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Valuing Banks: Case Study of Sparebank 1 SR-Bank

Navn: Einar Lie Indergaard, Asbjørn Thiis-Evensen

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Executive Summary

The purpose of this thesis is to identify the value of Sparebank 1 SR-Bank (SR-BANK) as of 31.12.2017. Furthermore, the thesis identifies why bank valuation is problematic and which approaches the literature recommends for bank valuation. Moreover, the thesis analysis how the applied valuation models incorporates the problematics with bank valuation.

In the first part of the thesis, a literature review of how the structure of banks complicates the valuation process and which valuation approaches academic literature consider most suitable for banks is presented. Four main aspects that complicates bank valuation have been identified. Firstly, banks are highly regulated. Secondly, banks perform maturity transformation. Thirdly, banks create value through risk transformation. Lastly, banks have integrated financing, operating and investment activities. Moreover, the literature review indicated that a variation of the free cash flow to equity (FCFE) model is the most appropriate model to use for bank valuation.

In the second part of the thesis, the valuation of SR-BANK is conducted. The valuation starts with a strategic analysis and a financial statements analysis. Further, two valuation models are applied to SR-BANK. First, the FCFE model which identifies the value of SR-BANK's equity to be NOK 26.894 million (NOK 105 per share). Second, the Treasury model which identifies the liquidation value of SR-BANK to be NOK 22.453 million (NOK 88 per share).

The last part of the thesis analysis how the FCFE model and the Treasury model applied to SR-BANK incorporates the problematics with bank valuation identified in the first part of the thesis. The FCFE model incorporates the problems arising from regulations, maturity transformation and risk transformation. However, integrated activities lead to difficulties defining working capital and capital expenditures. Thus, cash flow estimation remains problematic. The Treasury model incorporates all four aspects that complicates bank valuation. However, this is mainly solved by separating the value centres and by calculating a liquidation value.

Acknowledgments

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Table of Contents

Executive Summary	1
Acknowledgments.....	2
1.0 Introduction	6
1.1 Introduction to Bank Valuation.....	6
1.2 Motivation for Choosing Bank Valuation	6
1.3 Research Question.....	6
1.4 The Structure of the Thesis	7
2.0 Method	9
2.1 Why is bank valuation problematic and which approaches does the literature recommend for bank valuation	9
2.2 What is the value of Sparebank 1 SR-Bank as of 31.12.2017.....	9
2.3 How does the applied valuation models incorporate the problematics with bank valuation.....	11
3.0 Literature Review on Bank Valuation	12
3.1 Why Bank Valuation is Problematic	12
3.1.1 Regulatory Constraints	12
3.1.2 Maturity Transformation	13
3.1.3 Risk Transformation.....	14
3.1.4 Integrated Operating, Investing and Financial Activities	14
3.2 Bank Valuation Approaches.....	15
3.2.1 Discounted Cash Flow Models.....	16
3.2.2 Excess Return Models.....	18
3.2.3 Asset-Based Models.....	19
3.2.4 Relative Valuation Models.....	21
3.2.5 Option Based Models	22
3.3 Summary of the Literature Review	22
4.0 Valuation Models	24
4.1 Choosing Valuation Models	24
4.2 FCFE Model.....	24
4.3 Treasury Model	26
5.0 Strategic Analysis.....	28
5.1 Introduction to SR-BANK	28
5.2 PESTEL	30
5.2.1 Political and Legal Factors	30
5.2.2 Economic Factors.....	32
5.2.3 Social Factors	35
5.2.4 Technological Factors	37
5.2.5 Summary of PESTEL	39
5.3 Porter's Five Forces	41
5.3.1 Bargaining Power of Suppliers.....	41
5.3.2 Bargaining Power of Customers	43
5.3.3 Threat of New Entrants	44
5.3.4 Threat from Substitutes.....	46
5.3.5 Internal Competition	49
5.3.6 Summary of Porter's Five Forces.....	50
5.4 VRIO	52
5.4.1 Tangible Resources.....	53

5.4.2 Intangible Resources.....	55
5.4.3 Summary of VRIO.....	59
5.5 Summary of the Strategic Analysis.....	59
6.0 Financial Statements Analysis.....	62
6.1 Analysis Period.....	62
6.2 Comparable Firms	62
6.3 Profitability	63
6.3.1 Return on Equity	63
6.3.2 Equity Ratio.....	64
6.3.3 Cost/Income Ratio	65
6.3.4 Net Interest Income	66
6.4 Liquidity	67
6.4.1 Liquidity Coverage Ratio	67
6.4.2 Deposit to Loan Ratio.....	69
6.5 Financial Solidity.....	70
6.5.1 Common Equity Tier 1 Capital Ratio	70
6.6 Credit Quality	72
6.6.1 Loan Portfolio.....	73
6.6.2 Loan-to-Value	73
6.6.3 Default Level	74
6.6.4 Probability of Default in the Loan Portfolio	75
6.7 Summary of the Financial Statements Analysis	76
7.0 The Free Cash Flow to Equity Model	78
7.1 Finding Cost of Equity	78
7.1.1 Risk Free Rate	78
7.1.2 Equity Risk Premium	79
7.1.3 Beta.....	82
7.1.4 Cost of Equity.....	87
7.2 Adjusting and Normalizing the Financial Statements	87
7.2.1 Extraordinary Items	88
7.2.2 Excess Cash and Marketable Securities	88
7.2.3 Abnormal Losses.....	90
7.2.4 Summary of Adjusted and Normalized Earnings	91
7.3 Reorganizing the Financial Statements	91
7.4 Forecasting the Balance sheet and Income Statement	93
7.4.1 Length of the Forecasting Period.....	93
7.4.2 Gross Loans.....	94
7.4.3 Deposits and Wholesale Funding	97
7.4.4 Shareholders' Equity and Dividends	99
7.4.5 Net Interest Margin	100
7.4.6 Net Commissions and Fees.....	101
7.4.7 Salaries.....	102
7.4.8 LLP.....	102
7.4.9 Tax	103
7.4.10 Forecasted Financial Statements.....	103
7.5 Result of the FCFE model	104
7.6 Criticism of the Assumptions	106
8.0 The Treasury Model.....	109
8.1 Central Assumptions in the Treasury Model	109
8.1.1 Risk Free Rate / Zero-Bond Discount Factors	109
8.1.2 Maturity and Yield of Existing Contracts	110
8.2 The Yield Book.....	112

8.3 The Trading Book.....	115
8.4 Investment or Stake in a Company	115
8.5 All Other Assets	116
8.6 Other Liabilities	116
8.7 Expected Losses of Taken Risk	117
8.7.1 PV of Credit Risk in the Loan Portfolio.....	117
8.7.2 PV of Credit Risk in the Bond Portfolio	118
8.7.3 PV of Operational Risks.....	119
8.8 Costs and Earnings related to Active Transactions	120
8.8.1 PV of Costs of Existing Contracts	120
8.8.2 PV of Earnings of Existing Contracts	120
8.8.3 Tax Effect	121
8.8.4 Treasury, Trading and Future Deals.....	121
8.9 Result of the Treasury Model.....	122
8.10 Criticism of the Assumptions	123
9.0 How the Models Incorporates the Problematics with Bank Valuation	125
9.1.1 Regulatory Constraints	125
9.1.2 Maturity Transformation	126
9.1.3 Risk Transformation.....	127
9.1.4 Integrated Operating, Investing and Financial Activities	128
10.0 Conclusion	130
11.0 References.....	132
12.0 Appendix	141
12.1 Figures.....	141
12.2 Tables	142
12.3 Equations	144

1.0 Introduction

This chapter introduces the topic of bank valuation followed by the research question and the motivation for the choosing bank valuation as the topic of the thesis. Lastly, the structure of the thesis is presented.

1.1 Introduction to Bank Valuation

Few industries have encountered as much strategic turbulence in recent years as the financial industry. Regulatory and technological changes, as well as shifts in customer behaviour has left the industry in the middle of a major alteration (PwC, 2016). Furthermore, valuing banks have always been a daunting exercise as it differs significantly from valuation of businesses in most other industries (Damodaran, 2009). The majority of the valuation literature focuses on the valuation of industrial companies and do not account for bank-specific issues. Considering the nature, systemic importance, and complexity of bank's operations, they deserve a unique valuation method (Gross, 2007).

1.2 Motivation for Choosing Bank Valuation

We are intrigued by the complexity of bank valuation and the recent stream of academic contributions on the topic. Moreover, the finding of a bank-specific valuation method has further increase our curiosity for this subject. Hence, we have chosen to undertake a bank valuation as our final project at BI. Moreover, we wish to get a better understanding of why bank valuation is problematic.

1.3 Research Question

The thesis consists of three research questions.

- 1) Why is bank valuation problematic and which approaches does the literature recommend for bank valuation?
- 2) What is the value of the Sparebank 1 SR-Bank Group as of 31.12.2017?
- 3) How does the applied valuation models incorporate the problematics with bank valuation?

1.4 The Structure of the Thesis

The thesis will be structured as follows.

Chapter 1 introduces the topic of bank valuation followed by the research question and the motivation behind the topic of the thesis. Then, the structure of the thesis is presented.

Chapter 2 presents the methodology of the thesis. The chapter is divided according to the three research questions. Firstly, why is bank valuation problematic and which approaches does the literature recommend for bank valuation. Secondly, what is the value of the Sparebank 1 SR-Bank Group as of 31.12.2017. Lastly, how do the applied valuation models incorporate the problematics with bank valuation.

Chapter 3 presents the literature review on bank valuation. The literature review is divided into two main sections. Firstly, a review of how the structure of banks complicates the valuation process. Secondly, a review of the valuation approaches academic literature consider most suitable for banks. The findings in the literature review will be synthesized and presented. Furthermore, chapter 9 presents an analysis of how the valuation models applied to SR-BANK have incorporated the findings from this chapter.

Chapter 4 presents the two valuation models that will be applied to SR-BANK. The rationale for choosing the models are presented followed by the theoretical structure of the FCFE model and the Treasury model.

Chapter 5 presents a strategic analysis of SR-BANK and the industry which the bank operates in. Firstly, an analysis of SR-BANK's macro environment will be conducted using the PESTEL framework. Secondly, SR-BANK's micro environment will be analyzed by using the Porters Five Forces framework. Thirdly, an internal analysis will be conducted by using the VRIO framework. Lastly, the strategic analysis will be summarized in a SWOT framework that highlights SR-BANK's strengths, weaknesses, opportunities and threats.

Chapter 6 presents the financial statements analysis of SR-BANK. The profitability, liquidity, financial solidity and credit quality of SR-BANK will be evaluated.

Chapter 7 presents the valuation of SR-BANK by applying the FCFE model. Firstly, SR-BANK's cost of equity is identified. Secondly, the bank's financial statements are adjusted and normalized. Thirdly, the financial statements are reorganized. Fourthly, the balance sheet and income statement are forecasted. Fifthly, the FCFE model is applied and the equity value of the bank is obtained. Lastly, the assumptions in the model are discussed and analyzed in conjunction with a sensitivity analysis.

Chapter 8 presents the valuation of SR-BANK by applying the Treasury model. Firstly, central assumptions in the model are presented. Secondly, the model is applied, and the liquidation value is obtained. Lastly, the assumptions in the model are discussed and analyzed in conjunction with a sensitivity analysis.

Chapter 9 presents an analysis of how the FCFE model and the Treasury model have incorporated the problematics with bank valuation, identified in chapter 2.

Chapter 10 presents a general conclusion to the thesis.

2.0 Method

This chapter presents the methodology of the thesis. The chapter is divided according to the three research questions.

2.1 Why is bank valuation problematic and which approaches does the literature recommend for bank valuation

The first part of the thesis investigates why bank valuation is problematic and which approaches the literature recommend for bank valuation. To identify why bank valuation is problematic, academic contributions have been gathered and synthesized into the central aspects that complicates the valuation process. To identify which approaches the literature recommend for bank valuation, the main academic contributions on bank valuation have been gathered chronologically and synthesized into the most acknowledged valuation approaches.

A literature review is considered a beneficial way of assessing the current state of research. Further, this approach eases the synthesis of central contributions and provides a framework to assess different point of views on the subject.

To increase the reliability of the literature review, a wide range of sources is applied. Furthermore, when a contribution to the bank literature is identified, it is analysed from the original source if possible. By assessing the original source, the quality of the information is ensured. When original sources have not been obtained, secondary data have been applied. When using secondary data, the information or the opinions provided must be assessed. This is done by reviewing the quality of evidence that has been presented in the arguments, and the validity of the arguments themselves, as well as the reputation and qualifications of the writer or presenter. Further, as the literature review is synthesized, it could contain a selection bias. Hence, there is a possibility that some contributions have been excluded or that the central ideas have not been identified.

2.2 What is the value of Sparebank 1 SR-Bank as of 31.12.2017

The second part of the thesis identifies the value of SR-BANK as of 31.12.2017. To find the value of SR-BANK, a strategic analysis and a financial statement

analysis have been conducted. Further, the FCFE model and the Treasury have been applied.

A strategic analysis and a financial statement analysis is considered a beneficial way of assessing the current state of a company and its industry. This approach provides frameworks to make reliable assumptions. Furthermore, to increase the validity of the strategic analysis, well acknowledged frameworks are applied. The original authors of the frameworks will be assessed where it is possible. Data for the strategic analysis will mainly be collected from official annual reports, Norges Bank, Statistic Norway (SSB) and Bloomberg. The main source of data for the financial statements analysis, will be publicly available financial statements. This data has a high degree of reliability because of third-party audition and will be in line with International Financial Reporting Standards (IFRS). The data will be strongly consistent across comparable companies because they are underlined the same regulations, which makes comparisons across companies more reliable.

The FCFE model is applied because it is considered the most accepted model for bank valuation and will be applied with only external information. However, the quality of the FCFE model is highly dependent on the assumptions in the model. To increase the validity of the model, the theoretical foundation will be assessed from different sources. The main contributions for the bank-specific version of the FCFE model comes from Copeland et al., (2000), Damodaran (2009) and Koller et al., (2015).

The Treasury model is applied because it is a bank specific model and provides a practical framework for bank valuation. The framework for the Treasury model originates from Svend Reuse's book "Corporate Evaluation in the German Banking Sector" from 2007 and his published article in the journal "Financial Assets and Investing" (FAI) in 2011. The Treasury model will be applied with a variation to the original framework because internal data has not been obtained. Therefore, the model will consist of data from the bank's financial reports in conjuncture with assumptions. As the Treasury model is constructed without internal data as originally intended, the validity of the result provided by the model is reduced. However, the central idea behind the model is considered to be captured with the use of only external data. To increase the validity of the model,

the original author Svend Reuse have been contacted to assess the applied assumptions and structure. The contact has been established through e-mail correspondence throughout the writing process. Further, the Treasury model has not yet gained foothold in the bank valuation literature, and the theoretical foundation of the model has not been assessed by other academics. This decreases the validity and reliability of the model.

2.3 How does the applied valuation models incorporate the problematics with bank valuation

The last part of the thesis investigates how the applied valuation models incorporates the problematics with bank valuation. To identify how the models incorporates the problematics with bank valuation, they have been applied to the valuation of SR-BANK. This can be considered a case study. The findings are then synthesized and discussed in relation to the first research question.

A case study is considered a beneficial way to get a practical and theoretical understanding of how the models solve the problematics with bank valuation. By applying the models to the same case study, the findings are comparable.

The valuation models have only been applied to one case study, and this may reduce the reliability of the approach. Hence, the findings may not be generalizable. Further, as the findings are synthesized, it could contain a selection bias. Therefore, it is a possibility that some aspects on how the valuation models incorporates the problematics with bank valuation have been overlooked.

Moreover, the Treasury model is not structured exactly as the authors framework thus some of the findings can be incorrect. However, Svend Reuse have been contacted to assess the applied assumptions and procedure. This increases the validity of the findings.

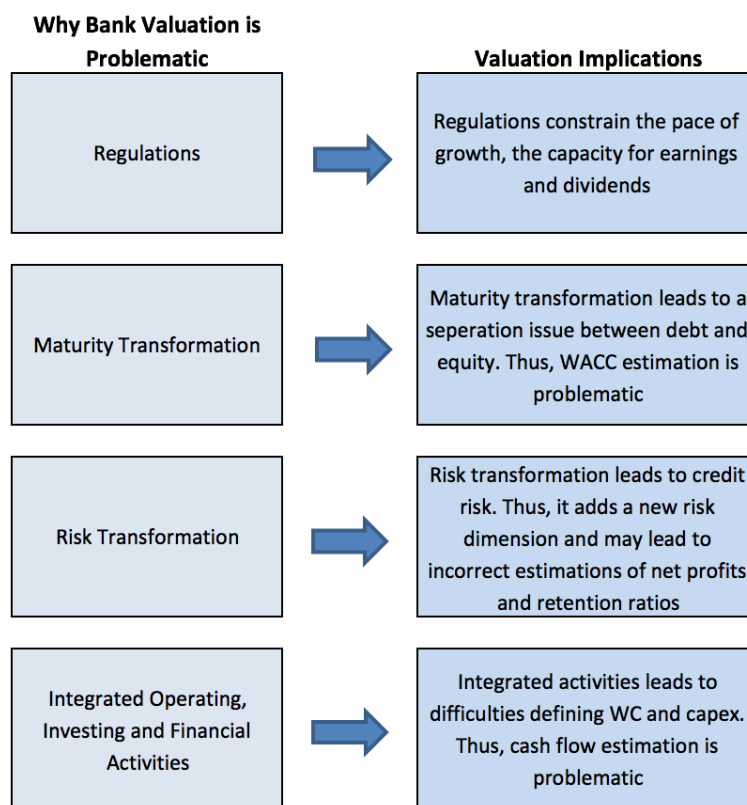
3.0 Literature Review on Bank Valuation

This chapter presents a literature review on bank valuation. The literature review is divided into two main sections. Firstly, a review of how the structure of banks complicates the valuation process. Secondly, a review of the valuation approaches academic literature consider most suitable for banks.

3.1 Why Bank Valuation is Problematic

The following section is divided into the main findings of why bank valuation is problematic. The findings are summarized in figure 1.

Figure 1 - Overview of how the structure of banks complicates the valuation process



3.1.1 Regulatory Constraints

Due to the risks taken on by banks, their specific role in the economic system, and their dependency on economic cycles, banks are subject to various bank-specific rules and regulations (Gross, 2007). The regulatory constraints represent operating and financial constraints and will have a considerable impact on the way banks are managed, both in the short and in the long term (Damodaran, 2013).

One of the most important regulatory constraints concerning banks are the Basel III standard (the Basel III standard is described in more detail in chapter 5.2.1.2). Basel III introduces new capital and liquidity standards to strengthen the regulation, supervision, and risk management of the banking and finance sector (Finanstilsynet, 2017a). Moreover, it states that banks must set aside a minimum amount of capital in relation to their asset's riskiness. Such restrictions are particularly significant in valuation since the regulatory capital is a formal constraint on growth opportunities. These restrictions will affect bank's ability to produce earnings and distribute dividends. Hence, when valuing banks, the current regulatory constraints must be considered in order to project growth. Furthermore, if regulations are changing or are expected to change, it adds another layer of uncertainty, which will influence the value of the company (Damodaran, 2013). For example, regulations usually tighten during periods of financial turmoil, as a response to negative shocks in the financial system (Moshirian, 2011). Thus, when projecting growth, one must also consider possible regulatory changes in the future.

Hence, banks operate under strict regulations, which affect the pace of growth, the capacity for earnings and dividends.

3.1.2 Maturity Transformation

Banks create value through maturity transformation (Sonntag, 2001 and Koch, 2004). Short-term liabilities are transformed into long-term assets, and the value added will be the difference in the yield structure (Reuse, 2011). In other words, banks fund short-term and invest long-term, which will lead to additional earnings with an upward sloping yield curve. This implies that banks use short-term debt as a raw material rather than a source of capital (Masari et al., 2014). Therefore, short-term debt is considered operational debt and a precise separation of operational debt and financial debt is difficult to perform.

The difficulties with defining debt will affect the valuation in two ways. Firstly, it will affect the calculation of the weighted cost of capital (WACC), since defining debt and equity weights will be misleading. Secondly, bank debt cannot be precisely subtracted by the market value of assets (Beltrame & Previtali 2016).

Hence, maturity transformation leads to a separation issue between debt and equity. Thus, WACC estimation is problematic.

3.1.3 Risk Transformation

Banks create value through risk transformation (Reuse, 2007). This means that liabilities in form of customer savings, are transformed into riskier assets e.g. retail loans and other financial products (Koch, 2004). By transforming customer saving into riskier assets the bank creates value by the difference in the yield of the assets. However, this leads to extra credit risk for the bank. To cope with the extra credit risk, banks set aside loan loss provisions (LLPs). LLPs are forecasts from defaults on loans outstanding to customers, and they are among the most important factor determining the value of a bank (Koller et al., 2010).

Furthermore, LLPs are strongly correlated with overall economic growth and they should be normalized in the expected earnings calculation (Dermine, 2016). If not normalized, LLPs can lead to a pitfall in valuation because banks use this feature to smooth out earnings to cope with high losses in bad-times and minor losses in good times (Damodaran 2007). Thus, LLPs must be considered to properly value a bank (Reuse, 2007).

Hence, risk transformation leads to credit risk. This adds a new risk dimension and may lead to incorrect estimations of net profits and retention ratios if not considered properly.

3.1.4 Integrated Operating, Investing and Financial Activities

Due to the complicated structure of banks, separating operations, investment and financing activities is difficult. This separation issue leads to difficulties defining working capital (WC) and capital expenditure (capex). Both WC and capex are key ingredients in cash flow calculations. Thus, cash flow calculations are problematic in bank valuation (Beltrame & Previtali (2016) Damodaran (2013), Reuse (2011) and Dermine (2016)).

In the standard definition, WC is defined as the difference between current assets (e.g. accounts receivable and inventory) and liabilities (e.g. accounts payable). However, because banks perform maturity and risk transformation, a large portion

of the bank's current assets and liabilities would consist of financial products and separating the items according to the standard WC definition is not possible with external information (Masari et al., 2014). Hence, identifying WC for banks is problematic.

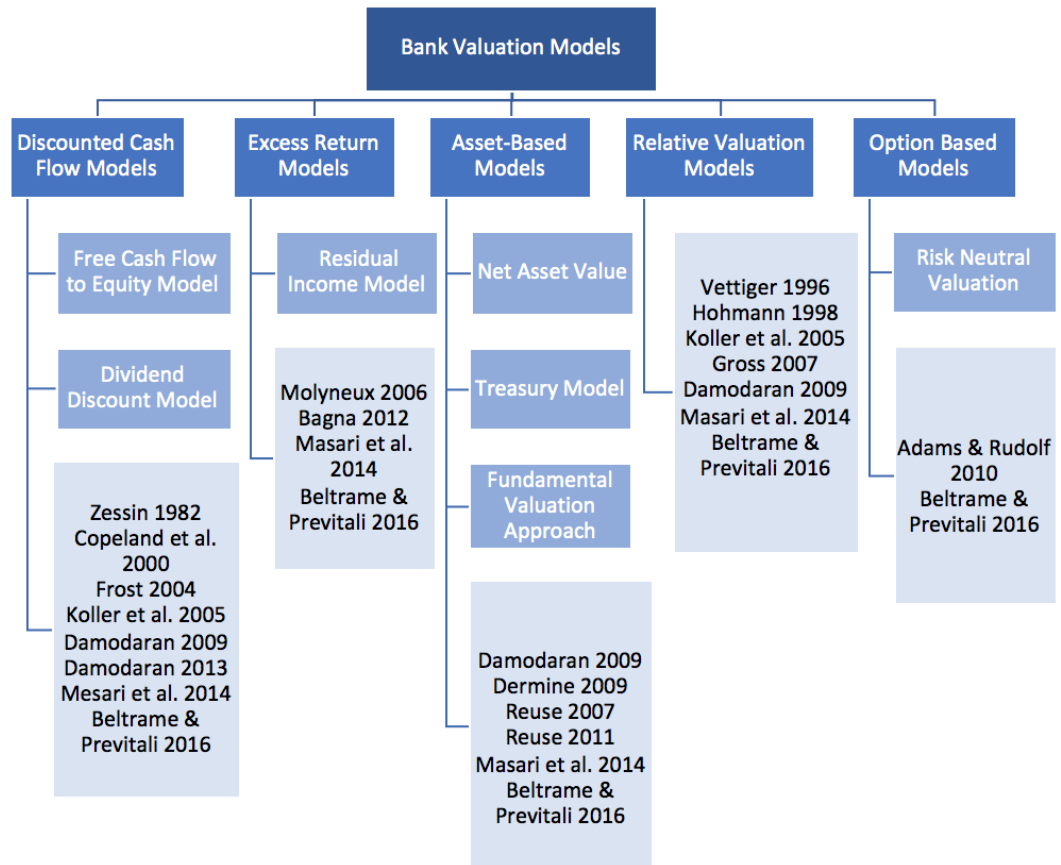
With regards to non-financial companies, capex mostly consists of investments in tangible assets. However, most of banks investments are not tangible assets. Banks mainly invest in human capital, IT-solutions and branding. As these investments are normally accounted as operational costs rather than capex, the main problem for an external analyst is to separate the two. Thus, identifying capex are problematic for banks (Beltrame & Previtali 2016).

