for the period	4,814	4,179	4,202	4,214	4,225	4,217	4,233	4,245	4,257	4,257
<i>Group contribution to DNB ASA for the period</i>	1,203	1,045	1,050	1,053	1,056	1,054	1,058	1,061	1,064	1,064
Total Equity closing balance	130,017	133,152	136,303	139,464	142,632	145,795	148,970	152,153	155,346	158,539
Share capital	18,314	18,314	18,314	18,314	18,314	18,314	18,314	18,314	18,314	18,314
Share premium reserve	20,611	20,611	20,611	20,611	20,611	20,611	20,611	20,611	20,611	20,611
Other Equity	91,092	94,227	97,378	100,539	103,707	106,870	110,045	113,228	116,421	119,614

6. Projected Capital Adequacy Q1 2014 – Q2 2016 (NOKm and %)

CAPITAL ADEQUACY	2014				2015				2016	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Share capital	18,314	18,314	18,314	18,314	18,314	18,314	18,314	18,314	18,314	18,314
Other equity	111,703	114,838	117,989	121,150	124,318	127,481	130,656	133,839	137,032	140,225
Total equity	130,017	133,152	136,303	139,464	142,632	145,795	148,970	152,153	155,346	158,539
<i>Deductions:</i>										
Pension funds above pension commitments	-	4	-	4	-	4	-	4	-	4
Deferred tax assets	-	1,093	-	1,093	-	1,093	-	1,093	-	1,093
Goodwill and other intangible assets	-	5,079	-	5,079	-	5,079	-	5,079	-	5,079
Unrealized gains on fixed assets	-	30	-	30	-	30	-	30	-	30
50 percent of expected losses exceeding actual losses, IRB portfolios	-	712	-	712	-	712	-	712	-	712
Adjustments for unrealised losses/(gains) on debt recorded at fair value	281	281	281	281	281	281	281	281	281	281
Group contribution, payable	-	-	-	-	-	-	-	-	-	-
Equity Tier 1 capital	123,380	126,515	129,666	132,827	135,995	139,158	142,333	145,516	148,709	151,902
Perpetual subordinated loan capital securities (Additional Tier 1 capital)	4,535	5,851	7,548	9,739	12,564	16,210	16,338	16,467	16,597	16,728
<i>Additional Tier 1 capital to total risk-weighted assets</i>	<i>0.4 %</i>	<i>0.6 %</i>	<i>0.7 %</i>	<i>0.9 %</i>	<i>1.2 %</i>	<i>1.5 %</i>	<i>1.5 %</i>	<i>1.5 %</i>	<i>1.5 %</i>	<i>1.5 %</i>
Tier 1 capital	127,915	132,366	137,214	142,565	148,559	155,368	158,671	161,983	165,306	168,630
Perpetual and term subordinated loan capital	20,527	20,601	20,676	20,751	20,826	20,901	20,977	21,053	21,129	21,205
<i>Deduction: 50 percent of expected losses exceeding actual losses, IRB portfolios</i>	<i>-</i>	<i>712</i>	<i>-</i>	<i>712</i>	<i>-</i>	<i>712</i>	<i>-</i>	<i>712</i>	<i>-</i>	<i>712</i>
Tier 2 capital	21,239	21,313	21,388	21,463	21,538	21,613	21,689	21,765	21,841	21,917
<i>Subordinated capital to total risk-weighted assets</i>	<i>2.5 %</i>	<i>2.6 %</i>	<i>2.7 %</i>	<i>2.9 %</i>	<i>3.2 %</i>	<i>3.5 %</i>	<i>3.5 %</i>	<i>3.5 %</i>	<i>3.5 %</i>	<i>3.5 %</i>
Total eligible primary capital	149,154	153,679	158,602	164,028	170,097	176,981	180,359	183,748	187,147	190,547
Risk weighted volume	1,038,971	1,047,177	1,055,449	1,063,786	1,072,188	1,080,657	1,089,193	1,097,796	1,106,467	1,115,207
Equity Tier 1 capital ratio (%)	11.88 %	12.08 %	12.29 %	12.49 %	12.68 %	12.88 %	13.07 %	13.26 %	13.44 %	13.62 %
Tier 1 capital ratio (%)	12.31 %	12.64 %	13.00 %	13.40 %	13.86 %	14.38 %	14.57 %	14.76 %	14.94 %	15.12 %
Capital ratio (%)	14.36 %	14.68 %	15.03 %	15.42 %	15.86 %	16.38 %	16.56 %	16.74 %	16.91 %	17.09 %

7. 20 largest shareholders in DNB ASA

Shareholder structure in DNB ASA as at 31 March 2014

Largest Shareholders	Shares in 1000	Shares in %
Norwegian Government/Ministry of Trade and Industry	553 792	34.00
Sparebankstiftelsen DNB (Savings Bank Foundation)	160 900	9.88
Folketrygdfondet (National Insurance Scheme Fund)	106 640	6.55
Blackrock Investments	29 816	1.83
SAFE Investment Company	26 968	1.66
Schroder Investment Management	23 808	1.46
MFS Investment Management	22 518	1.38
Vanguard Group	21 364	1.31
DNB Asset Management	20 262	1.24
Saudi Arabian Monetary Agency	17 504	1.07
Capital Research and Mangement	16 512	1.01
Jupiter Asset Mangement	16 357	1.00
Fidelity (FMS and FIL)	15 179	0.93
KLP Asset Management	15 032	0.92
T Rowe Price Global Investments	13 553	0.83
Storebrand Investments	13 273	0.81
BNP Paribas Investments Partners	12 679	0.78
Standard Life Investments	12 328	0.76
Marathon Asset Management	12 006	0.74
SSGA	11 607	0.71
Total largest Shareholders	1 122 099	68.89
Others	506 700	31.11
Total	1 628 799	100.00