Hence, the separation issue regarding operations, investment and financing activities leads to difficulties defining WC and capex. Thus, cash flow estimating is problematic.

3.2 Bank Valuation Approaches

The following section is divided into the most acknowledged valuation approaches starting with discounted cash flow models. Then follows excess return models, asset-based models, relative models and lastly option-based models. An overview of the academic contributions on bank valuation approaches is presented in figure 2.

Figure 2 - Overview of academic contributions on bank valuation



3.2.1 Discounted Cash Flow Models

Discounted cash flow (DCF) models are based on the principle that the value of a company can be expressed as the value of expected future cash flows discounted with the cost of capital (Koller et al., 2015). This is the traditional way of valuing non-financial companies and is thus a natural starting point for bank valuation. In bank valuation, there are two broadly accepted DCF models: the free cash flow to equity (FCFE) model and the dividend discount model (DDM).

3.2.1.1 FCFE Model

The FCFE model is a version of the DCF model where the expected future cash flow to equity investors is discounted with the cost of equity. The result of the model is the value of the equity in the company.

Zessin (1982) was the first who discussed the FCFE model in his work on bank valuation. He argued that banks do not produce real products, but deal with monetary assets and thus valuation of banks differ from valuation of non-financial firm. He argued that an equity approach combined with an equity discount factor

should be used. However, a more detailed analysis on banks value creation was not done (Zessin, 1982).

Both Copeland et al., (2000) and Koller et al., (2005) recommends the FCFE model, but with some alteration. They emphasize that the FCFE model should be calculated separately according to banks' source of income. Namely, interest-generating business, fee and commission business, and trading. Koller et al., (2005) further recommends that the FCFE model should be supplemented with an economic spread analysis to highlight the bank's value creation.

Damodaran (2009), Beltrame & Previtali (2016) and Masari et al., (2014) also recommends the FCFE model. They contribute to the literature with an alternative way to estimate the FCFE. As net WC and capex is undefinable, they argue that net income (NI) less reinvestment in regulatory capital should be used as a proxy for the FCFE.

Hence, Zessin (1982), Copeland et al., (2000), Koller et al., (2005), Damodaran (2009), Masari et al., (2014) and Beltrame & Previtali (2016) recommends the FCFE model, although with various adjustments for bank valuation. Further, the adjustment presented by Damodaran (2009), Beltrame & Previtali (2016) and Masari et al., (2014) to use NI less reinvestment in regulatory capital as a proxy for FCFE, is considered the most used correction to the model.

3.2.1.2 DDM

The DDM model is another version of the DCF model and is similar to the FCFE model. It is based on the theory that the equity value of the company is the discounted expected dividends to shareholders.

Frost (2004), Damodaran (2009), Beltrame & Previtali (2016) and Masari et al., (2014) covers the DDM in great extent. They argue that banks are underlined strong regulations and is required to set aside multiple forms of regulatory capital, which they call excess capital. They recommend an adjustment to the original DDM which incorporates excess capital. This has lead to the DDM excess capital (DDM.EC) model. The DDM.EC values the equity of the bank as the sum of

discounted expected dividends to shareholders and regulatory capital that is needed to sustain the expected dividends.

Furthermore, Massari et al., (2014) argues that the DDM.EC has historically been one of the favourite approaches for bank valuation. This is mainly because banks tend to have a quite stable dividend policy. However, the financial crisis of 2007/2008 altered the banking industry. Banks' dividends now tend to be more volatile, which is causing the DDM.EC to lose some of its relevance (Massari et al., 2014).

Hence, Frost (2004), Damodaran (2009), Beltrame & Previtali (2016) and Masari et al., (2014) argues that the DDM.EC is appropriate for bank valuation. However, the model is most suited for banks with stable dividend-policy.

3.2.2 Excess Return Models

Excess return (ER) models are based on the principle that the company value is equal to the sum of invested capital and the present value of the difference between return on invested capital and the cost of capital itself (Massari et al., 2014). In bank valuation, there is one broadly accepted ER model, the equity side residual income model (ES.RIM).

3.2.2.1 Equity Side Residual Income Model

The ES.RIM calculates the value of the equity as the sum of three parts. Firstly, the book value of equity. Secondly, the present value of the difference between return on equity (ROE) and cost of equity. Lastly, the terminal value of residual incomes (Massari et al., 2014).

Massari et al., (2014) covers ES.RIM in great extent and argue that the model can be applied to banks. They also offer a contribution to the bank valuation literature by making an adjustment to the ES.RIM. They argue that since banks are required to set aside regulatory capital, this value should be added to the value of the equity. Furthermore, to maintain consistency in the model, the ROE should be adjusted accordingly. Banks regulatory capital is nearly risk-free and should only earn a risk-free rate. This should be reflected in the ROE.

Beltrame and Previtali (2016) also cover the ES.RIM. However, they argue that ROE has several limitations, and it is unable to offer reliable insight on the potential effects of credit risks. The model will therefore overvalue the company when the losses regarding credit risks are not considered.

Bagna (2012) and Molyneux (2006) has countered the criticism from Beltrame and Previtali (2016), and further developed the ES.RIM to incorporate LLPs and other bank specific intangibles. They argue that this offer more insight on the potential effects of credit risk.

Hence, Massari et al., (2014), Beltrame & Previtali (2016), Bagna (2012) and Molyneux (2006) argue that ES.RIM can be applied for bank valuation. There is a broad acceptance that the model is straight forward to implement, considering that ROE is such a widely reported key ratio. However, ES.RIM is not widely used in the industry (Fernandez, 2002).

3.2.3 Asset-Based Models

Asset-based models calculates the value of assets and liabilities separately (Beltrame and Previtali, 2016). The most broadly accepted model in the literature is the net asset value (NAV) model. However, two bank specific asset-based valuation models have emerged the last two decades, namely The Fundamental Valuation approach and the Treasury model.

3.2.3.1 Net Asset Value

The NAV model calculates the value of assets at a fair market value or at their replacement cost, and then, nets for all the outstanding debt in order to calculate the value of equity (Beltrame and Previtali, 2016).

Damodaran (2009) argues that NAV can be applied when valuing mature banks. However, it has two significant limitations. Firstly, it does not assign any value to expected future growth and the excess returns that flow from that growth. Secondly, it is difficult to apply if the bank enters multiple businesses. This is because the assets would need to be valued separately, with different income streams and different discount rates (Damodaran, 2009).

Masari et al., (2014) further investigates NAV models in bank valuation. Their research coincides with Damodaran (2009), that it can be used for mature firms. However, they add the aspect that it can be used when banks are evaluated for liquidation, since the terminal value is not included in the model (Masari et al., 2014).

Beltrame and Previtali (2016) also cover NAV models in bank valuation. Further, they add a new term to the basic NAV model, which captures the terminal value of the company. However, Beltrame and Previtali (2016) argues that the model holds on strong assumptions and limits its potential applicability in real cases.

Hence, Damodaran (2009), Masari et al., (2014) and Beltrame and Previtali (2016) argue that NAV can be used for valuing banks, if the bank is either mature or is evaluated for liquidation.

3.2.3.2 Fundamental Valuation Approach

Dermine (2009) suggests a new bank specific valuation approach based on the asset-based valuation method. The Fundamental Valuation approach has two contributions to the existing literature on bank valuation. A first contribution includes the breakdown of the value of equity into two parts: a liquidation value and a franchise value. A second contribution is to call the attention to the corporate bond market instead of the equity market, to find adequate risk premium.

However, the model has two main limitations. Firstly, the model can be hard to implement with external information. Secondly, the model nets for a tax penalty assuming that banks have no debt and is fully funded by equity. This can lead to misvaluations of the bank's value.

The Fundamental Valuation approach has not yet gained foothold in the industry. However, this model is bank specific and offers a new contribution to the bank valuation literature.

3.2.3.3 Treasury Model

Reuse (2007) proposed another bank specific valuation model. The Treasury model calculates the liquidation value of a bank. His model calculates the value of a bank as a sum of the parts, measuring the contribution of single value centers, to the overall equity value of the bank. Furthermore, the main idea of the individualized approach of a bank evaluation is to take existing parts of methods or models that are used for bank controlling and combining and adjusting them to a new model of corporate evaluation (Reuse, 2007).

The model has some limitations, such as separating value centers and the need for internal information. However, Beltrame and Previtali (2016) concludes that the Treasury model captures the importance of analyzing the fundamental areas of value creation.

Similar to the bank specific approach by Dermine (2009), the Treasury model has not yet gained foothold in the industry. However, the Treasury model provides a practical and straightforward framework for bank valuation, which was the main intention of the author (Reuse, 2007).

3.2.4 Relative Valuation Models

Relative valuation uses information efficiency of stock exchanges and form comparative multiples that compare the value of an asset with the values assessed by the market for similar or comparable assets (Beltrame and Previtali, 2016).

Multiples are key ratios that are calculated for a set of comparable banks. If markets are efficient, then similar companies with the same risk-return profile should trade within close range of prices.

Beltrame and Previtali (2016) contributes to the bank valuation literature by introducing multiples with bank specific adjustments. Banks are required to keep regulatory capital, and therefore the multiples used for non-financial firms, should be adjusted to account for this excess capital that banks hold. Since these assets is not usually invested in risky assets, they should trade closely to their book value (Beltrame and Previtali, 2016).

Several other academics have mentioned bank specific multiples (e.g. Vettiger (1996), Hohmann (1998), Damodaran (2009), Koller et al., (2005) and Masari et al., (2014)). There is broad agreement that multiples are a good rule of thumb for valuing banks. However, the availability of comparable assets can be limited and firm specific factors that might affect a banks multiple can only be accounted for to a certain degree. Furthermore, these models are often not used on a stand-alone basis, but used in conjuncture with other valuation approaches.

3.2.5 Option Based Models

Option based models are based on the theory that the equity in the company can be replicated by a call option (Koller et al., 2015). Adams and Rudolf (2010) have built on these properties and developed a valuation model based on option pricing.

3.2.5.1 Risk Neutral Valuation

Adams and Rudolf (2010) argue that the exposure to interest rate risk is the major determinant of a bank's value because the interest rate drives price margin and business volume. They argue that banks are particularly exposed to credit risk and this is not captured by existing models. In their paper "A New Approach to the Valuation of Banks" they propose a valuation model based on the option theory and derive the bank's firm value from the value of three business units; the asset business, liability business, and the asset-liability management. Further, they argue that the value of each of these units can be derived in a risk-neutral valuation framework. In their valuation model, they lean on continuous-time finance to derive closed form solutions of various financial claims on the firm. This makes the model able to value the equity of the firm directly.

However, the model has several drawbacks. It does not consider the regulatory setting, reserve requirements or non-cash items. Further, it is highly technical and not yet suited as a practical bank valuation model.

3.3 Summary of the Literature Review

The literature review on how the structure of banks complicates the valuation process indicated that there are four main aspects that complicates bank valuation. Firstly, banks are highly regulated. This constrains the pace of growth, the

capacity for earnings and dividend. Secondly, banks perform maturity transformation. This leads to a separation issue between debt and equity. Thus, WACC estimation is problematic. Thirdly, banks create value through risk transformation. This leads to credit risk. Thus, it adds a new risk dimension and may lead to incorrect estimations of ration ratios and net profits. Lastly, banks have integrated financing, operating and investment activities. This leads to difficulties defining working capital and capex. Thus, cash flow estimation is problematic. All these aspects complicate the valuation of banks. Moreover, it requires that valuation models used for banks incorporates solutions to these aspects.

The literature review on bank valuation indicated that there has been a stream of contributions to bank valuation the last decade. However, most of the contributions tries to evolve existing valuation models instead of developing bank-specific models. From the existing valuation models, there is a general agreement that the FCFE model, with bank-specific adjustments, is the recommended model for bank valuation. Further, the literature review indicated that banks-specific models e.g. the Treasury model by Svend Reuse (2007), The Fundamental Valuation approach by Dermine (2009) and the Risk Neutral Valuation model by Adams and Rudolf (2010) have been developed. The authors of these models indicate that their models are constructed to handle all bank specific implications. After having assessed the bank-specific models, the Treasury model seems to be the most practical model to apply for bank valuation.

4.0 Valuation Models

This chapter presents the two valuation models that will be applied to SR-BANK. The rationale for choosing the models are presented followed by the theoretical structure of the FCFE model and the Treasury model.

4.1 Choosing Valuation Models

The findings from the literature review in chapter 2 will be used to identify the valuation models that will be applied to SR-BANK. The literature review indicated that the FCFE model is the most accepted model for bank valuation as it combines the usage of a simplified equity-side approach with adjustments for bank-specific implications. However, the model is not bank-specific and will therefore not incorporate solutions to all bank specific implications. Further, the literature review indicated that amongst the bank-specific models, the Treasury model by Svend Reuse (2007) provided the most practical framework for bank valuation.

Hence, in the valuation of SR-BANK, the FCFE model and the Treasury model will be applied. These models will be presented in the next section.

4.2 FCFE Model

The FCFE model calculates the value of the equity in a company directly. The model is based on the principle that the value of the equity can be measured as the the expected future cash flows to equity investors, discounted with the cost of equity (Damodaran, 2009).

The FCFE for non-financial firms can be defined as in equation 1.

Equation 1 - FCFE

Free Cash Flow to Equity = Net Income – Net Capital Expenditure – Changes in Net Working Capital

However, as discussed in chapter 3.1.4, the separation issue regarding operations, investment and financing activities leads to difficulties defining WC and capex for banks. Hence, the adjustment presented by Damodaran (2009), Beltrame &

Previtali (2016) and Masari et al., (2014) to use NI less reinvestment in regulatory capital as a proxy for FCFE (chapter 3.2.1) will be applied (equation 2).

Equation 2 - Bank specific FCFE

Free Cash Flow to Equity_{Financial Firms} = Net Income – Reinvestment in Regulatory Capital

The FCFE for each year of the estimation period is then summed up and discounted according to the correct discount factor.

Equation 3 - Value of FCFE

$$V_{FCFE} = \sum_{t=1}^T \frac{E(FCFE)}{(1+r)^t}$$

Where, V_{FCFE} = Value of the free cash flow to equity at time 0
 $E(FCF)$ = Expected free cash flow to equity
 r = Cost of equity
 t = Estimation period

However, cash flows cannot be estimated into perpetuity. Thus, a terminal value is used to calculate cash flows going further than the estimation period. Hence, the terminal value represents all future cash flows into perpetuity (Koller, 2005).

Equation 4 presents the terminal value.

Equation 4 - Terminal value (key value driver formula)

$$V_{Terminal\ Value} = \frac{NI_T(1 - \frac{g}{ROE})}{r_e - g}$$

Where, $V_{Terminal\ value}$ = Terminal value
 NI_T = The last Net income in the Explicit forecast Period
 g = Steady state growth
 ROE = Return on equity
 r_e = Cost of equity

Further, the value of marketable securities ($V_{Marketable\ Securities}$) must be added as these are valued separately at a risk-free rate.

Hence, the value of a financial firm's equity is presented in equation 5.

Equation 5 - Value of equity

$$\text{Value of equity} = V_{FCFE} + V_{Terminal\ Value} + V_{Marketable\ Securities}$$

4.3 Treasury Model

The Treasury model calculates the liquidation value of the bank. Moreover, the model is bank-specific and seeks to incorporate all bank specific problems.

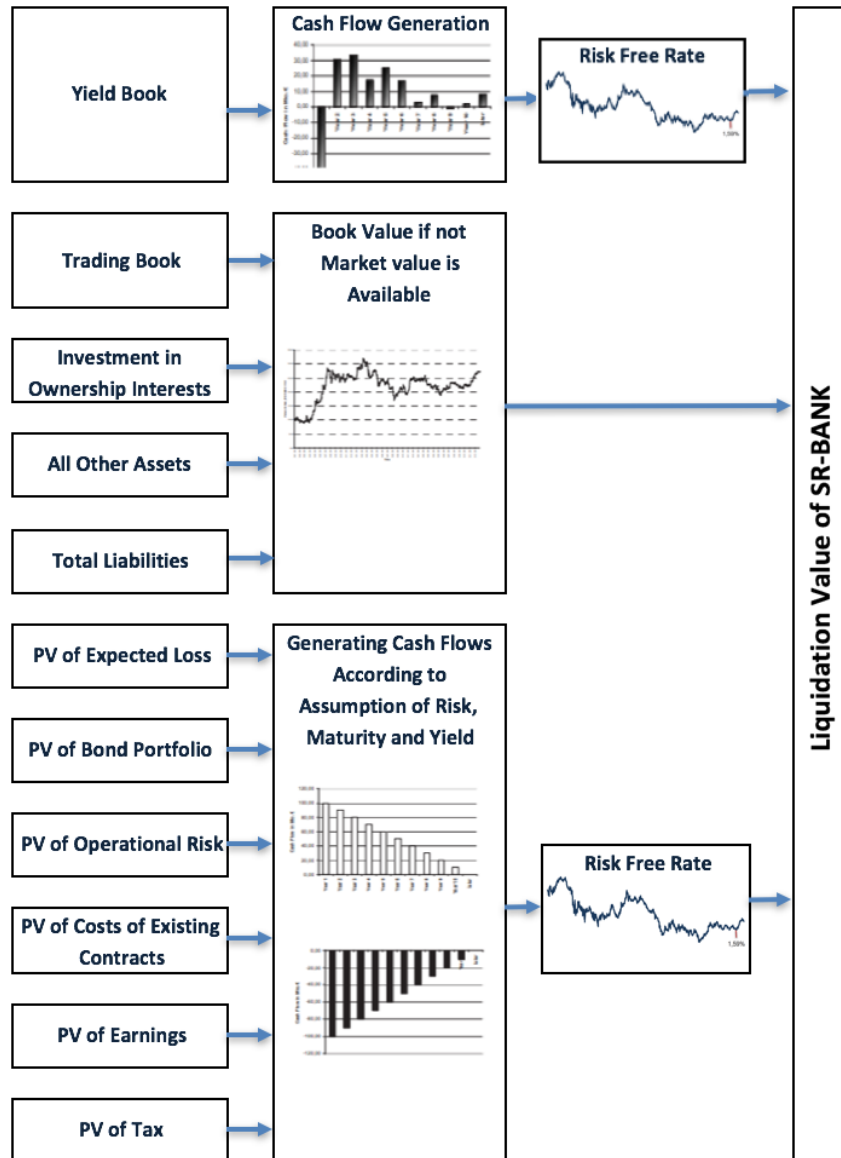
The Treasury model can be summarized in four steps. Firstly, the bank's activities are divided into several value centers. When banks create value through maturity- and risk transformation, different transactions contains different margins, and this approach offer a way to separate and value these accordingly.

Secondly, the liquidation value of the value centers is calculated. Hence, all value centers cease to exist at some point in time, and only existing transfers are generating value in the future.

Thirdly, cash flows from the separate value centers are calculated and discounted back to the valuation date. Since only existing contracts are generating value, all cash flows are certain and can be discounted with a risk-free rate.

Finally, all cash flows from the separate value centers, all assets, all liabilities, present value (PV) of costs, PV of earnings, PV of taxes and PV of risks are added together. The sum will be defined as the PV of the bank (Reuse, 2007). The structure of the Treasury model is presented in figure 3.

Figure 3 - Central structure of the Treasury model



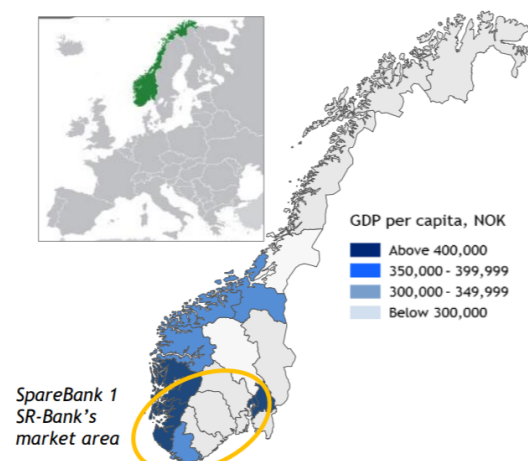
5.0 Strategic Analysis

In this chapter, a strategic analysis of SR-BANK and the industry which the bank operates in will be presented. Firstly, an analysis of SR-BANK's macro environment will be conducted using the PESTEL framework. Secondly, SR-BANK's micro environment will be analyzed by using the Porters Five Forces framework. Thirdly, an internal analysis will be conducted by using the VRIO framework. Lastly, the strategic analysis will be summarized in a SWOT framework that highlights SR-BANK's strengths, weaknesses, opportunities and threats. Before the strategic analysis will be applied, a short introduction to SR-BANK will be presented.

5.1 Introduction to SR-BANK

SR-BANK traces its roots all the way back to 1839. The bank is the leading financial group in Southern and Western Norway and operates as an independent institution within the SpareBank 1 Alliance. The Alliance was formed in 1996 as a strategic partnership with six other regional Norwegian banks.

Figure 4 - SR-BANK's geographical presence

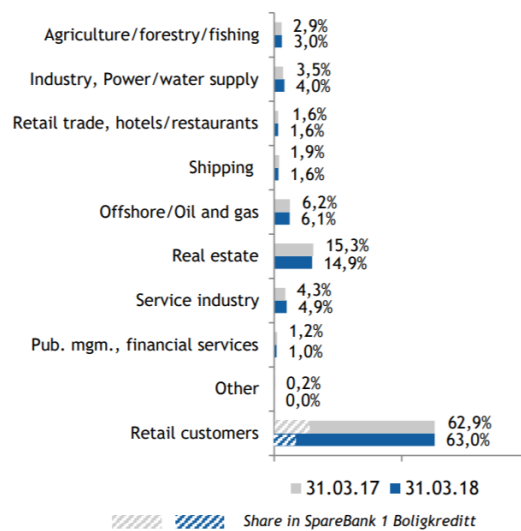


SR-BANK is a fully-fledged financial services group offering traditional banking services such as loans, insurance and savings products, as well as securities trading, accounting services and estate agency services for both retail and corporate customers. Moreover, the bank has three principal business areas: Retail division, Corporate division and Capital Markets division. In addition, three fully owned subsidiaries specialize in real estate brokerage, asset management and

accounting services. Furthermore, the bank is also the owner of the covered bond institution SR-Boligkreditt and a joint owner of the covered bond institutions, SpareBank 1 Boligkreditt and SpareBank 1 Næringskreditt.

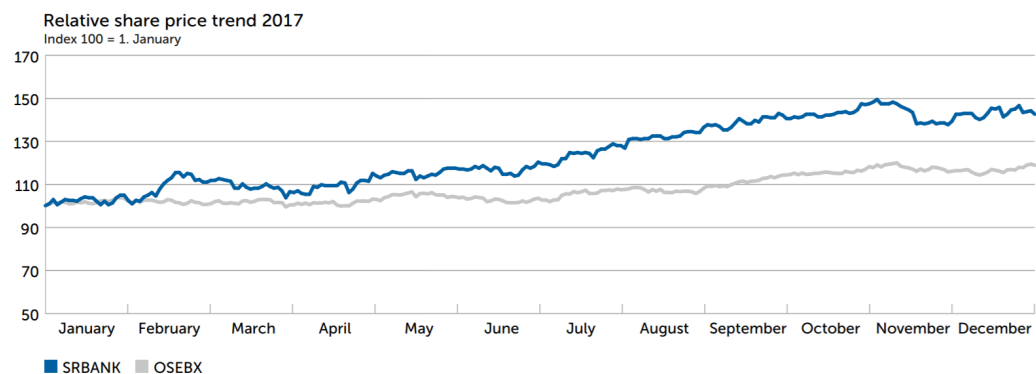
Stavanger, the regional capital of Rogaland and SR-BANK's headquarters, is the center of the Norwegian oil industry. SR-BANK has served as the local go-to bank for the oil industry and has therefore a substantial oil and gas exposure in their lending portfolio.

Figure 5 - SR-BANK's lending portfolio



SR-BANK converted from an equity certificate bank to a limited liability savings bank 01.01.2012. The ticker code on the Oslo Stock Exchange is "SRBANK". "SRBANK" is included in the Oslo Stock Exchange's main OSEBX, OSEAX All-share index and OSE40 Financials/OSE4010 Banks sector index.

Figure 6 – Development in SR-BANK's share vs OSEBX in 2017



5.2 PESTEL

To evaluate SR-BANK's macro environment the PESTEL framework will be applied. The framework provides a way to scan, monitor and evaluate the important external factors and trends that might impinge upon a firm (Rothaermel, 2015). The factors included in the PESTEL framework are: political, economic, social, technological, environmental and legal. To adapt the framework to SR-BANK, some adjustments will be done. Environmental factors will be excluded because it is of less importance for the banks value creation. Furthermore, political factors will be integrated with legal factors as these often overlap. By thoroughly analyzing the macro environment, a better understanding of the Norwegian bank industry and SR-BANK's profitability potential will be attained.

5.2.1 Political and Legal Factors

Political factors result from the process and actions of government bodies that can influence the decisions and behavior of firms. Legal factors include the official outcomes of political processes as manifested in laws, mandates, regulations, and court decisions (Rothaermel, 2015). Further in this section, the most relevant political and legal establishments for Norwegian banks - Sound Lending Practice for House Loans, Basel III and MiFID II/MiFIR - will be presented.

5.2.1.1 Sound Lending Practice for House Loans

Developments in housing prices and household debt are important for the financial stability in the economy. A restrained mortgage lending policy can help mitigate the build-up of risk in the household sector, which is the background for the Financial Supervisory Authority's (FSA) guidelines for "Sound Lending Practice for Mortgage Loans" published in spring 2010 (Finanstilsynet, 2011a).

It is stated in the guidelines that the overall financial situation of the customer, including all liabilities and other expenses, must be considered when assessing their ability to pay. In addition, banks must account for an interest rate increase of at least 5 percentage points when assessing the customer's ability to pay. The guidelines are tightened by the fact that mortgage loans should not exceed 85 % of the market value of the real estate. It is also stated that the loan ratio should include all loans in the household (Finanstilsynet, 2011b). Furthermore, new

regulations have been introduced in 2017. The new requirements in the regulation include a maximum debt-to income ratio of five times gross annual income. However, banks are given some flexibility to provide loans that breach the requirements. The new regulations will be in force until June 2018 and a further extension is expected (Norges Bank, 2017a).

Hence, the new requirements impose a stricter lending practice for SR-BANK which can affect the bank's margin. Although it is difficult to quantify the isolated effect of the mortgage policies, the FSA's assessment is that the guidelines have contributed to lower credit growth and that households with the least operational capacity and security have restricted their access to loans (Fianstilsynet, 2014).

5.2.1.2 Basel III

Basel III is an extension of the existing Basel II framework, and introduces new capital and liquidity standards to strengthen the regulation, supervision, and risk management of the banking and finance sector. The standard was scheduled to be introduced from 2013. However, changes made from April 2013 extended implementation until March 31, 2018 (Finanstilsynet, 2017b).

The Basel framework is based on a three-part system, referred to as the three pillars. Pillar I deal with ongoing maintenance of regulatory capital that is required to safeguard against the three major components of risk that a bank faces - credit risk, operational risk, and market risk. Pillar II is a regulatory response to the first pillar, giving regulators better tools over those previously available. It also provides a framework for risk management. Pillar III aims to encourage market discipline by developing a set of disclosure requirements, which allow market participants to assess key information (e.g. capital, risk exposures, risk assessment processes) (IBM, 2016).

To comply with Pillar I, banks must have a minimum common equity tier 1 capital of 4,5 %. Furthermore, to comply with Pillar II and III banks must have a capital conservation buffer of 2,5 %, systematic risk buffer of 3,0 % and a countercyclical buffer of 1,5 %. A summary of the capital requirements for SR-BANK as of April 2017 is presented in table 1.

Table 1 - Basel III capital requirements (Finanstilsynet, 2017b)

31.12.2017	
Minimum Common Equity Tier 1 (CET1) Capital Requirement	4.5 %
Buffer	
Capital Conservation Buffer	2.5 %
Systematic Risk Buffer	3.0 %
Countercyclical Buffer	1.5 %
Capital Adequacy	
Total Requirement for Common Equity Tier 1 Capital Ratio	15.0 %

By complying with the Basel III standard, SR-BANK's solidity and liquidity will be strengthened. However, the new requirement will also increase the bank's funding costs. Banks must hold more liquid assets and thus limits SR-BANK's options to manage their assets for maximum profit.

5.2.1.3 MiFID II/MiFIR

The Markets in Financial Instruments Directive (MiFID) II and The Markets in Financial Instruments Regulation (MiFIR) are new regulations governing the financial instruments market. The main purpose of the new regulations is to stipulate requirements for investment firms and reporting obligations to prevent market abuse. Thus, the directives and regulations aim to strengthen investor protection. The regulations came into force January 2018. However, the regulations are extensive, and the FSA assumes that it may take some time before all regulations will be required (Finanstilsynet, 2017c).

Hence, the new MifID II and MiFIR regulations will impose stricter regulations for SR-BANK's markets department and more reporting obligations. However, these regulations are not expected to have major impact on the banks profitability.

5.2.2 Economic Factors

Economic factors include all important trends in the economy that can help or hinder the company in achieving its objectives (Rothaermel, 2015). Further in this section, the most relevant economic factors affecting SR-BANK - GDP, level of employment, interest rates and inflation - will be presented.

5.2.2.1 GDP

Gross Domestic Product (GDP) is a measure of the total economic activity taking place on an economic territory which leads to output meeting the final demand of the economy (SSB, 2018b). After several years of weak economic developments in Norway, growth has picked up over the past year, partly due to low interest rates, improved competitiveness and an expansionary fiscal policy. Moreover, growth is expected to remain firm in the period ahead (Norges Bank, 2017c). SSBs National accounts for 2017 shows a stable growth in mainland GDP. For 2017, growth in GDP rose by 1,8 %, compared to 1,0 % in 2016. Furthermore, activity in the petroleum sector increased by 1,7 % in 2017 (SSB, 2018c). The Norwegian Petroleum Directorate expects a weak increase in oil investments of around 1,5 % in 2018, and a further increase of 15 % in 2019 (Sparebank 1 SR-Bank, 2017a).

Hence, the expected economic growth will contribute to reducing the overall risk levels in the lending portfolio of SR-BANK, especially for the corporate segment, as the likelihood for bankruptcy reduces. Further, the increased growth in the petroleum sector will have as strong positive effect on the lending risk as a large portion of the banks corporate customers are involved in this sector. Moreover, around 20 % of the labor force in Rogaland works in the oil industry and is thus affected by the positive outlook.

5.2.2.2 Level of Unemployment

The unemployment level in Norway continues to fall. After a peak in the middle of 2016, unemployment has now fallen to 2,7 % in Norway 2017 according to The Norwegian Labor and Welfare Administration (NAV) (NAV, 2018). The decline in unemployment applies to large parts of the country. Furthermore, the downsizing in the most oil-dependent industries now appears to be nearing an end, which is reflected by the rise in employment. In a historical perspective, this is close to a normal level of unemployment (SSB, 2018c). Table 2 presents the unemployment in SR-BANK's counties.

Table 2 - Yearly average of unemployment as percentage of the labour force (NAV, 2018)

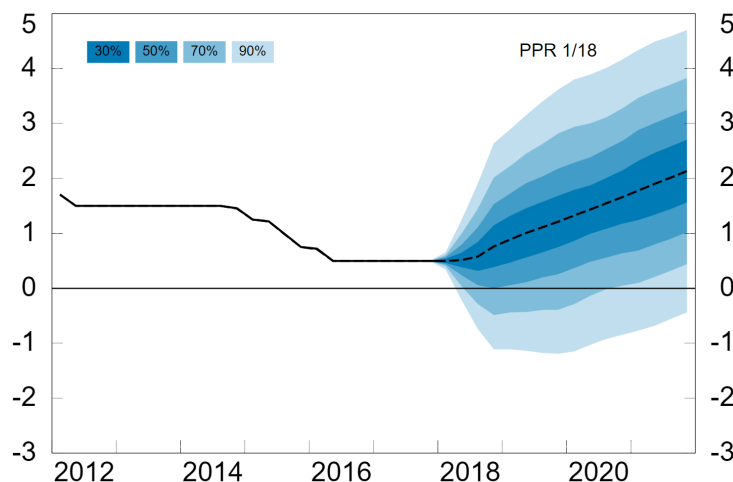
Year	2012	2013	2014	2015	2016	2017
Average in Norway	2,60 %	2,60 %	2,80 %	3,00 %	3,00 %	2,70 %
Rogaland	1,80 %	1,90 %	2,20 %	3,40 %	4,50 %	3,90 %
Hordaland	2,10 %	2,10 %	2,30 %	2,80 %	3,40 %	3,10 %
Aust-Agder	3,00 %	3,30 %	3,40 %	3,80 %	3,90 %	3,30 %
Vest-Agder	2,80 %	2,80 %	3,00 %	3,40 %	3,70 %	3,20 %
Average of SR-BANK's counties	2,43 %	2,53 %	2,73 %	3,35 %	3,88 %	3,38 %

The table indicates that SR-BANK's counties have reported a higher unemployment rate than the average in Norway from 2015. Thus, SR-BANK's counties have increased their unemployment rate in conjuncture with the oil price decline. However, the unemployment has started to decline as the downsizing in the most oil-dependent industries now appears to be nearing an end. Hence, the decrease in unemployment levels will affect SR-BANK positively as the probability of loan losses will be reduced.

5.2.2.3 Interest Rates

For Norwegian banks, the most important interest rate is the key policy rate. The key policy rate is the interest rate on banks reserves up to a specified quota in Norges Bank (Norges Bank, 2018a). Since March 2016, the interest rates have been record low at 0,5 %. The rate has remained unchanged since then. SSB expect the rate to be kept at this low level until 2019, then gradually increasing towards the end of the projection period (SSB, 2017b).

Figure 7 - The key policy rate in recent years and projections (Norges Bank, 2018a)



Hence, the expected increase in the interest rate levels can be a concern for SR-BANK as the level of household debt has had a large increase the last years.

Furthermore, changes in the interest rates will normally have strong impact on shortest money market rates on banks deposits and lending rates. However, the expected increase in money market rates will largely be offset by increases in lending rates, thus the interest rate margin will remain relatively stable for the banks.

5.2.2.4 Inflation

Inflation is measured as the year-on-year rise in the consumer price index (CPI). It represents a sustained rise in the overall price level (Norges Bank, 2018d). Norges Bank has an operational target for the monetary policy that the annual consumer price inflation shall be close to 2 % over time (Norges Bank, 2018a). Norges Bank’s fan chart for the inflation is presented in figure 8, while the base case for inflation is presented in table 3.

Figure 8 - Inflation rate in recent years and projections (Norges Bank, 2018a)

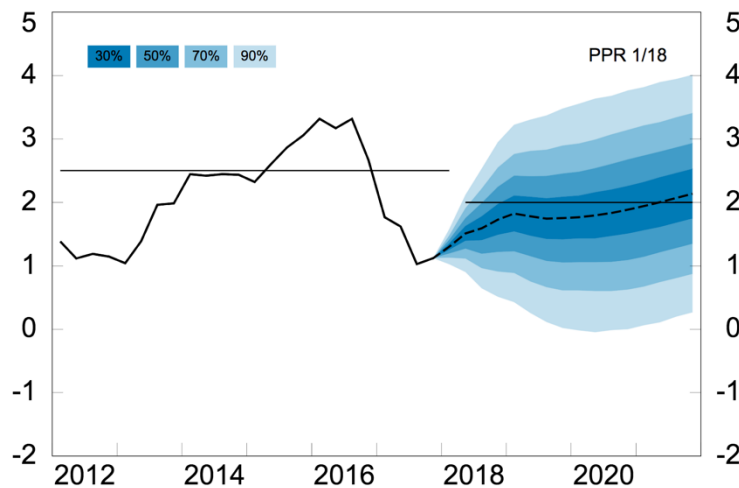


Table 3 - Inflation rate base case projections (Norges Bank, 2018a)

	FY 2018E	FY 2019E	FY 2020E	FY 2021E
Inflation	2,12 %	1,73 %	1,82 %	2,04 %

Hence, the inflation is expected to fluctuate around 2 %

5.2.3 Social Factors

Social factors capture society’s culture, norms, values and demographic. Moreover, these trends capture population characteristics related to age, gender, family size, ethnicity and socioeconomic class (Rothaermel, 2015). Further in this

section, the most relevant social factors affecting SR-BANK - population growth, life expectancy, and consumer spending - will be presented.

5.2.3.1 Population Growth

The population in Norway has grown rapidly in the last decade, and by 2017, there are over 5.2 million inhabitants living in Norway. In the base case that SSB has developed, Norway passes 6 million inhabitants around 2030 and 7 million before 2060 (SSB, 2016a). Furthermore, SSB has predicted the population growth in all four counties that SR-BANK operate in. Table 4 presents their projections.

Table 4 - Expected population growth in SR-BANK's counties (SSB, 2017a)

Population	January 2017	December 2017	1y growth	Year 2040	2017-2040 growth
Aust-Agder	116 673	117 263	0,51 %	145 000	24,28 %
Vest-Agder	184 116	186 773	1,44 %	231 000	25,46 %
Hordaland	519 963	522 915	0,57 %	638 000	22,70 %
Rogaland	472 024	473 642	0,34 %	592 000	25,42 %

For the period of 2017 – 2040, SSB predicts a population growth of 25 % in both Vest-Agder and Rogaland, 24 % in Aust-Agder and 23 % in Hordaland (SSB, 2017a). Hence, the expected population growth in SR-BANK's main counties will contribute to potentially more customers for the bank. Furthermore, the population growth is expected to increase the demand for goods and services in the regions. Thus, it can have a positive effect on the economy in the area.

5.2.3.2 Life Expectancy

For the coming years, SSB assumes that development in life expectancy will continue to increase. Life expectancy from birth increases from about 80 years today, to about 87 years in 2060 for men. For women, life expectancy increases from today's 84 years to around 89 in 2060. Furthermore, medical progress and fewer risk factors in everyday life (e.g. less smoking, safer jobs, fewer transport accidents and fewer environmental issues) indicate that mortality will continue to decline (SSB, 2016b).

Hence, a population of more elderly will increase the government's pension obligations. This may be considered an opportunity for SR-BANK as private pension-savings products may increase in popularity.

5.2.3.3 Consumer Spending and Household Debt

SSB's National accounts for 2017 indicates a moderate consumption growth in households. As a yearly average, household consumption increased by 2,4 % in 2017, versus 1,5 % in 2016 (SSB, 2018a). However, a growing concern is the high debt ratios for Norwegian households. Norwegian household debt has risen faster than income for a long period. The debt level is high both historically and compared with other countries and is the most important source of vulnerability in the Norwegian financial system (Norges Bank, 2017c). The high debt ratios increase the risk that households will reduce consumption in response to a sudden fall in house prices or a pronounced rise in the interest rate level. An abrupt rise in the interest rate level may result in higher losses on banks' retail loans. Retail spending may reduce corporate earnings which may in turn result in higher losses on banks' corporate loans.

Hence, the increased household debt in Norway may impose a threat for SR-BANK, as this may lead to an increased credit risk for both retail and corporate customers.

5.2.4 Technological Factors

Technological factors capture the application of knowledge to create new processes and products (Rothaermel, 2015). Further in this section, the most relevant technological factors affecting SR-BANK - cyber criminality, FinTech, Blockchain, advances in robotics and AI and new payment services - will be presented.

5.2.4.1 Cyber Criminality

The number of cyber attacks have escalated the recent years and the methods that are used are becoming increasingly sophisticated (PwC, 2016). Payment systems are highly centralized, making them vulnerable to cyber attacks. A successful cyber attack may result in heavy financial losses and prevent customers from completing their payments. Moreover, it can result in sensitive information ending up in the wrong hands (Norges Bank, 2017b). Hence, it is important for SR-BANK to have a resilient infrastructure protecting them against the increased risk of cyber criminality in the years to come.

5.2.4.2 FinTech

FinTech disruptors have been finding a way in to the financial industry. These disruptors are fast-moving companies, often start-ups, focused on innovative technology. Moreover, they have been attacking some of the most profitable elements of the financial services value chain the last years (PwC, 2016). To meet the challenge from FinTech companies SR-BANK invested over NOK 300 million in a new company called FinStart Nordic in 2017 which aims at finding new ideas within the finance technology. Moreover, the bank has acquired a stake in the FinTech company Monner. SR-BANK will also look outside Norway's borders to invest in FinTech companies with the goal of earning further development and growth, which benefits the bank and its customers (SYSLA, 2017). Hence, new FinTech companies can be considered a potential threat and opportunity for SR-BANK.

5.2.4.3 Blockchain

Blockchain can be described as a decentralized list, of all transactions across a peer-to-peer network. Using this technology, participants can transfer value across the internet without the need for a central third part. Thus, many believe common blockchain can provide better transaction efficiency. Moreover, it can make it harder to manipulate data for hackers. By the start of 2016, blockchain companies had raised over a billion dollars to fund their development and operations (PwC, 2016). According to a report from Santander Bank, banks can globally save 15 to 20 billion dollars annually on blockchain efficiency by 2022 (DN, 2016). Hence, blockchain imposes an opportunity for banks to increase the efficiency in transactions and the bank's profitability.

5.2.4.4 Advances in Robotics and AI

There have been advances in robotics and artificial intelligence (AI), machine learning and pattern recognition in recent years. There are already alliances between leading financial services and technology companies, using robotics and AI to reduce costs and mitigate risks (PwC, 2016). SR-BANK has already implemented robotics into the banks daily tasks. A self-taught robot technology for use as a chat service was introduced in the customer service department in 2016 (Sparebank 1 SR-Bank, 2016). The bank's introduction of the robot has improved the availability towards the customers and reduced process time to

central parts of the value chain. Hence, advances in robotics and AI can reduce costs and mitigate risk for SR-BANK.

5.2.4.5 New Payment Services

New technology and new regulations make it possible for other actors than banks to offer payment services that are cheap, safe and user-friendly. The biggest actors on the Norwegian market for mobile payment are Vipps, developed by DNB and MobilePay by Danske Bank. Vipps is used by over 40 % of the Norwegian population. Furthermore, major international technology players have developed their own mobile payment applications, but these applications are currently not established in the Norwegian market. However, considering their large customer groups in other areas, it can be possible for them to grow fast also in the field of payment in Norway (Norges Bank, 2017b). In 2017 the SpareBank 1 Alliance, entered a collaboration with Vipps after their unsuccessful partnership with mCash. Hence, SR-BANK is part of Norway's most popular mobile payment application. However, international actors may impose a threat if they establish themselves in Norway.

5.2.5 Summary of PESTEL

5.2.5.1 Political and Legal factors

SR-BANK operates in a highly regulated environment and the bank will continue to meet strict requirements going forward. Most important is the Basel III standard. The Basel III standard will push banks in the direction of more transparency and strengthening of their solidity and liquidity. However, the new requirement will also increase the banks funding costs. Banks must hold more liquid assets and thus limits banks' options to manage their assets for maximum profit. Furthermore, the new MifID II and MiFIR regulations will impose stricter regulations for SR-BANK's markets department and more reporting obligations. Lastly, the sound lending practice for house loans impose a stricter lending practice for SR-BANK which can affect the banks margins.

5.2.5.2 Economic Factors

Moderate to increasing growth is expected in the global economy in the years to come. Growth in the Norwegian economy has increased and the activity in oil

related operations are improving. Thus, the expected economic growth will contribute to reducing the overall risk levels in the lending portfolio of SR-BANK. Further, the growth in the petroleum sector will have a strong positive effect on the lending risk as a large portion of the bank's corporate customers are involved in this sector. Furthermore, the unemployment level in Norway continues to fall and thus affect SR-BANK positively as the probability of loan losses will be reduced. Additionally, expectations of increased interest rates can be a concern for SR-BANK as the level of household debt has had a large increase the last years.

5.2.5.3 Social Factors

SR-BANK's main areas will meet a moderate population growth and an older population in the years to come. The expected population growth in SR-BANK's main counties will contribute to potentially more customers for the bank. Moreover, the population growth is expected to increase the demand for goods and services in the regions. Thus, it will have a positive effect on economy in the area. Furthermore, more elderly may be considered an opportunity for SR-BANK as private pension-savings products may increase in popularity. Increased household debt, however, may impose a threat for SR-BANK as this may lead to reduced consumption and thus affect the bank's corporate customers.

5.2.5.4 Technological Factors

New technology is drastically changing the banking industry. Blockchain and advances in robotics and AI can contribute to increased efficiency in the banks' operations. These new technology advances will help to lower costs and increase earnings for the bank. Moreover, new technology has led to a switch in customer behavior. The bank's customers have become more independent and are more self-serviced. SR-BANK has already embraced the development and positioned itself for the change in customer behavior. Furthermore, cyber criminality poses as one of the biggest threats to SR-BANK. Thus, it is important for SR-BANK to have a resilient infrastructure protecting them against this risk in the years to come. Moreover, major international technology players have developed their own mobile payment applications and considering their large customer groups in other areas, it can be possible for them to grow fast also in the field of payment in

Norway. Hence, international actors for payment solutions may impose a threat if they establish themselves in Norway.

In order to increase the projection accuracy, the PESTEL analysis should be seen in conjuncture with a business analysis of the banks micro environment. Hence, the Porter's Five Forces – framework will be presented next.

5.3 Porter's Five Forces

To evaluate SR-BANK's micro environment the Porter's Five Forces framework will be applied. The purpose of the framework is to evaluate the competition intensity and the attractiveness of the industry. Porter (1979) argues that the state of competition in an industry depends on five basic forces, and the collective strength of these forces determines the profit potential of an industry. The five forces are: bargaining power of suppliers, bargaining power of customers, threat of new entrants, threat of substitute products and internal competition (Porter, 1979). Knowledge of these underlying forces of competitive pressure highlight the critical strengths and weaknesses of SR-BANK. Further in this section, these five forces will be presented.

5.3.1 Bargaining Power of Suppliers

Bargaining power of suppliers tends to be intensified when there is high concentration of suppliers, high degree of product differentiation and high switching costs. Thus, the suppliers can bargain for higher prices which reduces the bank's profitability (Porter, 1979). Further in this section, the bargaining power of SR-BANK's most important suppliers - suppliers of capital and IT solutions - will be presented.

5.3.1.1 Suppliers of Capital

The most important funding sources for Norwegian banks are customer deposits and market funding (Norges Bank, 2017d). Customer deposits account for approximately 40 % of banks' total funding, whereas long-term market funding accounts for approximately 30 %. Since depositors can be considered both suppliers of capital and end customers, they will be further analyzed when the

bargaining power of customers is presented later in the chapter. Further, market funding as a supplier of capital will be analyzed.

5.3.1.1.1 Market Funding

Market funding as a source of capital has increased the last decades. The background for this trend is that lending growth over a long period has been stronger than the growth in deposits (Norges Bank, 2017c).

Covered bonds accounts for the largest share of banks market funding at about 50 %. SR-BANK is exposed to both corporate customers in the oil and gas industry and to the housing market in areas exposed to the oil and gas industry. This can have a reinforcing effect during market distress (Fitch, 2017). In other words, if the oil industry is in distress, the housing prices will react negatively.

Furthermore, a fall in house prices may increase investors' skepticism towards covered bonds as an investment object, which could make it costlier and more difficult for banks to use covered bonds as a funding source.

Hence, the negotiating power of the suppliers of capital is low when the economy is going well and during normal market conditions. However, when the economy is slowing down, access to loans will be reduced and the suppliers will demand a higher risk premium. Thus, the negotiation power will be higher. In the current market, the negotiation power of suppliers of capital is considered low to moderate.

5.3.1.2 Suppliers of IT Solutions

The bank industry has seen drastic changes over the past few years due to technology. High quality IT- systems can reduce the operational risk and help increase the efficiency of banks. Thus, the suppliers of IT- systems are important for banks.

The development in technology leads to constant changes in demand for IT- solutions. According to a survey by the analysis company Gartner, 25 % of banks will use new startup providers to replace their old traditional IT-suppliers by the end of 2019 (Computerworld, 2016). Further, today's technology advances make it difficult for banks to develop its own systems. It will require huge investment in

new employees with technical expertise. This has led to increased outsourcing of banks IT- solutions. Banks are therefore dependent on external actors to buy and operate these systems. SR-BANK is part of the SpareBank 1 Alliance and have common IT-suppliers with the rest of the alliance. To switch IT- suppliers will thus incur huge costs. However, as SR-BANK is part of the SpareBank 1 Alliance, they will most likely benefit from economic of scale and thus reduce the bargaining power of the suppliers. Hence, the bargaining power of IT-Suppliers is considered moderate.

5.3.2 Bargaining Power of Customers

Customers can force down prices, demand higher quality or more service, and play competitors against each other – all at the expense of industry profits. The bargaining power of customers tends to be intensified when there are few customers, low switching costs, low degree of product differentiation and the products represent a significant fraction of the customers cost (Porter, 1979). These factors will be analyzed separately below after a short introduction to SR-BANK's customer base.

5.3.2.1 Customer Base

SR-BANK's customer base is split into the retail- and corporate market. SR-BANK is the leader in the retail market in Southern and Western Norway with 318,000 retail customers and has a market share of about 20 %. The corporate market is smaller in size, where SR-BANK serve ~ 15,000 customers in the region (Sparebank 1 SR-Bank, 2017b).

5.3.2.2 Product Differentiation

Generally, the products and services that banks offer are characterized by a high degree of comparability and low differentiation. Moreover, technological communication has empowered customers. Today's customers are highly informed and technologically advanced. Thus, customers have a broader choice of channels to connect with different banks and compare products and prices. Hence, this leads to increased mobility and a higher bargaining power.

5.3.2.3 Switching Costs

The switching costs of moving from one bank to another are mainly establishment fees and the time the customers may spend on signing new accounts. With the current technological development most of the establishment work can be done electronically within minutes. Furthermore, one in four mortgage customers has changed banks or renegotiated their interest rates in 2016 (Finans Norge, 2017). Hence, the switching costs of moving from one bank to another is considered low and will lead to a higher bargaining power.

5.3.2.4 Customers' Relative Cost

Norwegian household debt has risen faster than income for a long period. The debt level is high both historically and compared with other countries. This is considered the most important source of vulnerability in the Norwegian financial system (Norges Bank, 2017c). High debt increases the risk that households will need to tighten consumption in the event of a sharp decline in house prices or a marked rise in interest rates. Thus, it is likely that customers have a high price sensitivity to the interest rates on their loans, and will compare loan terms with different banks. Moreover, as the interest rates are expected to increase, as discussed in chapter 5.2.2.3, the interest cost will constitute a larger part of the household's total costs. Hence, the customers price sensitivity is considered high and is expected to increase. This will lead to a higher bargaining power.

Considering SR-BANK's customer base, product differentiation, switching costs and customers' relative cost, the bargaining power of customers is considered high.

5.3.3 Threat of New Entrants

The seriousness of the threat of entry depends on the barriers present and on the reaction from existing competitors (Porter, 1979). When more actors establish themselves in an industry, it often leads to higher price pressure and higher costs due to the increased competition. Further in this section the most important establishment barriers - capital requirements, regulatory requirements and economic of scale - will be presented.

5.3.3.1 Capital Requirements

When establishing a bank, there are costs relating to start-up capital, irreversible costs related to wages, investments in IT- systems and membership in various schemes. Moreover, many customers want to have the opportunity to physically meet up in the bank. Nearly seven out of ten bank customers prefer personal service when purchasing products such as insurance, fund products or credit cards (BI Business Review, 2016). Construction of such a distribution network will result in significant investments in capital and partly irreversible costs. However, it seems as the importance of branches are reducing. This is because banks without physical branches have proved to have a viable business model and the number of branches in Norway are decreasing (Konkurransetilsynet, 2015). Hence, capital requirements are a significant entry barrier.

5.3.3.2 Regulatory Requirements

As discussed in chapter 5.2.1 the bank industry is heavily regulated. To establish a bank in Norway it requires a permission from the authorities and a license from the Financial Supervisory Authority (FSA). To obtain the license, an initial capital equivalent to an amount of EUR 5 million is required. Moreover, the bank must have a capital base that is in reasonable proportion to the extent of the business. At the same time, the establishment of the EU's internal market have made it easier for foreign players to establish a bank in Norway. Foreign banks do not need a license to establish business in Norway if they already have a license in another EEA- country (Finanstilsynet, 2017e).

It will require large resources to work out sufficient knowledge and compliance with all regulations. This is especially true in the start-up phase, and in those periods, new and comprehensive regulation is introduced (Konkurransetilsynet, 2015). Hence, regulatory requirements constitute an entry barrier for new actors.

5.3.3.3 Economic of Scale

Economies of scale implies that the average cost drops as produced unites increase. If there are economies of scale within a sector, this could be an entry barrier for new actors. Within the banking sector there can be economies of scale linked to construction and operation of technological systems. Furthermore, actors with access to alliances and cooperation, such as SR-BANK, will largely be able

to extract economies of scale in areas such as branding, customer service and IT-solutions. Hence, there exist economics of scale in the bank industry that can act as entry barriers.

Considering capital requirements, regulatory requirements and economies of scale, the threat from new entrances is considered low to medium.

5.3.4 Threat from Substitutes

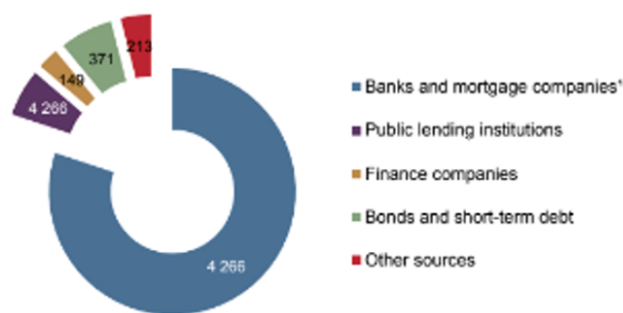
The threat from substitutes indicates that products or services available from outside the given industry will come close to meeting the needs of current customers (Rothaermel, 2015). The threat from substitutes depends on the customer's inclination to replace the banks products and services with substitutes. If there is a high threat from substitutes, it will increase the competitive intensity in the industry. SR-BANK offers a wide range of financial products and services. However, for this analysis banks' loan services and saving products will be the focus.

5.3.4.1 Loan Services

Banks provide credit to customers, mainly in the form of mortgages and credit loans, and to companies that need capital for different operational and investment purposes. Substitutes for bank loans are products that cover these needs but are offered by other actors than banks. For the retail market, Husbanken and the National Pension Fund (SPK) are considered possible substitutes, whereas the bond market operates as a substitute for the corporate market.

Figure 9 gives an overview of the largest loan sources in Norway. The figure illustrates that banks and mortgage companies is the most important source followed by public lending institutions. Husbanken and the Government Pension Fund are examples of public lending institutions and will be analyzed further.

Figure 9 - Gross domestic lending to the non-financial sector by credit source. In NOK billions, June 2017 (Norges Bank, 2017c)



5.3.4.1.1 Husbanken

Husbanken is the main agency implementing Norwegian housing policy on a national level (Husbanken, 2018). Through its municipalities, Husbanken grants loans for housing purchases for people who have trouble getting loans from traditional banks. Husbanken's target group is therefore people with low income, people without a job and other economically disadvantaged households.

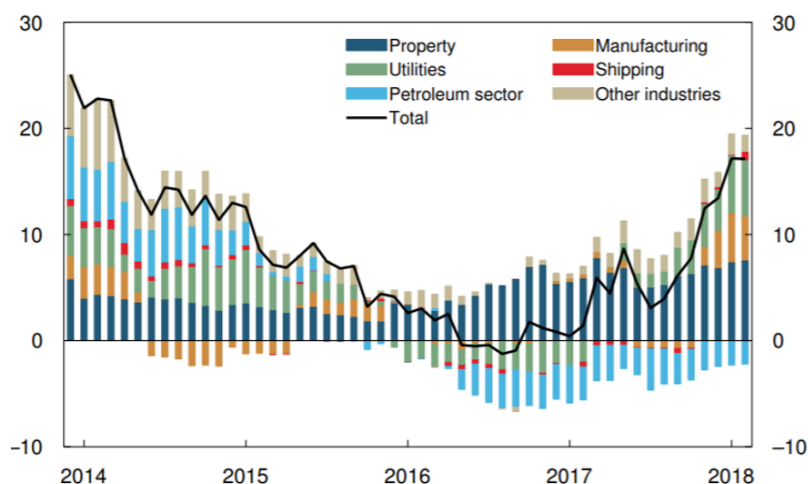
Moreover, start loans granted from Husbanken were close to 7 billion NOK in 2016. As the target group of Husbanken is not the same as for SRBANK, these loans are not considered a high threat. Furthermore, the lending practice was tightened in 2014. Now Husbanken can only grant loans to people who are economically disadvantaged, and not to first-time house loaners who can raise loans in private banks (Husbanken, 2016). Thus, Husbanken as a substitute is considered low.

5.3.4.1.2 The Government Pension Fund

The Government Pension Fund (SPK) offers housing loans to all government employees. SPK currently has 1.069.000 members which can borrow up to NOK 1,7 million (Government Pension Fund, 2018). In this way, the SPK is a substitute for SR-BANK and poses as a threat. However, the fact that the offer is reserved for members reduces the threat and it is therefore considered moderate.

For corporate customers, the bond market represents a substitute for credit. Figure 10 illustrates that the credit growth from the bond market have risen in several industries.

Figure 10 - Lending to Norwegian non-financial enterprises in the Norwegian bond market by industry (Norges Bank, 2018b)



Risk premiums in the Norwegian bond market declined through 2017, in both high-yield and low-yield segments. Low risk premiums have helped making bond market funding more attractive. In 2017, almost NOK 90 billion in corporate bonds was issued by Norwegian enterprises, which is almost twice as much as in 2015 and 2016 (Norges Bank, 2018b). This shows that bond loans pose a threat to the profit margin in the banking industry and may pose a greater threat in the future if the trend continues. Hence, the threat from the bond market is considered high.

5.3.4.2 Saving Products

A survey from DNB finds that most Norwegians use bank deposits as their main saving alternative and that Norwegians consider payments on house loans to be the best savings alternative (DNB, 2017). However, the historically low interest rates have contributed a higher appetite for the stock market. Norwegian private investors bought fund shares for NOK 20 billion in 2017 (Hegnar, 2018). This is four times higher than the average in the period of 2010 – 2016. This is largely due to the shares saving accounts which was introduced in September 2016. Moreover, there are now many different providers of shares saving accounts besides traditional banks. The introduction of the shares saving account have increased the awareness of saving alternatives to bank deposits and it has become easier for customers to switch providers. Thus, the risk from saving products substitutes is considered moderate.

Overall, the threat from substitutes is considered to be moderate.

5.3.5 Internal Competition

Factors that affect the internal rivalry can be the number of competitors, size, capacity, cost structure, the differentiation between competitors and the industry's exit barriers. High degree of rivalry will make the industry less attractive, as it puts pressure on the margins (Porter, 1979). Further in this section, these factors will be analyzed.

There are numerous banks in Norway, and the banking market is characterized by many small banks, and a few large and medium-sized banks. Moreover, the structure of the Norwegian banking sector is characterized by the extraordinarily high market share of the largest bank, DNB (Konkurransetilsynet, 2015).

However, an important factor for internal rivalry is geographical location. SR-BANK's main areas are Rogaland, Hordaland and the Agder counties. The intensity of competition is thus affected by how current and potential competitors can expand in these regions. DNB, Nordea, Skandiabanken and Sparebank Vest is considered SR-BANKs main competitors in the area. For savings banks, an important part of the strategy is to be a local bank with local knowledge.

However, current technological development can reduce the impact of this strategy as customers no longer need to seek out physical banking branches to the same extent as before. This development has made it easier for actors to expand its business into new areas and increased internal rivalry can thus be the result.

Furthermore, the extent to which a market is concentrated can give an indication of whether there is strong competition in the market (Konkurransetilsynet, 2015). As a measure of market concentration, Finans Norge (2018) has calculated market share based on loans with housing mortgages for the five largest banks in Norway.

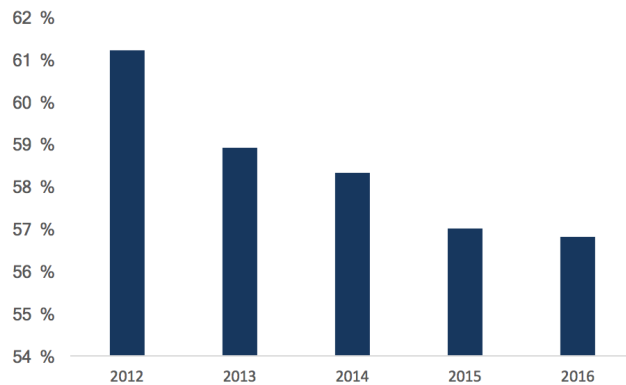
Figure 11 - Market share for the five largest banks in Norway (Finans Norge, 2018)

Figure 11 indicate that the five largest banks have a market share of 57 % in 2016, based on mortgage lending. The concentration has been dropping in the period of 2012-2016, and there seems to be a trend that the largest banks are losing market share. This illustrates that the internal rivalry in the industry is intensifying.

Competition regarding the banks interest rates is an important factor when considering the internal rivalry. Interest rates on customer deposits is a significant expense for the banks. Furthermore, the level of the deposit rate and the rate on house loans is important to the bank's customers and is an important factor in the choice of bank. Consumer and financial trends 2017, conducted by TNS Gallup in cooperation with Finance Norway, show that one in four mortgage customers has changed banks or renegotiated their interest rates in 2016. The interest conditions are the main reason why people change bank according to the survey (Finans Norge, 2017). Bank customers can easily compare deposit rates and the rates on house loans to different banks online. Hence, the competition between the banks on the deposit and house loan rate is therefore high and increases the internal rivalry in the industry.

Overall, the internal competition is considered to be moderate to high.

5.3.6 Summary of Porter`s Five Forces

5.3.6.1 Bargaining Power of Suppliers

The bank industry`s most important suppliers are suppliers of capital and IT-solutions. The negotiating power of the suppliers of capital is low when the economy is going well and during normal market conditions. However, when the

economy is slowing down, access to loans will be reduced and the suppliers will demand a higher risk premium. Thus, the negotiation power will be higher. In today's market, the negotiation power of suppliers of capital is considered low to moderate. Furthermore, the development in technology leads to constant changes in demands for IT- solutions. To switch IT- suppliers will thus incur huge costs. The bargaining power of IT- suppliers is thus considered high. However, SR-BANK will benefit from the SpareBank 1 Alliance and thus reduce the suppliers bargaining power slightly. Overall, the bargaining power of suppliers (capital and IT) is considered moderate.

5.3.6.2 The Bargaining Power of Customers

The bargaining power of customers have increased with the recent development in technology. The products and services that banks offer are characterized by a high degree of comparability and low differentiation. Thus, customers can connect to different banks to compare products and prices. This leads to increased mobility and reduced switching costs. Moreover, as the interest rates are expected to increase, the interest cost will constitute a larger part of the household's total costs. Hence, the customers price sensitivity is considered high and is expected to increase. Overall, the bargaining power of customers is considered high.

5.3.6.3 Threat of New Entrants

There are large costs associated with the establishment of a bank. Hence, capital requirements are thus considered to be a significant entry barrier. To establish a bank in Norway, it requires permission from the authorities and banks must meet the legal requirements that apply to the industry. Hence, regulatory requirements constitute another entry barrier. Furthermore, actors with access to alliances and cooperation, such as SR-BANK, will largely be able to extract economies of scale that acts as another entry barrier. Overall, the threat from new entrances is low to medium due to the many entry barriers in the bank industry.

5.3.6.4 Threat from Substitutes

There are possible substitutes for both loans services and saving products in the industry. For the retail market, Husbanken and SPK are considered possible substitutes for loan services. However, Husbanken can only grant loans to people who are economically disadvantaged and not to first-time house loaners who can

raise loans in private banks. Thus, Husbanken as a substitute is considered low. Further, the fact that the SPK offer is reserved for members reduces the threat and it is therefore considered moderate. The bond market operates as a substitute for the corporate market. The credit growth from the bond market have risen in several industries and may pose a greater threat in the future if the trend continues. The threat from the bond market is therefore considered high. Furthermore, the introduction of the shares saving account have increased the awareness of saving alternatives to bank deposits and it has become easier for customers to switch providers. Thus, the risk from saving products substitutes is considered moderate. Overall, the threat from substitutes is considered to be moderate.

5.3.6.5 Internal Competition

All the above-mentioned factors affect the internal rivalry in SR-BANK's market. There are numerous banks in Norway, and the banking market is characterized by many small banks, and a few large and medium-sized banks. Moreover, the market is relatively high concentrated. For savings banks, an important part of the strategy is to be a local bank with local knowledge. However, current technological development has made it easier to expand into new areas and increased internal rivalry can thus be the result. Furthermore, bank customers can easily compare deposit rates and the rates on house loans to different banks online. Hence, the competition between the banks on the deposit and house loan rate is intense and increases the internal rivalry in the industry. Overall, the internal competition is considered moderate to high.

The analysis of SR-BANKS macro- and micro- environment have provided insight into which factors that affect the bank's profitability. In the next section, an internal analysis will be conducted to get a better understanding of SR-BANK's strengths and weaknesses. Moreover, it will try to identify if the banks have any competitive advantage.

5.4 VRIO

The VRIO framework provides a way to scan for resources that are valuable, rare, imperfectly imitable and organized (Barney, 1991). Barney (1991) argues that these four properties of the resources are criteria that can create sustainable competitive advantage in a market. A competitive advantage is a superiority a

firm has over its rivals and can create return on investment that are above their cost of capital. Hence, if SR-BANK has a competitive advantage it will have a vast implication for the valuation of SR-Bank. To search for competitive advantage, figure 12 will be applied. Further, SR-BANK’s resources will be split in to two categories, tangible and intangible resources.

Figure 12 - VRIO framework (Barney, 1991)

Resource characteristics				Strategic Implication
Valuable	Rare	Imperfectly imitable	Organized	Competitive implication
No	-	-	No	Competitive Disadvantage
Yes	No	-	↑	Competitive Parity
Yes	Yes	No	↓	Temporary Competitive Advantage
Yes	Yes	No	Yes	Sustained Competitive Advantage

5.4.1 Tangible Resources

Tangible resources are any company property that has a physical existence (Barney, 2014). Financial resources and branches have been identified as the bank’s main tangible resources and will be analyzed further.

5.4.1.1 Financial Resources

Financial resources can be described as both raw material, and a result of the value creation (Barney, 2014). For a company to be able to maintain its daily and future operations, its financial solidity and liquidity must be adequate.

SR-BANK achieved a pre-tax profit of NOK 2 610 million in 2017 with a net profit of NOK 2 086 million. The return on equity (ROE) in 2017 was 11 % which is in line with the bank’s long term ROE target. Further, SR-BANK position as the market leader in Rogaland was enhanced within both the retail market and the corporate market. (SpareBank 1 SR-bank, 2017b). The financial statements analysis in chapter 6 will indicate that SR-BANK have satisfactory liquidity and financial solidity. Hence, SR-BANK is in a good position for maintaining its daily and future operations.

SR-BANK`s strong financial situation is critical for the bank to maintain its daily operations both short- and long- term and is thus considered valuable. Further, the bank`s financial resources make it possible to achieve the strict requirements from the authorities. However, banks who operate in the same market have access to the same capital resources. Thus, the resources are not considered rare or difficult or imitate. Moreover, the bank is organized in a way that exploits these resources. Hence, SR-BANK`s financial resources gives competitive parity.

5.4.1.2 Physical resources

SR-BANK`s branches are considered the banks physical resources. These physical resources are often capital-intensive and is thus important for the performance of the company. How the physical resources are managed may lead to a competitive advantage. Further in this analysis, the bank`s branches will be presented.

As of 31.12.2017, SR-BANK has 36 physical branches. The bank builds its customer relationships through both digital and physical meetings (Sparebank 1 SR-Bank, 2017b). In 2016, the SR-Bank closed 13 smaller branches indicating that there is a push away from physical branches. Online banking has increased in popularity and there are currently 3,9 million Norwegians users (Finans Norge, 2016). However, many customers want to have the opportunity to physically meet up in the bank. Nearly seven out of ten bank customers (68 per cent) prefer personal service when purchasing products such as insurance, fund products or credit cards (BI Business Review, 2016). Thus, an important competitive parameter in the banking market may be having a distribution network with own branches.

Physical branches are considered valuable. However, the value of branches is reducing in line with the trend in customer behavior. Branches are not considered rare because the primary competitors of the bank have corresponding office buildings and branches. Further, the physical branches are not difficult to imitate. Finally, the branches of the bank are considered organized. Hence, SR-BANK`s physical resources gives competitive parity.

5.4.2 Intangible Resources

Intangible resources are non-physical. Furthermore, competitive advantage is more likely to spring from intangible rather than tangible resources (Rothaermel, 2015). SR-BANK's intangible resources that will be analyzed further are intellectual capital, brand equity and location.

5.4.2.1 Intellectual Capital

Intellectual capital is the intangible value of a business, covering human capital and relational capital (Barney, 2014). Stabell & Fjeldstad (1998) argue that the business model of a bank can be classified as a value network where intellectual capital is the key value driver. Further, the modern banking industry demands a continuous development of new skillsets, which can be met through developing existing employees and hiring new resources.

Skilled and informed employees are crucial for SR-BANK to compete in the market. The PESTEL- framework from chapter 5.2 indicated that technology is changing the bank industry. Thus, it is important for the bank to have employees with the necessary skills to follow this development. SR-BANK has taken multiple measures during 2017 which proves that they are complying with the technological developments in the industry.

In January, SR-BANK became the first bank in the country to introduce robot technology as part of the customer service interface. In April, SR-BANK acquired a stake in the FinTech company Monner. In May, SR-BANK expanded its focus on entrepreneurs and decided to establish two new grunderhubs in Bergen and Kristiansand. In June, the bank established a collaboration with NTNU in Trondheim, which is a customized study program to enhance the IT-skills within the bank. Furthermore, in the last part of the year, the start-up factory FinStart Nordic was established as a wholly owned subsidiary of the bank, with the purpose of investing in the development of new ideas and new FinTech companies (Sparebank 1 SR-Bank, 2017b). Hence, SR-BANK has increased its employee's technological competence and have initiated activities that will further increase this competence.

Furthermore, SR-BANK`s annual report states that, on average, each employee spends half a business day a week improving their skills to stay on top of the developments in the industry (Sparebank 1 SR-Bank, 2017b). Moreover, skills that are not relevant are phased out and replenished with new certifications and various courses. For the bank to attract competent employees, it is important that the bank offers good career opportunities. SR-BANK aims to provide employees with equal opportunities for personal development, pay and other career related issues (Sparebank 1 SR-Bank, 2017b).

SR-BANK`s employees are critical for the bank to compete in the market and the banks human capital is thus considered valuable. However, the banks competitors will also be able to attract competent employees. Further, the banks employees can quit and bring its competence to SR-BANK`s competitors. Although, the bank has increased its employee`s technological competence and have initiated activities that will further increase this competence, the human capital is not considered rare or imperfectly imitable. Further, the human capital is considered organized. Hence, SR-BANK`s intellectual capital gives competitive parity.

5.4.2.2 Brand Equity

Brand equity describes the value of having a well-known brand name. The owner of a well-known brand name can generate more revenue simply from brand recognition (Barney, 2014). Corporate Social Responsibility (CSR), customer satisfaction and membership with the SpareBank 1 Alliance will be highlighted further in this section.

A way of increasing a company`s brand equity is through CSR. SR-BANK is acting as a donator with an objective to distribute profits to charitable causes. In 2017, NOK 57 million was distributed among 402 beneficiaries in Rogaland, Hordaland and Agder. Further, the bank express that it is their competitive advantage that they are closer to people and companies, than other major banks in their area (Sparebank 1 SR-Bank, 2017b). Being an active donator has given SR-BANK a strong position in the local community and increased their reputation.

Furthermore, SR-Bank is part of the SpareBank 1 Alliance. Norsk Kundebarometer (2017) has measured customer satisfaction and loyalty among

Norwegian customers the last 20 years. The SpareBank 1 Alliance is rated 4 in the Norwegian bank industry, in front of DNB, Nordea and Danske Bank (BI, 2017). This indicates that the brand SpareBank 1 has a strong foothold in Norway. Hence, the brand SpareBank 1 have a strong position in the market and thus SR-BANK enjoys brand-based economies of scale through the alliance. However, the membership in the alliance makes SR-BANK vulnerable for the mistakes of other members.

Through focus on CSR and brand-based economies of scale from the alliance, SR-BANK currently have a strong brand. These factors are essential in both keeping existing customers and attracting new and can therefore strengthen the competitive position of the bank and is thus considered valuable. A good reputation will also increase customer loyalty. However, the PESTEL analysis in chapter 5.3.2.2 indicated that the switching costs for the customer are low which can reduce the customer loyalty in bad times. Moreover, the banks brand equity is neither considered rare or imperfectly imitable. However, to accomplish similar brand-based economies of scale for a competitor will take time and the bank is organized in an alliance that exploits this resource. Hence, the banks brand equity could therefore provide competitive advantage in the short term.

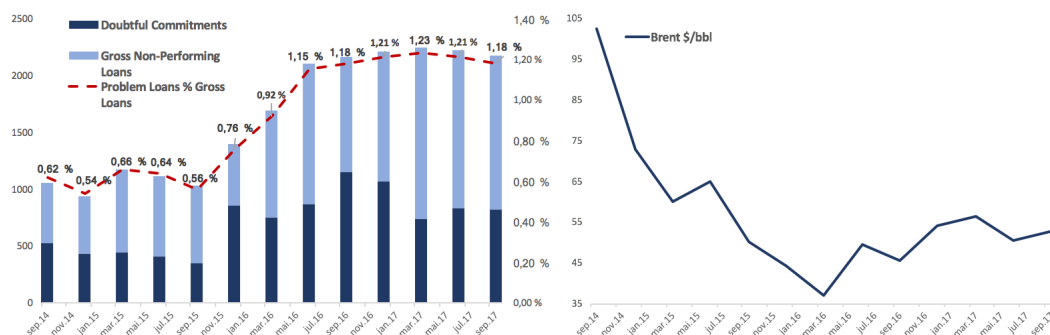
5.4.2.3 Location

The location of a company is an intangible resource that can provide access to valuable network of contacts and gives the company several benefits (Rothaermel, 2015). Further in this section, SR-BANK's geographical location will be analyzed to see if it provides the bank with a competitive advantage.

The Stavanger region in Rogaland has played a key role in the evolution of the oil and energy industry in Norway since 1969. Thus, the region has become very prosperous and is ranked second after Oslo in GDP per capita. The Stavanger region holds both large international actors in oil and gas, and some of Norway's largest oil companies. Further, around 20 % of the labor force in Rogaland works in the oil industry. Being the largest bank in an oil dominated region means that SR-BANK has the largest exposure of the Norwegian banks to cyclical industries, both oil and gas and real estate (Sparebank 1 SR-Bank, 2017b).

The oil price has had a large decrease since record levels in 2014. Thus, petroleum activities fell in 2015 and 2016. The downturn has slowed down/flattened in 2017 however, the outlook for 2018 is positive (Norges Bank, 2017c). SR-Bank have a relatively high exposure to the oil sector where 5,8 % of the loan portfolio is exposed to oil and gas. The cyclical slowdown has driven a significant increase in problem loans in 2016 and 2017. Figure 13 indicates that SR-BANK’s stock of nonperforming loans and doubtful commitments increased from NOK 1 054 (0,62% of gross loans) million in September 2014 to NOK 2 176 (1,18% of gross loans) in September 2017. These loans are predominantly the result of companies in the oil sector experiencing financial distress mainly through excess capacity in their offshore service vessels fleet.

Figure 13 – Stock of non-performing loans and doubtful commitments in relation to \$ price of brent (Sparebank 1 SR-Bank, 2017b)



All this infers that SR-BANK’s location in the hearth of the Norwegian oil industry have a vast impact on the bank’s profitability. Clearly, SR-BANK’s region is highly exposed to changes in the oil and gas industry. However, since 1969 this has mostly been for the positive (Sparebank 1 SR-Bank, 2017b). SR-Bank has benefited from the prosperous population in Rogaland and the oil industry’s demand for bank loans. This is a resource that is valuable because it means more opportunities for SR-BANK. Furthermore, to be positioned as a market leader in such an oil dominated region with all the possibilities it brings is considered rare. The position that SR-BANK have in Rogaland, is imperfectly imitable. Moreover, it is organized in a way that exploits this resource. Hence, location gives SR-Bank a sustained competitive advantage. However, sustained does not mean constant. There is a trend towards a less personal relationship

between a bank and its customer. Thus, the competitive advantage may demise over time.

5.4.3 Summary of VRIO

Figure 14 - Summary of VRIO

Resource	Resource characteristics				Strategic Implication
	Valuable	Rare	Imperfectly imitable	Organized	Competitive implication
Tangible					
Financials	Yes	No	No	Yes	Competitive Parity
Branches	Yes	No	No	Yes	Competitive Parity
Intangible					
Intellectual Capital	Yes	No	No	Yes	Competitive Parity
Brand Equity	Yes	No	No	Yes	Competitive Advantage
Location	Yes	Yes	Yes	Yes	Sustained Competitive Advantage

The VRIO framework have identified brand equity as a temporary competitive advantage. Through focus on CSR and brand-based economies of scale from the SpareBank 1 Alliance, SR-BANK currently have a strong brand. To accomplish similar brand-based economies of scale for a competitor will take time. Moreover, location has been identified as a sustained competitive advantage. SR-BANK`s location in the hearth of the Norwegian oil industry have a vast impact on the bank`s profitability. This resource has unique historical conditions and is both space- and time-dependent and will be difficult for competitors to imitate. The identified competitive advantages can result in increased profitability for SR-BANK, relative to the competitors. Furthermore, the VRIO framework identifies that financial resources, physical resources and intellectual capital gives competitive parity.

5.5 Summary of the Strategic Analysis

The analysis of SR-BANK`s macro- and micro- environment, in conjuncture with the internal analysis provides a better understanding of the banks strengths, weaknesses, opportunities and threats. Further, these aspects will be highlighted and summarized in a SWOT (figure 15).

5.5.1 Strengths

Brand equity has been identified as a temporary competitive advantage for SR-BANK. Through focus on CSR and brand-based economies of scale from the SpareBank 1 Alliance, SR-BANK currently have a strong brand. Moreover, the alliance gives economies of scales in other areas such as branding and IT-solutions. Further, location has been identified as a sustained competitive advantage. SR-BANK's location in the hearth of the Norwegian oil industry have a vast impact on the bank's profitability. Moreover, the bank has a strong financial situation which is crucial for maintaining the daily operations both short- and long- term. Lastly, SR-BANK has already embraced the technological development and positioned itself for the change in customer behavior.

5.5.2 Weaknesses

The products and services that SR-BANK offer is characterized by a high degree of comparability and low differentiation. This leads to increased mobility and reduced switching costs for the customers. Moreover, as the interest rates are expected to increase, the interest cost will constitute a larger part of Norwegian household's total costs. Hence, the customers price sensitivity is considered high and is expected to increase. Further, the internal competition in SR-BANK's area is considered moderate to high. High degree of rivalry will make the industry less attractive, as it puts pressure on margins.

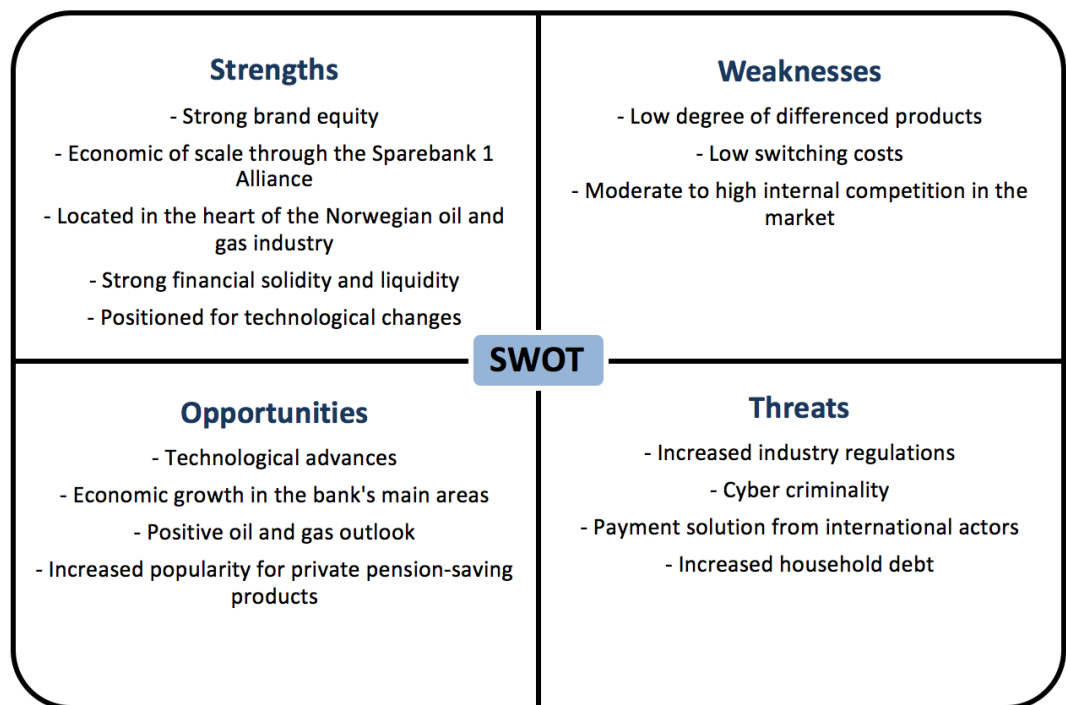
5.5.3 Opportunities

New technology is drastically changing the banking industry. Blockchain and advances in robotics and AI can contribute to increased efficiency in the banks' operations and can help to lower costs and increase earnings for the bank. Further, SR-BANK's main areas will meet a moderate population growth and an older population in the years to come. The expected population growth in SR-BANK's main counties will contribute to potentially more customers for the bank. Furthermore, a more elderly population may be considered an opportunity for SR-BANK as private pension-savings products may increase in popularity. Moderate to increasing growth is expected in the global economy and activities in oil related operations are showing signs of improvement. Thus, the expected economic growth will contribute to reducing the overall risk levels in the lending portfolio of SR-BANK.

5.5.4 Threats

SR-BANK operates in a highly regulated environment and the bank will continue to meet strict requirements going forward. Regulatory requirements will increase the banks funding costs. Moreover, cyber criminality poses as one of the biggest threats to SR-BANK and the bank industry. Further, major international technology players have developed their own mobile payment applications and it is possible for them to grow fast in the Norwegian market. Furthermore, increased household debt, may impose a threat for SR-BANK as this may led to reduced consumption and thus affect the banks cooperate customers.

Figure 15 - SWOT Framework



6.0 Financial Statements Analysis

This chapter presents a financial statement analysis of SR-BANK. In the analysis, SR-BANK's profitability, liquidity, financial solidity and credit quality will be evaluated. Before the analysis can take place, the analysis period and comparable firms must be identified.

Understanding a company's past is essential to forecast its future. Thus, a thorough analysis of the historical performance of SR-BANK will be conducted. The purpose of the analysis is to create a comprehensive picture of the financial situation of SR-BANK. The historical figures are important to develop forecasts for the bank's future. However, the historical figures can only give an indication of the bank's prospects and forecasts must therefore be developed in combination with the strategic analysis.

6.1 Analysis Period

Koller et al., (2015) argues that one should look back as far as possible, at least 10 years. A lengthy time horizon will determine whether the company and industry tend to revert to a normal level of performance, and whether short-term trends are likely to be permanent (Koller et al., 2015). By going too far back in time, one can risk that the older financial statements are not directly comparable, because accounting rules and other bank regulations may have changed. Also, if the bank's results have been unstable, historical numbers is not as representative for the future, thus a shorter time period is preferred.

SR-BANK began to use the IFRS accounting standards on 1 January 2007. Therefore, figures before 1. January 2007 are not directly comparable to figures after 1. January 2007. Furthermore, SR-BANK converted from a savings bank to a public limited company (limited liability savings bank) in January 2012 which could be considered a natural starting point for the analysis (Sparebank 1 SR-Bank, 2018). Hence, the analysis period will be 6 years, from 01.01 2012 to 31.12. 2017.

6.2 Comparable Firms

A comparable firm has similar cash flows, growth potential, and risk to the firm being valued (Damodaran, 2006). For this analysis, total assets and gross lending

have been identified as a proxy for these features. Hence, Sparebanken Vest, Sparebanken Sør and Sparebank 1 SMN are chosen as comparable firms. Further in this chapter, the three banks will be used as comparable firms and their average ratios will be referred to as CA (comparable average).

Table 5 - Total assets and gross lending for SR-BANK and comparable firms (Finans Norge, 2018)

Comparable Firms / NOK Million	Total Assets	Gross Lending
Sparebanken Vest	162 752	138 387
Sparebanken Sør	138 080	134 744
Sparebanken 1 SMN	105 455	91 654
SR-BANK	193 408	181 739

6.3 Profitability

Profitability refers to the ability of a company to use its resources to generate revenues in excess of its expenses (Banken & Busch, 1999). High profitability increases SR-BANK's ability to raise new capital, issue more loans, and strengthen its financial solidity. Thus, a profitability analysis will be conducted where the return on equity, cost/income-ratio and the average interest margin will be analyzed.

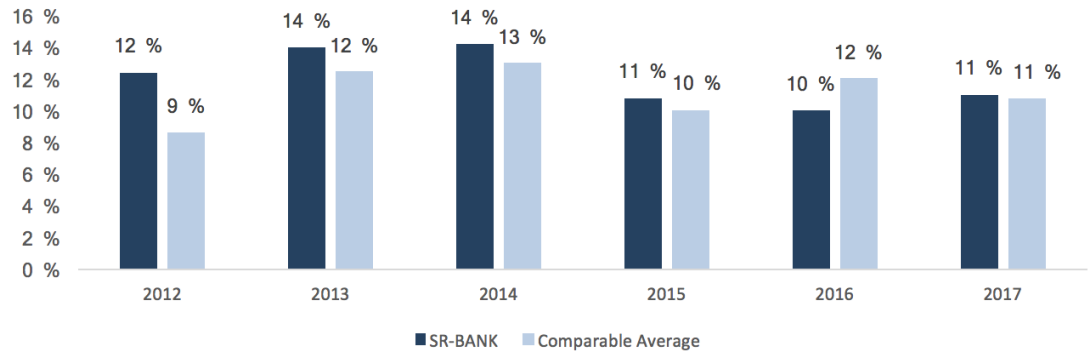
6.3.1 Return on Equity

The most recognizable profitability ratio for banks is return on equity (ROE). ROE measures the bank's profitability by revealing how effective the bank is at turning the cash put into the business into greater gains and growth for the company and investors (Koller et al., 2015). SR-BANK's goal according to their 2017 annual report, is to produce financial results that provide a good, stable ROE of at least 11% (Sparebank 1 SR-Bank, 2016a).

Equation 6 - Return on equity

$$ROE = \frac{\text{Net Income}}{\text{Book Value of Shareholders' Equity}}$$

Figure 16 - SR-BANK's ROE vs CA



SR-BANK's ROE has been above CA in 4 of 6 years, and above 10 % the entire analysis period. However, the ROE has decreased from the highly profitable years in 2013 and 2014, to 10 % in 2016 which is the lowest ROE for the period. The reduced ROE is a result of the downturn in the oil industry from 2014 (Sparebank 1-SR-Bank, 2016a). The banks ROE target of 11 % was reached in 2017. However, it is important to keep in mind that an increase in shareholders' equity will reduce ROE. At the same time, an increase in shareholders' equity will strengthen the banks financial solidity. Thus, ROE will be analyzed in conjunction with the equity ratio.

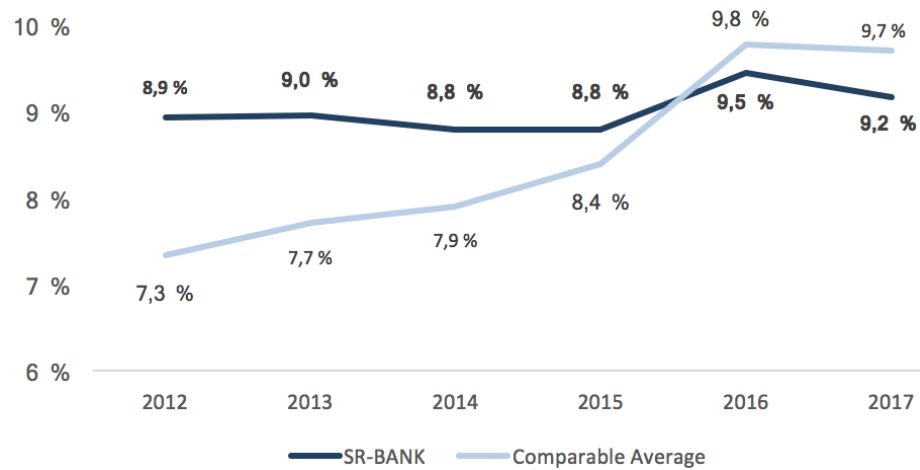
6.3.2 Equity Ratio

The Equity ratio refers to the total shareholders' equity divided by total assets and represents the amount of assets which the shareholders have in residual claim.

Equation 7 - Equity ratio

$$Equity\ Ratio = \frac{Shareholders' Equity}{Total Assets}$$

Figure 17 - SR-BANK's equity ratio vs CA



SR-BANK's equity ratio has been higher than CA until 2016. At the same time, the equity ratio has been more stable than CA throughout the period. The CA has increased to meet stricter requirements for capital adequacy from the authorities. Furthermore, when the ROE from figure 17 is seen in conjuncture with the equity ratio, there are indications that SR-BANK has been more profitable (measured by ROE) than its peers from 2012 – 2015. The high ROE together with the high equity share is a sign of strong profitability together with a solid financial solidity.

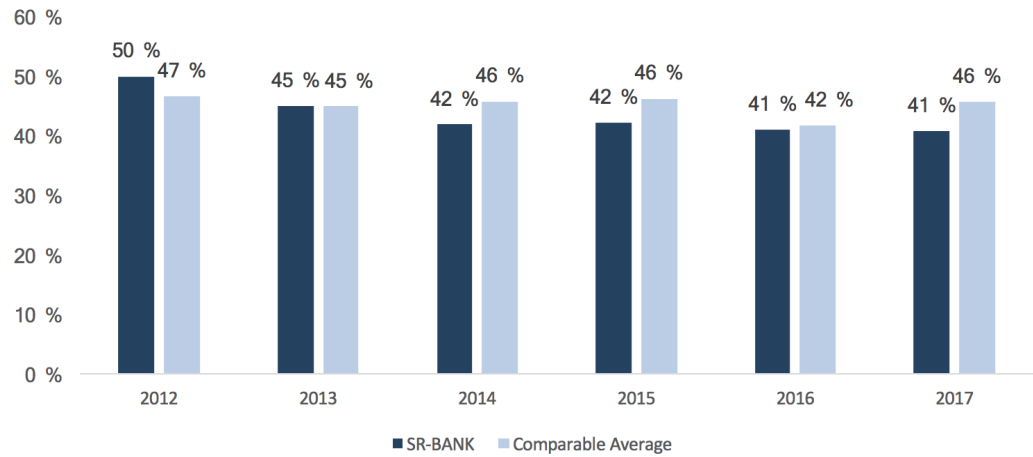
6.3.3 Cost/Income Ratio

The cost/income ratio is important for determining the profitability of a bank. The ratio gives a view of how efficient the bank is being managed. A lower ratio indicates that the company is earning more profits per revenue generated.

Equation 8 - Cost/income ratio

$$Cost/income\ ratio = \frac{Operating\ Expenses}{Operating\ Income}$$

Figure 18 – SR-BANK’s cost/income ratio vs CA



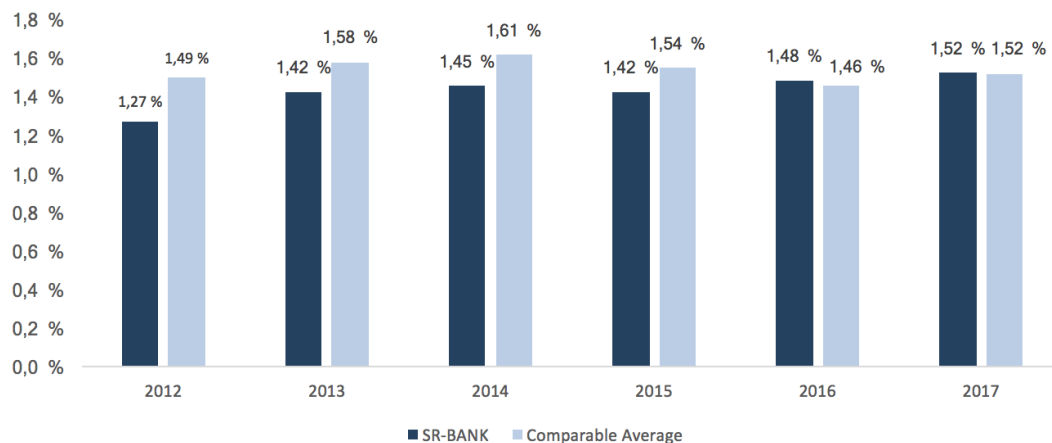
SR-BANK’s cost/income ratio has been below CA for all years in the period except in 2012 and 2013. The ratio has been stable at ~ 40 % from 2014 to 2017. Furthermore, the ratio has decreased during the period which may indicate that the bank has increased the efficiency of its operations. SR-BANK credits the low cost/income ratio to continuously focusing on efficiency and digitalization (Sparebank 1 SR-Bank, 2016a).

6.3.4 Net Interest Income

The difference between the interest income the bank earns from lending and the interest expenses it pays to borrow funds is the net interest income (Koller et al., 2015). This is considered the banks most important form of income and thus it has strong impact on the banks profitability. Furthermore, it is important to consider the size of the banks total assets when comparing net interest income with peers. This is because the size of the banks total assets will affect the size of the net interest income. Thus, net interest income in % of average total assets will be used in this analysis.

Equation 9 - Net interest margin in % of total assets

$$Net\ interest\ income\ in\ \%\ of\ average\ total\ assets = \frac{(Interest\ Income - Interest\ Cost)}{Average\ Total\ Assets}$$

Figure 19 - SR-BANK's net interest income in % of total assets vs CA

SR-BANK's net interest margin has been below CA from 2012 to 2015. However, in the last two years, the ratio has increased. In 2017, the net interest margin was the highest in the period, ending at 1,52 %. The increase was the result of improved risk pricing for large parts of the corporate market portfolio and an improvement in the banks deposit margins (Sparebank 1 SR-Bank, 2017b). The difference in net interest margin between SR-BANK and CA the previous years may be due to the banks different risk profile. Higher risk in the loan portfolio will in isolation provide high lending rates, while the risk of default will increase. This illustrates some of the problematics of comparing the net interest margin between peers. It does not necessarily express the bank's ability to create value for shareholders, as increased risk is compensated by higher interest rates.

6.4 Liquidity

Liquidity refers to the company's ability to pay its current obligations (Banken & Busch, 1999). An analysis of the liquidity can reveal whether it is likely that SR-BANK will be able to serve its obligations in the near future. Furthermore, liquidity risk is the risk that SR-BANK is unable to refinance its debt or is unable to finance an increase in assets. To assess SR-BANK's liquidity and liquidity risk, both the liquidity coverage ratio (LCR) and the deposits to loan ratio (DTL) will be analyzed. A solid liquidity will rationalize valuing SR-BANK as a going concern.

6.4.1 Liquidity Coverage Ratio

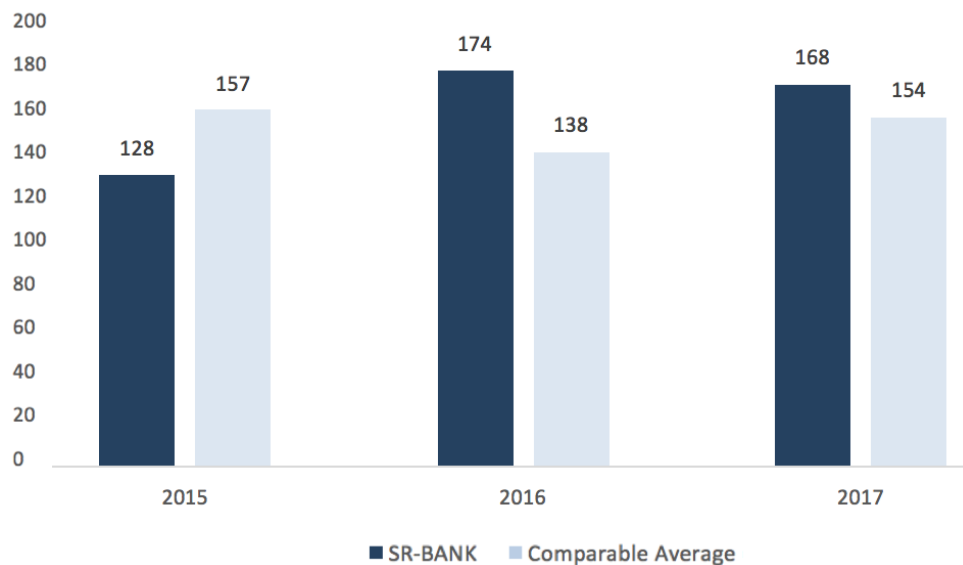
The Liquidity Coverage Ratio (LCR) requirements are intended to reduce the banks liquidity risk. It states that, banks must hold an adequate stock of liquid

assets to meet their payment obligations for a 30-day period of financial market distress (Finanstilsynet, 2017a).

Equation 10 - Liquidity coverage ratio

$$LCR = \frac{\text{High Quality Liquid Assets}}{\text{Total Net Cash Outflows}}$$

Figure 20 - SR-BANK's LCR vs CA



Norwegian banks started to report their LCR ratio in 2015, thus there are only three years to compare. SR-BANK reports a higher LCR ratio than CA for 2017 and 2016, while in 2015 their LCR was under the CA. All banks report a LCR above 100 for all years (except Sparebanken SMN which don not report LCR for 2015). Thus, SR-BANK and its peers have met the yearly requirements with a solid buffer. Furthermore, SR-BANK's liquidity reserve is NOK 32,3 billion at year-end 2017, and the group has an additional NOK 19,7 billion in home mortgages ready for covered bond funding. The liquidity buffer indicates a survival period of 32 months at the end of 2017 without access to external funding (Sparebank 1 SR Bank, 2017b). Hence, SR-BANK is well equipped to meet its payment obligations for a 30-day period of financial market distress. Thus, the LCR for SR-BANK is satisfying.

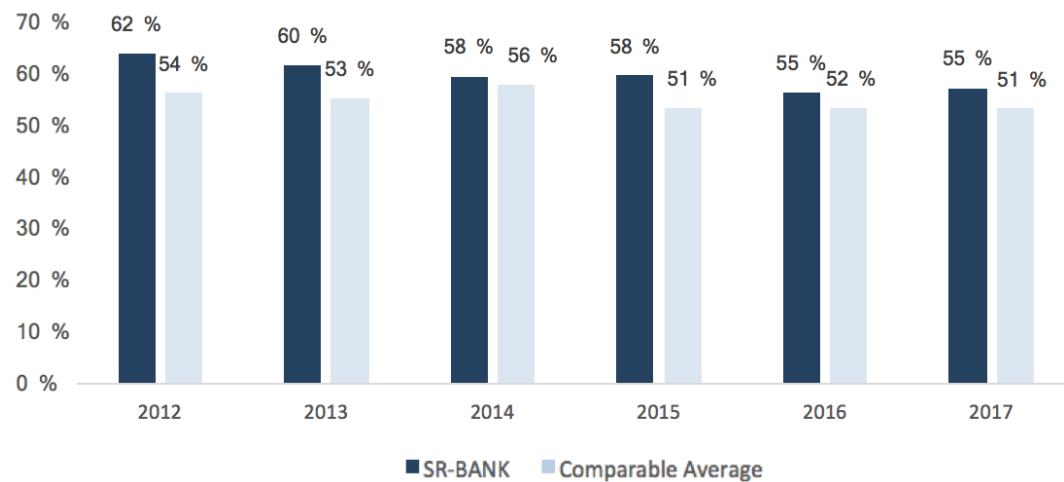
6.4.2 Deposit to Loan Ratio

The deposits-to-loan ratio (DTL) is a commonly used ratio for assessing a banks liquidity. A high DTL will be beneficial, on the basis that deposits from customers are considered the cheapest financing method.

Equation 11 - Deposits-to-loan ratio

$$DTL = \frac{\text{Customer Deposits}}{\text{Gross Loans}}$$

Figure 21 - SR-BANK`s DTL vs CA



SR-BANK`s DTL is above CA for all years in the period. Furthermore, SR-BANK`s DTL has been stable throughout the entire period, fluctuating between 55,3 % and 61,7 %. The lowest DTL was reported in 2016. This was primarily due to the buyback of loan portfolios from SpareBank 1 Boligkreditt AS, but also due to lower volume of deposits (Sparebank 1 SR-Bank, 2016a). According to the European Banking Federation (EBF) the average DTL ratio of Norwegian banks are 57% (EBF, 2016). Thus, SR-BANK and CA are aligned with what is considered a normal state. Further, an overview of SR-BANK`s lending and deposits growth is given.

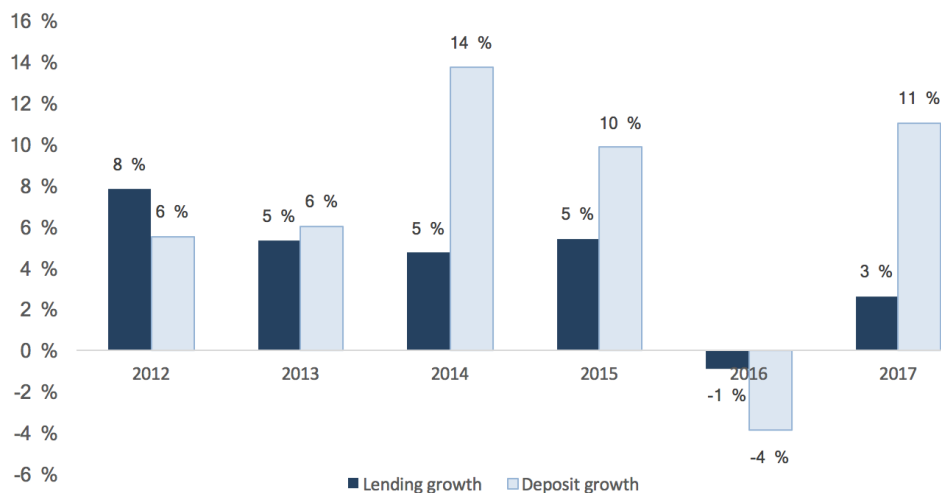
Figure 22 - SR-BANK's lending and deposits growth

Figure 22 displays SR-BANK's lending and deposit growth. Both lending and deposits growth was negative in 2016. This was due to a combination of greater competition in the market for home mortgages, slightly lower growth in the Norwegian economy, and weak to negative price growth for homes in Rogaland (Sparebank 1 SR-Bank, 2016a). Furthermore, lending growth and deposit growth have had a quick uptake during 2017, ending at respectively 3 % and 11 %. The increase in deposits is primarily due to larger deposits from public sector customers (Sparebank 1 SR-Bank, 2017b).

6.5 Financial Solidity

Financial solidity refers to the company's ability to pay its long-term obligations (Banken & Busch, 1999). Banks with strong financial solidity will be attractive borrowers, especially under abnormal market conditions. Strong financial solidity over time will therefore be considered a competitive advantage. To assess SR-BANK's financial solidity, an analysis of the common equity tier 1 capital ratio and the leverage ratio will be conducted.

6.5.1 Common Equity Tier 1 Capital Ratio

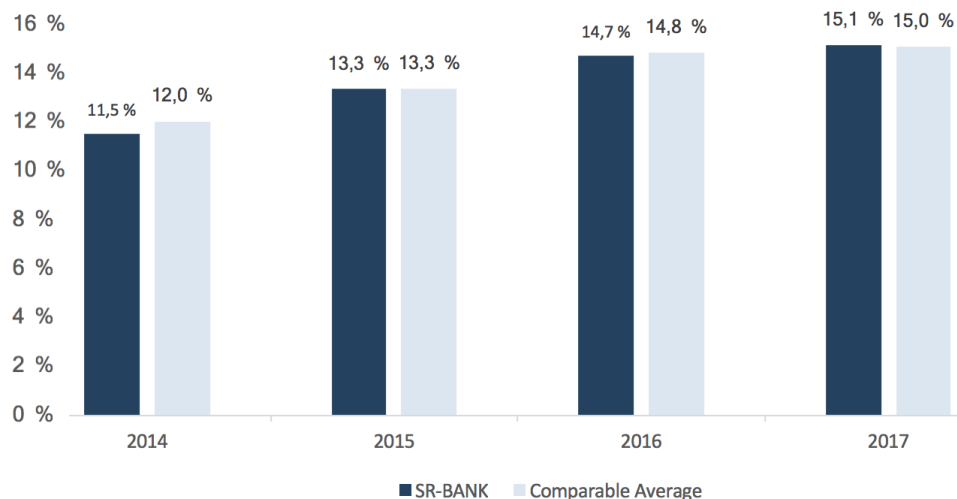
Common equity tier 1 (CET1) capital consists of equity capital less regulatory deductions. This is divided by the bank's total risk-weighted assets to get the CET1 capital ratio. The CET1 capital ratio works as an indication of how well a bank can withstand financial stress and remain solvent. From 31.12.2017, the total CET1 capital ratio requirement under Pillar 1 will be 12 %. SR-BANK's long-

term goal is to achieve a CET1 capital ratio of 15.0 % (Sparebank 1 SR-Bank, 2017b).

Equation 12 - Common equity tier 1 capital ratio

$$\text{Common Equity Tier 1 ratio} = \frac{\text{Common Equity Tier 1 Capital}}{\text{Risk Weighted Assets}}$$

Figure 23 - SR-BANK's CET1 capital ratio vs CA



SR-BANK has significantly strengthened its CET1 capital over the last few years. It has increased from NOK 4.6 billion in 2008 to NOK 18.1 billion in 2017. Moreover, SR-BANK's CET1 capital ratio has increased from 11,5 % in 2014 to 15,1 % in 2017. Furthermore, figure 23 indicates that SR-BANK's CET1 capital ratio is almost identical with CA. The total CET1 capital ratio requirement for SR-BANK, inclusive of the countercyclical buffer and Pillar 2 premium, as of 31 December 2017 was 14.0 %. This requirement is met by a good margin. SR-BANK's CET1 capital ratio has remained strong and in line with CA for the entire period. Hence, it indicates that SR-BANK can withstand financial stress and remain solvent.

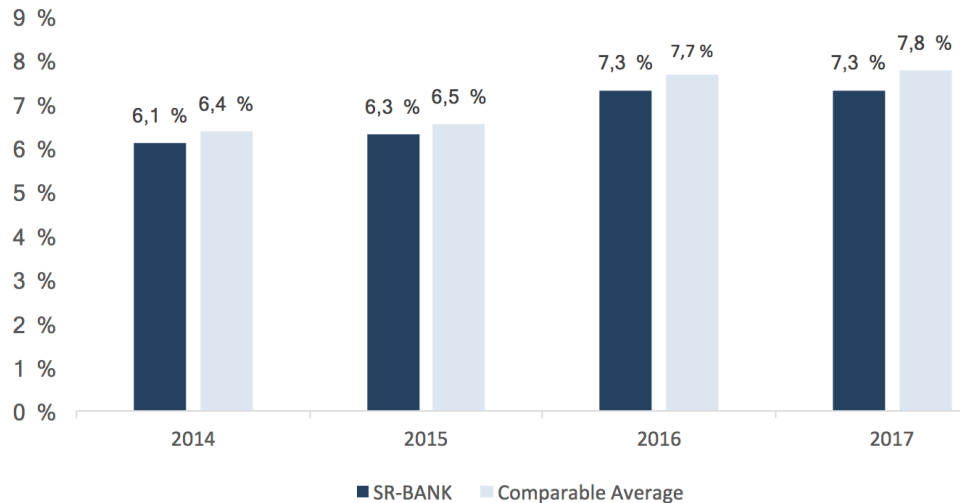
6.5.2 Leverage Ratio

Leverage ratio is a new monitoring tool implemented in the Basel III framework which will allow authorities to assess the risk of excessive leverage in banks (Finanstilsynet, 2017f). The minimum leverage ratio is 3 % and the buffer requirement is 3 %. However, the Norwegian financial authorities recommend a minimum requirement of 6 % for Norwegian banks (Finanstilsynet, 2017d).

Equation 13 - Leverage ratio

$$\text{Leverage Ratio} = \frac{\text{CET1 Capital}}{\text{Total Assets}}$$

Figure 24 - SR-BANK's leverage ratio vs CA



SR-BANK's leverage ratio is slightly lower than CA for all reported years. However, SR-BANK's leverage ratio is above the minimum requirement and the FSA's recommendation of 6 % throughout the period. Furthermore, the leverage ratio has increased in line with the CA. One reason why SR-BANK is under CA is the strong numbers reported by Sparebanken Sør. The bank reports a leverage ratio of 8,6 % in 2016 and 9,2 in 2017 which increases the CA.

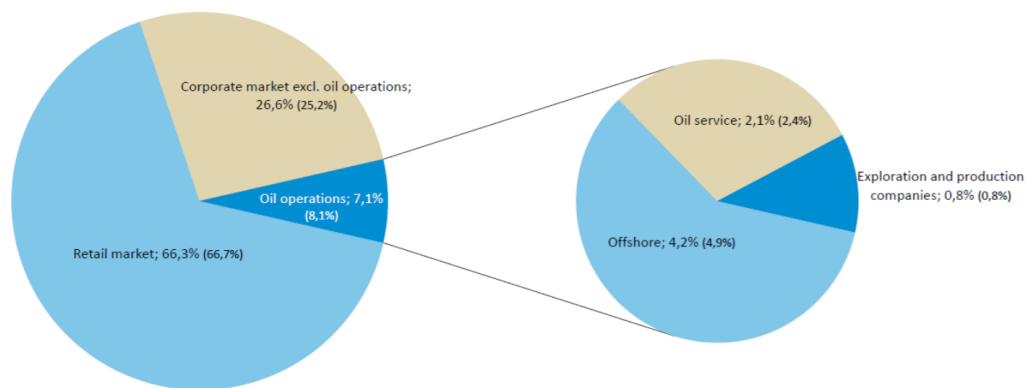
6.6 Credit Quality

The credit quality of a bank is a measure of the credit risk associated with the bank's loan portfolio, which is the risk of loss resulting from the counterparties' inability or unwillingness to fulfil their obligations. Credit risk is a determining factor for obtaining long term profitability (Dahl et al., 1998). An evaluation of the credit quality of the loan portfolio is therefore an important factor in valuation. To assess SR-BANK's credit quality, their loan portfolio will be presented and an analysis of the loan-to-value (LTV) ratio, default level and probability of default will be conducted.

6.6.1 Loan Portfolio

Figure 25 gives an overview of SR-BANK’s loan exposure by sector, split by retail and corporate market, as of 31.12.2017. Total gross loans at year-end 2017 amounted to NOK 172.5 billion.

Figure 25 - SR-BANK’s loan exposure by sector (Sparebank 1 SR-Bank, 2017c)



6.6.1.1 Retail Customers

The largest share of the loan exposure for SR-BANK is retail customers which amounts to 66,3 % of the total loan portfolio. The retail market mostly consists of mortgages in the Rogaland area. The exposure to retail customers has been stable during the last year, and by the end of 2017 it amounted to NOK 104,3 billion. Moreover, 98 % of the loan exposure in the retail market consists of loans that are smaller than NOK 10 million (Sparebank 1 SR-Bank, 2017b).

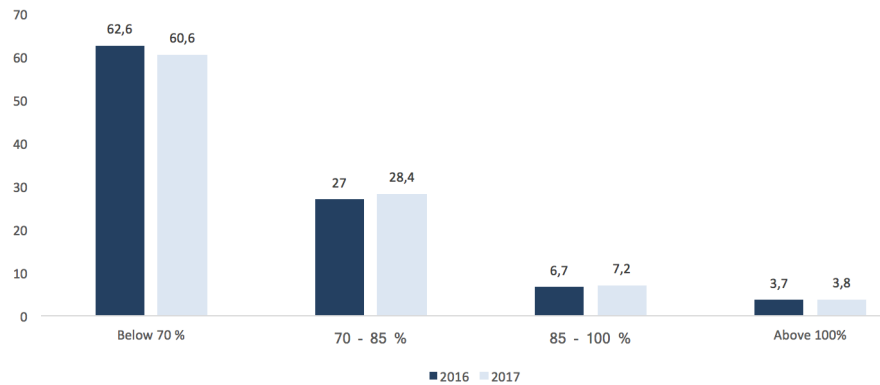
6.6.1.2 Corporate Customers

Loans to corporate customers amounts to 33,7 % of the total loan portfolio, where 7,1% is linked to offshore, oil services, and oil and gas. Furthermore, the commercial property portfolio represents the banks greatest concentration in a single sector, and accounts for 14,5 % of the total loan exposure. However, this portfolio is characterized by lending to commercial properties with long-term contracts and financially solid tenants (Sparebank 1 SR-Bank, 2017c).

6.6.2 Loan-to-Value

Figure 26 illustrates the development of the loan-to-value (LTV) ratio in the retail market portfolio from 2016 to 2017.

Figure 26 - SR-BANK's LTV ratio for the retail market portfolio (Capital Management, 2017)



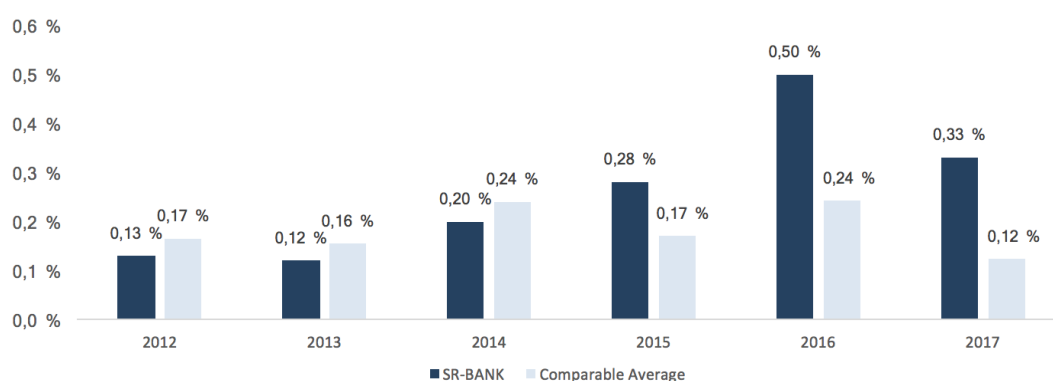
The calculation of the LTV ratio is based on the collateral's market value and is shown as total-distributed LTV ratio. The market value of housing in SR-BANK's market area has been weak in recent years. This means that the proportion of loans within 70 % of the assessed value of the collateral has decreased slightly since 2016. The proportion of loans with LTV ratio below 85 % is high. Moreover, 89 % of the lending exposure at the end of 2017 is within 85 % of assessed security values (Sparebank 1 SR-Bank, 2017c).

6.6.3 Default Level

The default level indicates how much of the bank's loans that are defaulted.

Equation 14 - Default level

$$Default\ level = \frac{Gross\ Defaults}{Gross\ Loans}$$

Figure 27 - SR-BANK's default level vs CA

SR-BANK's default level was below CA from 2012 to 2014. Then, from 2014 to 2017, the banks default level has been higher than CA. The analysis of SR-BANK's loan portfolio indicated that the bank is highly exposed to changes in the housing market and at the same time changes in the oil industry. After the oil price decline in 2014, the bank's default level has risen sharply. However, in 2017 the level has started to decrease which indicates that the worst losses from the downturn in the oil industry is over.

6.6.4 Probability of Default in the Loan Portfolio

SR-BANK manages the credit quality of financial assets in accordance with its internal credit rating guidelines (Sparebank 1 SR-Bank, 2017b). Thus, a comparison with other banks can be misleading. Table 6 presents the probability of default for the loan portfolio. The remaining percentage that is not displayed in table 6 are assets that are defaulted or impairment losses in the period. For example, a PD of 0.00 – 0.50 % indicates that there is a probability of default between 0.00 and 0.50 % over a 12-month period, based on a long-term outcome (Sparebank 1 SR-Bank, 2017c).

Table 6 - SR-BANK's probability of default (PD) in the Loan Portfolio

NOK Billion	PD 0.00 - 0.50 %	PD 0.50 - 2.50 %	PD 2.50 - 5.00 %	PD 5.00 - 99.99 %
Net loans				
Retail market	81,67	19,279	1,215	1,733
<i>% of Total Loans</i>	78,6 %	18,6 %	1,2 %	1,7 %
Corporate market	16,867	33,546	10,327	5,547
<i>% of Total Loans</i>	25,4 %	50,6 %	15,6 %	8,4 %
Total Net Loans	98,537	52,825	11,542	7,28
<i>% of Total Loans</i>	58 %	31 %	7 %	4 %

SR-BANK states that credit risk is managed via the framework procedures for granting credit, monitoring commitments and portfolio management. Table 6

indicates that 78.6 % of net loans to the retail market is within the lowest PD of 0.00 – 0.50 %. Moreover, only 1.7 % of net loans to the retail market is within the highest PD of 5.00 – 99.99 %. Considering the fall in housing prices and the unemployment rate in SR-BANK's areas the last year, the banks retail customer portfolio seems robust based on the internal credit rating. However, table 6 indicates that the banks loans to the corporate market have a higher PD overall. 8.4 % of net loans to the corporate market is in the highest PD category of 5.00 – 99.99 %. Hence, net loans to the corporate market are considered to have a lower internal credit rating.

Overall, 58 % of the bank's total loans are within the lowest PD and only 4 % are within the highest. Hence, the internal credit rating indicates that the bank's loan related assets have a low PD overall and thus a high internal credit rating. Furthermore, the bank has managed to maintain a loan portfolio with good credit rating despite the last year's downturn in the economy.

6.7 Summary of the Financial Statements Analysis

6.7.1 Profitability

SR-BANK's ROE has been above CA in 4 of 6 years, and above 10 % the entire analysis period. Moreover, the banks ROE target of 11 % was reached the last year. SR-BANK's stable ROE indicates a strong profitability in the period. When the bank's ROE is seen in conjuncture with the banks equity ratio, there are indications that SR-BANK has been more profitable than its peers from 2012 – 2015. Furthermore, SR-BANK's cost/income ratio has been below CA for all years in the period except in 2012 and 2017. The ratio has decreased during the period which may indicate that the bank has increased the efficiency of its operations. SR-BANK's net interest margin has been below CA from 2012 to 2015. However, in the last two years, the ratio has increased and in 2017, the net interest margin was the highest in the period, ending at 1,52 %. Hence, the analysis indicates strong profitability in the period.

6.7.2 Liquidity

SR-BANK's liquidity buffer indicates a survival period of 32 months at the end of 2017 without access to external funding. Further, SR-BANK reports a higher LCR

than CA for 2016 and 2017. The bank has met the yearly LCR requirements with a solid buffer. Furthermore, SR-BANK's DTL ratio is above CA for all years in the period. The DTL has been stable throughout the entire period, fluctuating between 55,3 % and 61,7 %. Further, both lending and deposits growth have risen in 2017. Hence, the analysis indicates strong liquidity in the period.

6.7.3 Solidity

SR-BANK solidity has been strengthened in line with new regulations. The CET1 capital ratio has increased from 11,5 % in 2014 to 15,1 % in 2017. Further, SR-BANK's CET1 capital ratio has remained strong and in line with CA for the entire period. Thus, it indicates that SR-BANK can withstand financial stress and remain solvent. Furthermore, SR-BANK's leverage ratio is slightly lower than CA for all reported years. However, SR-BANK's leverage ratio is above the minimum requirement and the FSA's recommendation of 6 % throughout the period. Hence, the analysis indicates strong solidity in the period.

6.7.4 Credit Quality

SR-BANKS loan exposure consists of both retail and corporate customers. The largest share of the loan exposure for SR-BANK is retail customers which amounts to 66,3 % of the total loan portfolio. Exposure to oil-related activities accounts for 7,1 % of the total loan portfolio. Moreover, the commercial property portfolio represents the bank's greatest concentration in a single sector, and accounts for 14,5 % of the total loan exposure. Hence, SR-BANK is highly exposed to the real estate market and the changes in the oil industry. Further, SR-BANK's default level has been considerably higher than CA the last three years. After the oil price decline in 2014, the bank's default level has risen sharply. Furthermore, 58 % of the bank's total loan related assets are within the lowest probability of default (PD) and only 4 % are within the highest. Hence, the internal credit rating indicates that the bank's loan related assets have a low PD overall and thus a high internal credit rating.

7.0 The Free Cash Flow to Equity Model

This chapter presents the valuation of SR-BANK by applying the FCFE model. Firstly, SR-BANK's cost of equity is identified. Secondly, the bank's financial statements are adjusted and normalized. Thirdly, the financial statements are reorganized. Fourthly, the balance sheet and income statement are forecasted. Fifthly, the FCFE model is applied and the equity value of the bank is obtained. Lastly, the assumptions in the model are discussed and analyzed in conjunction with a sensitivity analysis.

7.1 Finding Cost of Equity

To find the value of SR-BANK by using the FCFE model, the bank's future cash flows must be discounted back at the cost of equity. In order to identify SR-BANK's cost of equity, the Capital Asset Pricing Model (CAPM) will be applied. The model is presented in equation 15 and consists of three key components; the risk-free rate, the equity risk premium and the beta, which will be presented and calculated in the following sections.

Equation 15 - CAPM

$$E(R_i) = r_f + \beta_i [E(R_m) - r_f]$$

where $E(R_i)$ = expected return of security i
 r_f = risk-free rate
 β_i = stock's sensitivity to the market
 $E(R_m)$ = expected return of the market

7.1.1 Risk Free Rate

In its most general form, the risk-free rate is defined as the return on a portfolio of an asset that has no covariance with the market, represented by a CAPM beta of 0 (Koller et al., 20015).

Both academics and practitioners have used government bonds yields as risk-free rates, but there have been differences on whether to use short-term or long-term rates (Damodaran, 2008). Ideally, each cash flow should be discounted using a government bond with the same maturity. However, this adds more complexity to the valuation model and the improvements are often minimal.

PwC (2017) have in collaboration with Norske Finansanalytikeres Forening (NFF) conducted a survey about the risk-free rates in the Norwegian market. The survey finds that 10-year government bond is the preferred choice of risk-free rate in the Norwegian market (PwC, 2017). Hence, the 10-year government bond yield at 1,59 %, as of 31.12.2017, will be used as the risk-free rate.

7.1.2 Equity Risk Premium

The Equity Risk Premium (ERP) is defined as the excess return of equities over risk-free securities (Koller et al., 2015). In other words, it is the required compensation by investors to hold risky assets.

Similar to a stock's expected return, the expected return on the market is unobservable and thus no single model for estimating the ERP has gained universal acceptance (Koller et al., 2015). However, practitioners mainly rely on three estimation approaches: survey premiums, historical premiums and forward-looking premiums (Damodaran, 2015). Further in this section, these three approaches will be discussed before a final ERP will be chosen.

7.1.2.1 Survey Premiums

In the survey premium approach, investors and managers are asked to assess the risk premium in the market and the consensus is used as a reference point for the ERP.

Fernandez et al., (2017) have surveyed over 6932 economic professors, analysts and managers in order to obtain a measurement of the ERP per country. The report finds an ERP of 5 - 5,5 % in major developed markets. KPMG (2018) have conducted another survey, similar to the findings of Fernandez et al., (2017), they estimate the ERP to be ~ 5,5 %. Furthermore, PWC have surveyed Norwegian managers since 2012 and the average ERP have fluctuated around 5 % (PWC, 2017).

Table 7 - Survey premiums

	Fernandez et al. 2017	KPMG	PWC
Survey Premiums	5-5,5%	5,50 %	5,00 %

Surveys are appealing because they extract the forward-looking views on the ERP. However, critics of the survey argue that the survey data are weak and noisy, with various biases (NBIM, 2016). Furthermore, it is often problematic to find a subset of investors that is representative for the whole population (Damodaran, 2015).

7.1.2.2 Historical Premiums

Historical premiums use regressions based on historical data to identify the ERP (NBIM, 2016). To identify historical premiums for the Norwegian market, several regression analyses will be conducted.

Table 8 and 9 presents the regression analysis conducted on the Norwegian market with different time horizon and averaging method. The risk premiums are calculated based on return from OSEBX and 10-year Norwegian government bonds. The tables indicate that the results vary from 3,5 - 8,8 % depending on time horizon and averaging method.

Table 8 - Historical ERPs (arithmetic average)

Arithmetic Average	OSEBX	10 Year T.Bond	Risk Premium
1996-2017	14,2 %	6,6 %	7,6 %
2008-2017	9,8 %	5,7 %	4,0 %

Table 9 - Historical ERPs (geometric average)

Geometric Average	OSEBX	10 Year T.Bond	Risk Premium
1996-2017	10,0 %	6,5 %	3,5 %
2008-2017	13,7 %	4,9 %	8,8 %

The main advantages by using historical risk premiums is that they are straight forward to implement and are fairly stable (JP-Morgan, 2008). However, JP-Morgan (2008) points to the deep dependence on both the historical window and the averaging method as the main disadvantage.

7.1.2.3 Forward Looking Models

Forward looking models incorporates expectations about dividends and growth in the market to extract an implied ERP (NBIM, 2016). To identify the forward looking ERP the multi-stage DDM will be applied to the Norwegian market.

The multi-stage DDM model is a forward looking model which attempt to capture the different stages of growth rates. Companies go through life cycles where cash flow growth may vary substantially. To capture the different life cycles of companies, the model incorporates that high initial growth rates decline to a lower steady-state growth in the long run (NBIM, 2016). The model can be formulated as in equation 16 (Pastor et al., (2008) and Li et al., (2013))

Equation 16 - Multi-stage DDM

$$P_t = \sum_{k=1}^T \frac{FE_{t+k}(1 - b_{t+k})}{(1 + r_e)^k} + \frac{FE_{t+T+1}}{r_e(1 + r_e)^T}$$

- Where, P_t = Price at time t
- FE_{t+k} = Earnings forecast for year t+k
- r_e = Implied cost of equity
- T = Number of different growth stages

For the Norwegian market, a 5-year high growth period with consensus estimates from Bloomberg have been used to calculate the ERP. After the high growth period, the steady state growth will be set equal to the risk-free rate of 1,59 %. The model result in an ERP 5,10 %.

Table 10 - ERP using multi-stage DDM

	Multi-Stage DDM
Norway (OSEBX)	5,10 %

Forward-looking models use market prices, provide timely and fast-moving estimates of the ERP, and do not rely exclusively on historical data. However, estimates tend to be sensitive to the inputs of the model and especially sensitive to the assumed growth rates of future cash flows (NBIM, 2016).

7.1.2.5 Choosing ERP

No single model for estimating the ERP has gained universal acceptance (Koller et al., 2015). The survey approach indicates an ERP of ~ 5 % for the Norwegian market. However, critics of the survey argue that the survey data are weak and noisy, with various biases. The historical premiums differ significantly based on both the historical window and the averaging method used in the calculation. Moreover, historical ERP approaches are backward looking. The historical ERP approaches indicates an of ERP 3,5 – 8,8 % for the Norwegian market. Forward-looking models, however, are relatively straightforward to implement. The multi-stage DDM result in an ERP of 5,10 % and captures the current expectations about dividends and growth in the market. Hence, 5,10 % will be used as the ERP for the Norwegian market.

Table 11 - Summary of ERP models

Equity Risk Models	ERP
Survey Models	
Fernandez et al. 2017	5 - 5,5 %
KPMG	5,50 %
PWC	5,50 %
Historical Models	
Arithmetic Average	4 - 7,6 %
Geometric Average	3,5 - 8,8 %
Forward Looking Model	
Multi-Stage DDM	5,10 %

7.1.3 Beta

According to the CAPM, a stock's expected return is driven by beta, which measures how much the stock and the entire market move together (Koller et al., 2015) The beta of an asset can be estimated by regressing the returns on any asset against returns on an index representing the market portfolio, over a reasonable time period (Damodaran, 2014). In order to find SR-BANK's beta, the regression approach will be used, and the regression equation is presented in equation 17. Moreover, the market index, time-period and return-interval will be defined.

Equation 17 - Simple regression

$$R_i = \alpha + \beta R_m + \varepsilon$$

Where, R_i = Return on stock i

α = Regression intercept

$$\begin{aligned}\beta &= \text{Regression slope} \\ R_m &= \text{Return on the market portfolio (OSEBX)} \\ \varepsilon &= \text{Random error term}\end{aligned}$$

7.1.3.1 Market Index

In the CAPM, the market index equals the value-weighted portfolio of all assets, both traded (e.g., stocks and bonds) and untraded (e.g., private companies and human capital). Since the true market portfolio is unobservable, the OSEBX have been used to proxy the market index. The OSEBX is an investable index, which consists of a representative selection of companies from Oslo Stock Exchange and is thus considered as a good proxy.

7.1.3.2 Time-Period and Return Interval

There is no common standard for the appropriate time-period. However, using five years of monthly data originated as a rule of thumb during early tests of the CAPM (Koller et al., 2015). Furthermore, the objective is not to estimate the best beta over the last period but to obtain the best beta for the future (Damodaran, 2014). Thus, three time periods have been used further in this section to compare the results. Firstly, a time-period of 5 years as recommended by Koller et al., (2015). Secondly, a time period of 6,25 years because it contains all data since SR-BANK was listed on the OSEBX. Lastly, a longer time-period of 10 years which uses both unlisted and listed data for SR-BANK. Furthermore, daily, weekly and monthly returns will be used.

7.1.3.3 Regression Results

Table 12-14 presents the results from the regression.

Table 12 - 5-year beta

Historical Data Years Data Frequency	5y		
	Daily	Weekly	Monthly
Beta	0,76	0,81	0,92
SE	0,03	0,08	0,23

Table 13 - 6,25-year beta

Historical Data Years Data Frequency	6,25y		
	Daily	Weekly	Monthly
Beta	0,71	0,85	1,09
SE	0,03	0,07	0,19

Table 14 - 10-year beta

Historical Data Years Data Frequency	10y		
	Daily	Weekly	Monthly
Beta	0,52	0,51	0,81
SE	0,02	0,08	0,10

The betas range from 0,51 to 1,09 and have considerable standard errors. Hence, the regression betas are affected by the time-period, the return-interval and the index. However, the main problem with the standard regression beta calculated is the large standard error. In order to increase the validity of the beta, Damodaran (2014) recommends using a bottom-up beta. Furthermore, the beta should be adjusted to better reflect the risk of the company. Hence, further in this section a bottom up beta will be calculated and then the beta will be Marshal Blume adjusted.

7.1.3.5 Bottom-up Beta

A bottom-up beta is derived from SR-BANK`s peer group and can reduce the standard error while at the same time capturing the forward-looking fundamentals of the beta (Damodaran, 2014).

This approach provides a more precise beta estimate for the firm for three reasons. Firstly, the bottom-up beta has a lower standard error than a simple regression beta because a weighted average of the unlevered betas in the industry is used (equation 18). Thus, the standard error will be reduced by the root of number of firms. Secondly, the beta reflects the firm as it exists today since it uses the current industry conditions in the calculations. Lastly, the levered beta is computed using the forecasted capital structure of the firm, rather than the average leverage over the period of the regression (Damodaran, 2014).

Equation 18 - Standard error of the industry beta

$$SE_{Average\ Beta} = \frac{Average\ SE_{Beta}}{\sqrt{n}}$$

Where, $SE_{Average\ Beta}$ = Standard error of the average beta
 $Average\ SE_{Beta\ Estimate}$ = Average of standards errors for the beta
 n = Number of firms

The bottom-up beta can be estimated in four steps. Firstly, the comparable companies that make up SR-BANK`s industry must be identified. Because of data availability some of the comparable companies identified in chapter 6.2 cannot be used to calculate the industry beta. Hence, a new peer group has been identified for this analysis.

Table 15 – Comparable companies with their capital structure

Comparables	Weight Equity	Weight Debt	Weight Preferred
Sparebank 1 SMN	17 %	84 %	0 %
DNB	19 %	80 %	1 %
Sparebank 1 Nord Norge	20 %	79 %	2 %
Nordea	16 %	84 %	0 %
Handelsbanken	13 %	87 %	0 %
Danske Bank	11 %	88 %	1 %

Secondly, the levered industry beta must be estimated. The regressions to find the industry betas have been conducted with a time-interval of 5-years, with weekly returns. The average of the industry`s levered betas is calculated to be 0,870.

Table 16 – Comparable companies with levered industry beta

Comparables	Beta 5y weekly
Sparebank 1 SMN	0,681
DNB	1,088
Sparebank 1 Nord Norge	0,588
Nordea	1,052
Handelsbanken	1,112
Danske Bank	0,697
Levered Industry Beta	0,870

Thirdly, the levered industry beta reflects the industry capital structure, and must be unlevered with equation 19, by using the industry capital structure and a tax rate. The industry unlevered beta is calculated to be 0,173, as presented in table 17.

Equation 19 - Unlevered beta

$$Unlevered\ beta = \frac{Regression\ beta}{(1 + (1 - \tau) \frac{D}{E})}$$

Where, τ = Industry tax rate
 $\frac{D}{E}$ = Debt to equity ratio

Table 17 – Industry unlevered beta and capital structure

	Unlevered Beta	Weight Equity	Weight Debt	Weight Preferred
Industry	0,173	16 %	84 %	1 %

Lastly, the unlevered industry beta is levered up with equation 20, by using the forecasted steady state capital structure of SR-BANK.

Equation 20 - Levered company beta (Damodaran, 2014)

$$\text{Levered beta} = \frac{\text{Unlevered beta}}{(1 + (1 - \tau) \frac{D}{E})}$$

Where, τ = Industry tax rate

$$\frac{D}{E} = \text{Debt to equity ratio}$$

Table 18 – SR-BANK’s levered beta and forecasted steady-state capital structure

	Levered Beta	Weight Equity	Weight Debt
SR-BANK	1,383	10 %	90 %

Hence, SR-Bank a levered beta is 1,383. Compared with SR-BANK’s single regression beta, the standard error from the bottom-up beta is approximately three times less than SR-BANK’s single regression beta (table 19). The Bottom-up beta of 1,383 will be used further to calculate SR-BANK’s cost of equity.

Table 19 –Comparison of SR-BANK’s bottom-up beta and single regression beta

5 Year Weekly	Bottom-up Approach	Regression Approach
Beta	1,383	0,815
SE	0,026	0,075

7.1.3.6 Marshall Blume Adjustment

Marshall Blume (1975) discovered that beta coefficients were not strictly stationary and tended to regress towards 1 over time. The explanation he offered in 1975 was that new projects for high-risk firms’ (e.g., beta > 1) tend to have less extreme risk characteristics than existing projects, which will push the beta towards 1 from the upside. Conversely, new projects for low-risk firms’ (e.g., beta < 1) tend to take on more risk than existing projects, which will push the beta towards 1 from the downside. Thus, Blume (1975) offers a simple adjustment to make the estimated beta tend towards 1 (Blume, 1975). This adjustment is generally accepted in the market and Bloomberg report Blume adjusted betas as a standard.

Equation 21- Marshall Blume Beta

$$\beta_{adjusted} = \frac{2}{3}\beta_{estimated} + \frac{2}{3}\beta_{mean\ reverting\ level}$$

Hence, SR-BANK`s beta of 1,383 will be adjusted to account for the mean reverting property using the Marshall Blume adjustment. The final beta result is 1,256.

Table 20 - SR-BANK`s Marshall Blume adjusted beta

SR-BANK	Adjusted Beta	Raw Beta
Beta	1,256	1,383

7.1.4 Cost of Equity

The banks risk-free rate, equity risk premium and beta have been calculated. These components will derive the banks cost of equity using the CAPM model (equation 15). Hence, SR-BANK`s cost of equity is 8,00 %. This number represents SR-BANK`s discount factor and will be used to discount the banks cash flows in later sections.

Table 21 - SR-BANK`s cost of equity

CAPM	
Risk-free Rate	1,59 %
Beta	1,256
ERP	5,10 %
Cost of Equity	8,00 %

7.2 Adjusting and Normalizing the Financial Statements

The purpose of adjusting and normalizing the financial statements is to identify the continuing operations of SR-BANK. Financial statements may contain arbitrary income/expenses, and other measurement errors that do not reflect the firm`s continuing operations. (Damodaran, 2009). Hence, the earnings obtained from the accounting statements must be adjusted to be more appropriate for valuation. Further in this section, three parts of SR-BANK`s financial statements will be analysed and adjusted. Firstly, extraordinary items. Secondly, excess cash and marketable securities. Lastly, abnormal losses.

7.2.1 Extraordinary Items

Operating income that is used as a base for projections should reflect continuing operations and should not include any items that are extraordinary (Damodaran, 2016).

A thorough assessment of SR-BANK's annual report for the analysis period have indicated that the bank has extraordinary items that should be adjusted. SR-BANK made changes in their current pension scheme (APF) with effect from 01.01.2011. This change has resulted in an extraordinary reduction in expenses which amount to NOK 45 million in 2012 and NOK 2 million in 2014 and NOK 226 million in 2015. Hence, the costs that has resulted from the new APF scheme should be excluded to better reflect continuing operations.

Table 22 - Costs related to the new APF scheme

NOK Million	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Costs Related to the new AFP Scheme	45	0	2	226	0	0

Furthermore, in 2013, SR-BANK's planned personnel related restructuring amounted to NOK 37 million in 2013 and NOK 13 million in 2014 (Sparebanken 1 SR-Bank, 2013). Hence, the costs related to personnel restructuring are considered extraordinary expenses and will be excluded to better reflect continuing operations.

Table 23 - Cost related to personnel restructuring

NOK Million	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Costs Related to Personnel Restructuring	0	37	13	0	0	0

7.2.2 Excess Cash and Marketable Securities

Excess cash refers to cash above the amount required for day-to-day operations (Koller et al., 2015). Marketable securities refer to near cash investments e.g. short-term government securities or commercial paper (Damodaran, 2005).

Excess cash and marketable securities can be included as a part of total assets and valued on a consolidated basis. However, the income from cash and marketable securities are nearly risk-free and should not be discounted with cost of equity (Damodaran, 2005). Thus, excess cash and marketable securities will be valued individually at the risk-free rate. Once the value of operating assets is obtained,

the value of the excess cash and marketable securities will be added back to arrive at the equity value of SR-BANK (equation 5).

7.2.2.1 Marketable Securities

SR-BANK's marketable securities consist of various equity instruments, bonds and derivatives (Sparebank 1 SR-Bank, 2016). Table 24 presents the net income from marketable securities and as percentage of pre-tax income for the bank. The net income from marketable securities will be separated from the operating income and valued separately. Moreover, the marketable securities will be valued at their market value as of 31.12.2017.

Table 24 - SR-BANK's marketable securities

NOK Million	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Net income/loss from Marketable Securities	153	36	128	-239	23	94
Percentage of Pretax Income	8,7 %	1,5 %	4,9 %	-11,1 %	1,1 %	3,6 %

7.2.2.2 Excess Cash

Excess cash is unnecessary for core operations. Rather than mix excess cash with core operations, excess cash should be valued separately (Koller et al., 2015)

Companies do not disclose how much cash they deem necessary for operations e.g. working cash. To estimate the size of working cash, Damodaran (2005) and Koller et al., (2015) recommends using the industry average as a proxy for working cash, and any cash above the industry average should be considered excess cash. SR-BANK's comparable firms have been used to define the industry average. Table 25 presents SR-BANK's cash and cash equivalents. Moreover, it presents the industry average and the banks excess cash for the period. The table indicates that SR-BANK have excess cash in 2012 and 2016.

Table 25 - Excess cash

NOK Million	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Cash & Cash Equivalents for SR-BANK	1 314	1 265	1 847	931	1 079	207
Industry Average	810	2 154	2 493	1 411	590	1 714
Excess Cash	504	0	0	0	489	0

The excess cash is expected to earn the risk-free rate which is calculated to be 1,59 % (chapter 7.1.1). Table 26 presents the income from excess cash after

earning the risk-free rate. This income will be excluded from the adjusted and normalized pre-tax income.

Table 26 - Income from excess cash

NOK Million	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Income from Excess Cash	8,0	0,0	0,0	0,0	7,8	0,0

7.2.3 Abnormal Losses

Banks are exposed to credit risk. Thus, banks set aside loan loss provisions (LLPs) to cope with the extra credit risk as discussed in chapter 3.1.3.

Table 27 presents SR-BANK and the comparable bank's LLPs as a percentage of total loans in the period. The table indicates that SR-BANK has the highest loss average in the period, closely followed by Sparebanken SMN.

Table 27 - Loan loss provision for SR-Bank and peers

NOK Million	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	Average
SR-BANK							
Provision For Loan Loss	137	132	257	420	778	543	378
Provision for Loan Loss / Total Loans	0,13 %	0,11 %	0,18 %	0,27 %	0,49 %	0,31 %	0,25 %
Sparebanken Vest							
Provision For Loan Loss	147	280	410	184	40	33	182
Provision for Loan Loss / Total Loans	0,14 %	0,25 %	0,34 %	0,14 %	0,03 %	0,02 %	0,15 %
Sparebanken Sør							
Provision For Loan Loss	21	28	268	97	78	20	85
Provision for Loan Loss / Total Loans	0,06 %	0,07 %	0,33 %	0,11 %	0,09 %	0,02 %	0,11 %
Sparebanken SMN							
Provision For Loan Loss	135	100	112	182	524	349	234
Provision for Loan Loss / Total Loans	0,18 %	0,12 %	0,12 %	0,19 %	0,51 %	0,31 %	0,24 %

Table 28 presents SR-BANK's LLPs as a percentage of total loss and expected losses in the period. Moreover, the table indicates that the banks expected losses often deviates largely from the LLPs. However, the average provisions for loan loss of 0,25 % is relatively close to the average expected loss average of 0,23 %

Table 28 - SR-Bank's loan-loss ratios

NOK Million	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	Average
Provision for Loan Loss / Total Loans	0,13 %	0,11 %	0,18 %	0,27 %	0,49 %	0,31 %	0,25 %
Expected Annual losses %	0,30 %	0,27 %	0,25 %	0,22 %	0,17 %	0,15 %	0,23 %

To identify if SR-BANK has any abnormal losses, the expected loss average of 0,23 % has been used as a benchmark. Thus, 0,23 % will categorize normal

annual losses and any losses that are larger than 0,23 % will be categorized as abnormal losses. Table 29 presents SR-BANK`s abnormal losses.

Table 29 - SR-BANK`s abnormal losses

NOK Million	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Total Loans	109 513	120 273	141 620	155 188	157 638	172 554
Expected annual losses	330	322	361	334	274	258
Expected annual losses %	0,30 %	0,27 %	0,25 %	0,22 %	0,17 %	0,15 %
Normalized annual losses %	0,23 %	0,23 %	0,23 %	0,23 %	0,23 %	0,23 %
Normalized annual losses	249	273	322	352	358	392
Provision for loan losses	137	132	257	420	778	543
Abnormal losses	-112	-141	-65	68	420	151

7.2.4 Summary of Adjusted and Normalized Earnings

Table 30 presents the adjusted and normalized pre-tax income of SR-BANK. The table indicates that adjusted pre-tax income in 2012, 2013 and 2014 are lower than reported in SR-BANK`s accounting statement. In 2015, 2016 and 2017 the adjusted pre-tax income is higher than reported. The adjusted and normalized earnings will better reflect the continuing earnings of the bank and thus represent a better base for calculating future cash flows. Hence, the adjusted and normalized pre-tax earnings will be used further in the valuation of SR-BANK.

Table 30 - Adjusted and normalized pre-tax earnings

Adjusted and Normalized Earnings	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Pretax Earnings	1 761	2 347	2 601	2 146	2 163	2 610
Abnormal Losses	-112	-141	-65	68	420	151
Personell Restructuring	0	37	13	0	0	0
Costs Regarding AFP	-45	0	-2	-226	0	0
Net Income from Excess Cash	-8	0	0	0	-8	0
Net Income from Marketable Securities	-153	-36	-128	239	-23	-94
Adjusted and Normalized Pretax Earnings	1 443	2 207	2 419	2 227	2 552	2 667

7.3 Reorganizing the Financial Statements

To make the income statements more expedient for future predictions, the balance sheet and the income statement will be reorganized. This is conducted in order to identify and separate the main “blocks” in the financial statements that is most important when forecasting SR-BANK`s cash flows. Scope Ratings (2018) gives a comprehensive framework for forecasting banks financials and is thus used as a reference in the next sections.

Scope Ratings (2018) recommends to reorganizing the balance sheet and the income statement in the following way. Firstly, the balance sheet should be reorganized around loans and deposits, financial instruments, wholesale funding, other assets and shareholders' equity. Secondly, the income statement should be reorganized around the revenue block, the cost block, the cost of risk block, and the "below-the-line" block.

Hence, SR-BANK's income statement and balance sheet have been reorganized following Scope Ratings (2018) recommendations. The reorganized balance sheet and income statement are presented in figure 28 and 29.

Figure 28 - SR-BANK's reorganized income statement

NOK Million	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
The Revenue Block						
Interest Income	5 300	5 644	6 137	5 752	5 563	5 747
Interest Expense	-3 558	-3 525	-3 733	-3 159	-2 692	-2 585
Net Interest Margin	1 742	2 119	2 404	2 593	2 871	3 162
Net Commissions & Fees	1 029	1 380	1 726	1 527	1 439	1 518
<i>Commissions From Property Related Activities</i>	439	730	1 045	794	614	660
<i>Other Commissions</i>	590	650	681	733	825	858
Trading Income/Financial Investments	288	167	236	-135	160	198
Other Income	12	11	6	5	4	6
Net Revenue	3 071	3 677	4 372	3 990	4 474	4 884
The Cost Block						
Cash Costs						
<i>Salaries and Employee Benefits</i>	1 082	1 196	1 202	945	1 166	1 263
<i>General and Administrative Expenses</i>	719	749	766	833	786	830
Non Cash Costs						
<i>Depreciation of Tangible and Amortization of Intangible</i>	87	74	88	85	80	74
Total Costs	1 888	2 019	2 056	1 863	2 032	2 167
Total Pre-Provision Profits	1 183	1 658	2 316	2 127	2 442	2 717
The Cost of Risk Block						
Net Loan Loss Provisions (Normalized)	249	273	322	352	358	392
Total Cost of Risk	249	273	322	352	358	392
The "Below-the-line" Block						
Income from Ownership Interests incl. Dividends	290	388	542	439	494	436
Non-Recurring Items						
<i>Property Sale</i>	425	433	0	0	0	0
<i>Personell Restructuring</i>	0	37	13	0	0	0
<i>Costs Regarding AFP</i>	-45	0	-2	-226	0	0
<i>Net Income from Excess Cash</i>	-8	0	0	0	-8	0
<i>Net Income from Marketable Securities</i>	-153	-36	-128	239	-23	-94
Adjusted and Normalized Pretax Earnings	1 443	2 207	2 419	2 227	2 547	2 667
Income Tax	-400	-487	-506	-400	-403	-524
Adjusted and Normalized Net Income	1 043	1 720	1 913	1 827	2 144	2 143
Comprehensive Income	337	-55	-319	256	-116	8
Adjusted and Normalized Total Comprehensive Income	1 380	1 665	1 594	2 083	2 028	2 151

Figure 29 - SR-BANK's reorganized balance sheet

NOK Million	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Assets						
Retail Market	52 569	59 848	77 651	87 229	91 171	104 299
Corporate Market	55 723	59 128	62 880	66 705	66 497	67 883
Other	1 221	1 297	1 089	1 254	-30	372
Total Gross Loans	109 513	120 273	141 620	155 188	157 638	172 554
<i>Reserve For Loan Losses</i>	755	748	700	833	1 266	1 317
Total Net Loans	108 758	119 525	140 920	154 355	156 372	171 237
Total Derivative Assets	4 578	4 923	7 340	6 135	4 315	5 541
Total Other Assets	1 409	3 244	1 984	2 708	1 206	1 446
<i>Fixed Assets</i>	363	362	327	404	495	572
<i>Intangible Assets</i>	43	62	43	61	89	96
<i>Other Assets</i>	1 003	2 820	1 614	2 243	622	778
Investments in Associates	4 964	4 710	4 727	4 792	4 460	3 953
Total Securities	7 937	6 844	3	97	2 227	3 268
<i>Available-for-sale (AFS)</i>	3	7	3	97	36	62
<i>Held-to-maturity (HTM)</i>	7 934	6 837	0	0	2 191	3 206
"Balancing Post"	13 897	17 739	19 952	23 962	24 828	31 173
Total Assets	141 543	156 985	174 926	192 049	193 408	216 618
Liabilities						
Total Deposits	67 594	78 096	81 489	89 444	85 914	95 384
<i>Corporate Market and Public Sector %</i>	49 %	50 %	53 %	53 %	50 %	54 %
<i>Retail Market</i>	34 338	39 438	38 707	42 128	42 871	44 258
<i>Corporate Market and Public Sector</i>	33 256	38 658	42 782	47 316	43 043	51 126
Total Wholesale Funding	49 436	60 074	72 356	80 734	84 503	95 596
<i>ST Borrowings & Repos</i>	4 522	3 742	6 139	5 296	2 674	2 335
<i>Long-Term Debt</i>	44 914	56 332	66 217	75 438	81 829	93 261
<i>NFSR</i>						
Total Derivative Liabilities	2 282	2 013	3 317	2 786	2 515	3 787
Other Liabilities	2 086	2 369	2 155	1 534	1 507	1 475
Deferred Tax Liabilities	631	671	821	654	360	393
Balancing Post	7 508	377	206	637	681	487
Total Liabilities	128 906	142 929	159 523	175 135	175 120	196 729

7.4 Forecasting the Balance sheet and Income Statement

To find the value of SR-BANK using the FCFE method, forecasts regarding the banks cash flows must be developed. Thus, SR-BANK's balance sheet and income statement must be forecasted. The findings from the strategic analysis and the accounting statements analysis will be applied and creates the foundation for the assumptions.

7.4.1 Length of the Forecasting Period

The length of the forecasting period will be important for the outcome of the valuation. Koller et al., (2015) recommends developing an explicit forecast for several years and then value the remaining years by using a perpetuity formula where steady state performance is assumed. Damodaran (2016) recommends looking at three factors when considering how long a firm will be able to maintain high growth before entering a steady state.

Firstly, the size of the firm. Smaller firms are more likely to earn excess returns and maintain these excess returns than otherwise larger firms (Damodaran, 2016).

The strategic analysis from chapter 5 indicated that SR-BANK is ranked as the fifth largest bank in Norway based on gross lending and total assets. Thus, SR-BANK is considered a large bank in Norwegian scale.

Secondly, the existing growth rate and excess returns. Firms that have reported rapidly growing revenues or high excess returns in the current period are more likely to see revenues grow rapidly and sustain the excess returns for the next few years (Damodaran, 2016). The financial statement analysis from chapter 6 indicated that SR-BANK is a highly profitable bank. However, the bank has not shown rapidly growing revenues or high excess returns compared with its peers. Thus, SR-BANK is not more likely to grow rapidly in the coming years relative to its peers.

Lastly, the magnitude and sustainability of competitive advantages. If there are significant barriers to entry and the firm has sustainable competitive advantage, it can maintain high growth for longer periods (Damodaran, 2016). The Porter's Five Forces framework from chapter 5.3 indicated that there are significant entry barriers in the bank industry. Moreover, the internal analysis in chapter 5.4 indicated that SR-BANK location have a vast impact on the bank's profitability and was identified as a sustained competitive advantage. Thus, the entry barriers and the banks competitive advantage may support SR-BANK to maintain its current growth level going forward.

SR-BANK's size, existing growth rate and competitive advantages does not imply a sustained high growth period. Thus, a shorter forecasting period will be use. Hence, an explicit forecast period of 6 years will be developed before SR-BANK's performance is assumed to enter a steady state using the perpetuity formula (equation 4).

7.4.2 Gross Loans

In 2017, gross loans constituted ~ 80 % of the bank's total assets (Sparebank 1 SR-Bank, 2017). Table 31 presents SR-BANK's loan portfolio divided by retail and corporate market. The table indicates that the yearly growth in total gross loans has been 9 % in the period. Moreover, the table indicates that the retail market has had a higher growth (14%) compared with the corporate market (4%)

in the period. The next sections will analyse the retail customers and corporate customers separately.

Table 31 - SR-BANK's gross loan portfolio

Gross Loans Portfolio in NOK Million	Average	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Total Gross Loans	142 798	109 513	120 273	141 620	155 188	157 638	172 554
<i>Growth in Total Gross Loans</i>	9 %	8 %	10 %	18 %	10 %	2 %	9 %
Retail Market	78 795	52 569	59 848	77 651	87 229	91 171	104 299
<i>Growth in Retail Market</i>	14 %	10 %	14 %	30 %	12 %	5 %	14 %
Corporate Market	63 136	55 723	59 128	62 880	66 705	66 497	67 883
<i>Growth in Corporate Market</i>	4 %	6 %	6 %	6 %	6 %	0 %	2 %

7.4.2.1 Retail Customers

SR-BANK's average yearly growth in loans to the retail market has been 14 % in the period. The strategic analysis in chapter 5 indicated growth in the Norwegian economy and that activities in oil related operations are showing signs of improvement. Moreover, SSB expect unemployment to gradually be reduced and that SR-BANK's main regions will experience population growth. Better outlook for the economy, increased population and increased employment in the region may lead to more attractive customers for the bank and more demand for retail loans. However, the expected increase in the interest rate levels can be a concern. The strategic analysis indicated that household debt is increasing and will constitute a larger part of the household's total costs. Hence, the customers price sensitivity is considered high. Thus, changes in the bank's interest rates on retail loans will have impact on the bank's lending growth.

Furthermore, SR-BANK is reporting higher activity in the housing market, with the total market in Rogaland growing by 7,7 % in the last year. Some uncertainty is expected concerning the development of transaction volumes and house prices in the total market going forward (Sparebank 1 SR-Bank, 2017). The combination of better macroeconomic outlooks in the bank's market area and the fact that the fall in house prices in the banks regions has turned around indicates that lending growth in loans to retail customers will continue going forward.

Hence, SR-BANK's lending growth to the retail market is expected to continue. However, the expected increase in interest rates in conjuncture with the increased household debt will reduce the pace of the growth. Thus, in 2018 the growth rate

is estimated to be 7 % and then fall gradually to a steady state of 1,59 % (expected GDP growth) in 2022.

7.4.2.2 Corporate Customers

SR-BANK`s average yearly growth in loans to the corporate market has been 4 % in the period. Table 32 presents SR-BANK`s loan to the corporate market divided by sector. The table indicates that the different sectors grow at different pace. However, it is difficult to forecast each sector individually and thus the total growth for the corporate market will be emphasized.

Table 32 - SR-BANK`s gross loans to corporate customers divided by sectors

Gross Loans Corporate Sector	Average	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
<i>Growth in Agriculture/forestry</i>	4,3 %	9,8 %	4,5 %	3,1 %	-0,3 %	2,4 %	6,2 %
<i>Growth in Fisheries/fish farming</i>	15,6 %	43,5 %	-9,4 %	10,2 %	51,5 %	-16,4 %	13,9 %
<i>Growth in Mining operations/extraction</i>	12,4 %	-13,8 %	20,3 %	53,4 %	22,8 %	-10,3 %	2,0 %
<i>Growth in Industry</i>	16,6 %	26,6 %	59,4 %	-22,1 %	16,7 %	-5,8 %	24,6 %
<i>Growth in Power and water supply</i>	-1,0 %	-5,4 %	-18,5 %	13,5 %	-2,4 %	2,8 %	3,8 %
<i>Growth in Wholesale and retail trade, hotel and restaurants</i>	3,6 %	19,6 %	-3,3 %	-12,1 %	1,9 %	11,9 %	3,4 %
<i>Growth in Overseas shipping, pipeline transport and other transport</i>	7,6 %	-1,6 %	13,1 %	12,9 %	17,3 %	1,0 %	2,5 %
<i>Growth in Property management</i>	2,2 %	2,3 %	5,9 %	5,5 %	1,5 %	-1,1 %	-0,8 %
<i>Growth in Service sector</i>	3,7 %	12,1 %	-1,4 %	4,2 %	3,2 %	4,0 %	-0,2 %
<i>Growth in Public sector and financial services</i>	14,0 %	82,5 %	16,8 %	-17,6 %	17,7 %	-14,1 %	-1,5 %
Total Growth in Corporate Sector	4 %	6 %	6 %	6 %	6 %	-1 %	2 %

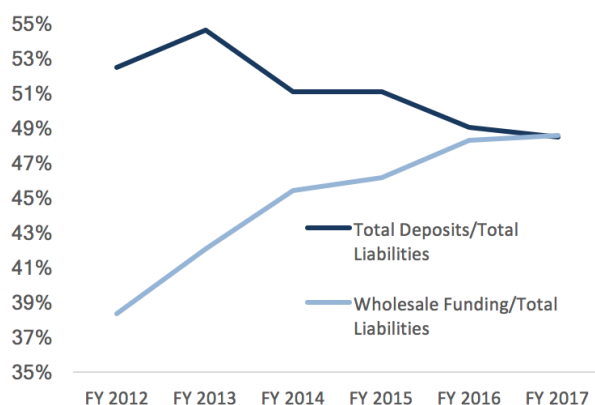
The financial statement analysis in chapter 6 indicated that the banks exposure to the commercial property portfolio (14,1%) and oil-related activities (7,1%) represents the banks largest corporate market exposure. The growth in the oil industry and the better macroeconomic outlook in the economy will thus have a positive effect on the bank`s lending growth. SR-BANK reports that some of the bank's customers in the oil industry are still experiencing a demanding market. Thus, it is likely to assume that the increased optimism in the regions will increase the demand for corporate loans as new projects will emerge.

Hence, SR-BANK`s lending growth to the corporate market is expected to continue based on the positive market outlook. Table 32 indicates a yearly average of 4 % growth in loans to the corporate market. Thus, in 2018 the growth rate is forecasted to be 4 % and then gradually increase to 6 % 2022 before entering a steady state of 1,59 % (expected GDP growth) in 2022.

7.4.3 Deposits and Wholesale Funding

Deposits and wholesale funding are the banks most important funding sources. Furthermore, the financial statement analysis indicated that wholesale funding is becoming a more important funding source for banks. This trend is visible in figure 30, which presents SR-BANK’s deposits and wholesale funding in % of total liabilities. The next sections will look at deposits and wholesale funding separately.

Figure 30 - Deposits and wholesale funding in % of total liabilities



7.4.3.1 Deposits

Table 33 presents SR-BANK’s growth in deposits in the period. The growth rate in total deposits has been unstable the last years with a yearly average of 7 %.

Table 33 - SR-BANK’s growth in deposits

Deposits in NOK Million	Average	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Total Deposits	82 987	67 594	78 096	81 489	89 444	85 914	95 384
<i>Growth in Total Deposits</i>	7 %	6 %	16 %	4 %	10 %	-4 %	11 %
Retail Market	40 290	34 338	39 438	38 707	42 128	42 871	44 258
<i>Growth in Retail Market</i>	6 %	9 %	15 %	-2 %	9 %	2 %	3 %
Corporate Market and Public Sector	42 697	33 256	38 658	42 782	47 316	43 043	51 126
<i>Growth in Corporate Market and Public Sector</i>	8 %	2 %	16 %	11 %	11 %	-9 %	19 %

Interest rates, alternatives for household savings and economic growth are factors that will impact deposit forecasts (Scope Ratings, 2018). The strategic analysis indicated that the key policy rate will gradually increase the next years. The key policy rate is expected to reach ~ 2,0 % in 2020 as an annual average (SSB, 2017b). An increase in the key policy rate will affect the bank’s deposits rates and make bank deposits more favorable as a savings alternative for customers. Furthermore, the strategic analysis indicated that the market outlook for Norway

and SR-BANK's regions are positive. For Norway as a whole, households savings level was 7,3 % in 2017 and SSB predicts the level to gradually increase to 8,7 % in 2021 (SSB, 2017c). However, the strategic analysis in chapter 5 indicated that customers are more price sensitive to deposits rates and the internal rivalry in the industry is high.

The expected increase in the key policy rate in conjuncture with increased expected household savings may lead to increased growth in deposits. Hence, growth is assumed to continue going forward. Thus, in 2018 the growth rate is forecasted to be 7 % and then gradually enter into a steady state of 1,59 % (expected GDP growth) in 2022.

7.4.3.2 Wholesale funding

Table 34 presents SR-BANK's wholesale portfolio. Moreover, it indicates that the yearly average growth in total wholesale funding has been 11 %.

Table 34 - SR-BANK's growth in wholesale funding

Wholesale Portfolio in NOK Million	Average	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Total Wholesale Funding	73 783	49 436	60 074	72 356	80 734	84 503	95 596
<i>Growth in Total Wholesale Funding</i>	11 %	-8 %	22 %	20 %	12 %	5 %	13 %
Short-Term Debt & Repos	4 118	4 522	3 742	6 139	5 296	2 674	2 335
<i>Growth in Short-Term Debt & Repos</i>	-6 %	-9 %	-17 %	64 %	-14 %	-50 %	-13 %
Long-Term Debt	62 208	48 515	44 914	56 332	66 217	75 438	81 829
<i>Growth in Long-Term Debt</i>	12 %	-7 %	25 %	18 %	14 %	8 %	14 %

Scope Ratings (2018) indicates that there are two drivers to wholesale funding forecasts. Firstly, economic and market activity, that will dictate the size of the loan book to be funded. Secondly, regulatory trends that will encourage greater allocation to long-term debt and capital instruments rather than more short-term and volatile resources. Norwegian banks and mortgage companies have ample access to wholesale funding, both in NOK and in other currencies. However, risk premiums on banks' whole- sale funding have fallen recently and are below the average for the past few years (Norges Bank, 2017c). Moreover, as the access for deposits have been reduced the last years, banks have increased their wholesale funding. This is visually presented in figure 30. As retail deposits decline, banks tend to substitute wholesale funding in order to maintain their lending.

SR-BANK's wholesale funding is expected to decrease as deposits are expected to increase. Hence, growth in wholesale funding is expected to follow the growth

of GDP forecasts for the Norwegian economy going forward. In 2022 the growth will enter a steady state of 1,59 % (expected GDP growth).

7.4.4 Shareholders' Equity and Dividends

The strategic analysis and the financial statement analysis highlighted the effects of bank regulations. Regulatory requirements will have a vast impact on shareholders' equity and the dividend policy of SR-BANK. In order to forecast how SR-BANK's shareholders' equity and dividend policy will develop, the common equity tier 1 (CET1) capital ratio must be assessed. SR-BANK's CET1 capital ratio was 15,1 % after dividends in 2017 and the future target is to maintain a corresponding level (Sparebank 1 SR-Bank, 2017). Thus, a CET1 capital ratio of 15 % is used as a long-term target for SR-BANK. To analyse how the CET1 capital ratio of 15 % will affect SR-BANK's balance sheet, its two components, risk-weighted assets and common equity tier 1 capital, will be further assessed.

Equation 22 - Common equity tier 1 ratio

$$\text{Common Equity Tier 1 ratio} = \frac{\text{Common Equity Tier 1 Capital}}{\text{Risk Weighted Assets}}$$

The estimation of SR-BANK's risk-weighted assets is not publicly available, thus a proxy is used as a base for projections. Furthermore, the growth in risk weighted assets is assumed to follow the same growth as the growth for SR-BANK's total loan portfolio. The expected growth of SR-BANK's risk-weighted assets are presented in table 35.

Table 35 - Growth in SR-BANK's risk weighted assets

NOK Million	FY 2017	FY 2018E	FY 2019E	FY 2020E	FY 2021E	FY 2022E
Risk-Weighted Assets	120 160	123 498	129 673	138 750	144 931	147 699
Growth in Risk-Weighted Assets	n/a	3 %	5 %	7 %	4 %	2 %

The CET1 capital is roughly defined as total shareholders' equity with deductions for allocated dividends. SR-BANK's shareholders' equity, dividend pay-outs, CET1 capital and regulatory capital is presented in table 36. Once risk-weighted assets and total CET 1 capital is fixed, the dividend payments are projected such that the CET 1 capital ratio of 15 % is reached. Hence, the dividend pay-out ratio

is 0,70 in steady state in order to sustain a CET 1 capital ratio of 15 % in perpetuity.

Table 36 - SR-Bank's shareholders' equity

Shareholders' Equity	FY 2018E	FY 2019E	FY 2020E	FY 2021E	FY 2022E
Shareholders' Equity Y-1	19 889	21 020	22 076	23 187	24 352
Years Comprehensive Income	2 218	2 387	2 544	2 691	2 352
Dividend from Y-1	-1 087	-1 331	-1 432	-1 526	-1 883
Total Shareholders' Equity	21 020	22 076	23 187	24 352	24 820
Deduction for allocated Dividend Y+1	-1 331	-1 432	-1 526	-1 883	-1 646
Other Items	-725	-735	-746	-758	-770
Total Common Equity Tier 1 Capital	18 964	19 909	20 916	21 711	22 404
Risk-Weighted Assets	123 498	129 673	138 750	144 931	147 699
Common Equity Tier 1 Capital Ratio	0,15	0,15	0,15	0,15	0,15
Dividend Payout Ratio	0,50	0,60	0,60	0,60	0,70

7.4.5 Net Interest Margin

The net interest margin is derived from the difference in interest income and interest expenses and is expressed as a percentage of average interest-bearing assets as discussed in chapter 6.3.4.

Table 37 presents SR-BANK's net interest margin from 2012 to 2017. The table indicates that the interest expenses has been gradually decreasing. Moreover, the interest income has increased in the period, which is mainly a result of an increasing loan portfolio (Sparebank 1 SR-BANK, 2017b). These effects translate to a steady climb in the net interest margin from 1,27 % in 2012 to 1,52 % in 2017.

Table 37 - SR-BANK's net interest margin

	Average	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Interest Income	5 691	5 300	5 644	6 137	5 752	5 563	5 747
<i>Growth in Interest Income</i>	2 %	0 %	6 %	9 %	-6 %	-3 %	3 %
Interest Expense	3 209	3 558	3 525	3 733	3 159	2 692	2 585
<i>Growth in Interest Expense</i>	-5 %	1 %	-1 %	6 %	-15 %	-15 %	-4 %
Net Interest Margin	1,43 %	1,27 %	1,42 %	1,45 %	1,42 %	1,48 %	1,52 %

The largest determinant of the net interest margin is the key policy rate. However, an increase in key policy rates will be largely offset by increased lending rates thus the interest rate margin will remain relatively stable. The prevailing view in the literature is that, in the long run, an increase in the level of interest rates will have a slightly positively impact on banks' net interest margin (Busch & Memmel, 2017). Busch & Memmel (2017), used a time series for more than 40

years and found that the net interest margin increases by 7 basis point for every 100 basis points increase in the key policy rate.

As discussed in the strategic analysis in chapter 5.2.2, the key policy rate is projected to increase the next years. Norges Bank's base case for the key policy rate implies that the annual average increases from 0,5 in 2017 to 1,96 in 2021. The base case, together with the results of Busch et al., (2017) is used to project the net interest income for SR-BANK. Moreover, the net interest margin is estimated to convert to the SR-BANK's long-term average (2012-2017) of 1,43 % in steady state. Table 38 presents the bank's projected net interest margin.

Table 38 - SR-BANK's expected net interest margin

	FY 2018E	FY 2019E	FY 2020E	FY 2021E	FY 2022E
Yearly Absolute Change in Key Policy Rate in Bp	9	47	43	47	0
Estimated Effect on Net Interest Margin in %	0,006 %	0,033 %	0,030 %	0,033 %	0,000 %
Expected Net Interest Margin	1,53 %	1,56 %	1,59 %	1,62 %	1,43 %

7.4.6 Net Commissions and Fees

Net commissions are the difference between commissions received and commissions paid. Table 39 presents SR-BANK's net commissions and fees and the table indicate that they are volatile with no clear pattern.

Table 39 - SR-BANK's net commissions and fees

NOK Million	Average	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Net Commissions & Fees	1 437	1 029	1 380	1 726	1 527	1 439	1 518
Growth in Net Commissions & Fees	14 %	35 %	34 %	25 %	-12 %	-6 %	5 %

In table 40, SR-BANK's net commissions and fees are broken down in segments to identify possible patterns that can increase the forecasting reliability.

Table 40 - SR-BANK's commissions from property related activities

NOK Million	Average	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Commissions from Property Related Activities	714	439	730	1 045	794	614	660
Total Gross Loans Retail Market	78 795	52 569	59 848	77 651	87 229	91 171	104 299
Commissions from Property Related Activities / Total Retail Loans	0,94 %	0,84 %	1,22 %	1,35 %	0,91 %	0,67 %	0,63 %

The majority of net commissions and fees consists of commissions from property related activities. This commission is derived from total gross loans for the retail market. Therefore, commissions from property related activities as a percentage of total retail loans (0,63 %) for 2017 is used as a proxy to forecast the commissions

going forward. Furthermore, the inflation guidance from Norges Bank (6.1.4.4) will be used to project other commissions.

Table 41 - Expected other commissions and fees

NOK Million	FY 2018E	FY 2019E	FY 2020E	FY 2021E	FY 2022E
Commissions from Property Related Activities	706	746	778	801	814
<i>Commissions from Property Related Activities / Total Retail Loans</i>	0,633 %	0,633 %	0,633 %	0,633 %	0,633 %
Other Commissions	876	891	908	926	945
<i>Growth in other Commission in line with inflation guidance</i>	2,1 %	1,7 %	1,8 %	2,0 %	2,0 %

7.4.7 Salaries

The financial sector had the highest wage growth of all sectors in Norway in 2017. Moreover, the average salary growth in the financial sector from 2012-2017 has been 3,9 % (Finansforbundet, 2018). SR-BANK`s growth in salaries are presented in table 42 and indicates that the bank has had an average growth of 2,75 %.

Table 42 - SR-BANK`s salaries

	Average	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Salaries	883	848	909	888	851	874	930
Growth in Salaries	2,75 %	6,67 %	7,19 %	-2,31 %	-4,17 %	2,70 %	6,41 %

The high salary growth in 2017 of 6,41 % can be a result of the increased competition in SR-BANK`s sector and the banks focus on development and competence among its employees, as discussed in chapter 5.4. However, it is natural to assume that the salary growth rate for SR-BANK will decline and follow the growth rate of the industry (3,9 %) in a steady state. Hence, the growth in SR-BANK`s salaries has been modelled as a linear decreasing function of the difference between current growth rate of 6,41 % and steady state growth in the industry of 3,88 %.

Table 43 – Expected growth in salaries

NOK Million	FY 2018E	FY 2019E	FY 2020E	FY 2021E	FY 2022E
Salaries	985	1 038	1 089	1 137	1 181
Growth in Salaries	5,90 %	5,40 %	4,89 %	4,39 %	3,88 %

7.4.8 LLP

To forecast SR-BANK`s LLPs, the normalized LLPs of 0,23 %, from chapter 7.4.8 will be applied. The normalized LLPs represents an average across an

economic cycle and will be a good indication of further losses. Hence, table 44 presents the forecasted LLPs.

Table 44 – Expected LLPs

NOK Million	FY 2018E	FY 2019E	FY 2020E	FY 2021E	FY 2022E
LLPs	414	436	458	473	480

7.4.9 Tax

The corporate tax rate in Norway has steadily decreased from 28 % to 23 % in the period. The best assumption regarding future tax rates is to use the current tax rate as there are no indications of a new tax reform. Hence, a corporate marginal tax rate of 23 % will be used going forward.

Table 45 – Expected corporate marginal tax rate

	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018E
Corporate Marginal Tax Rate	28 %	28 %	27 %	27 %	25 %	24 %	23 %

7.4.10 Forecasted Financial Statements

Table 46 – Forecasted income statement

NOK Million	FY 2018E	FY 2019E	FY 2020E	FY 2021E	FY 2022E
The Revenue Block					
Net Interest Margin	3 396	3 646	3 887	4 116	3 705
Net Commissions & Fees	1 582	1 637	1 686	1 727	1 758
<i>Commissions From Property Related Activities</i>	706	746	778	801	814
<i>Other Commissions</i>	876	891	908	926	945
Trading Income/Financial Investments	156	158	161	164	168
Other Income	6	6	6	6	6
Net Revenue	5 140	5 448	5 740	6 013	5 637
The Cost Block					
Cash Costs					
<i>Salaries and Employee Benefits</i>	1 325	1 384	1 441	1 496	1 547
<i>General and Administrative Expenses</i>	848	862	878	896	914
Non Cash Costs					
<i>Depreciation of Tangible and Amortization of Intangible</i>	83	84	86	88	90
Total Costs	2 256	2 331	2 405	2 480	2 551
Total Pre-Provision Profits	2 885	3 117	3 335	3 534	3 087
The Cost of Risk Block					
Net Loan Loss Provisions (Normalized)	414	436	458	473	480
Total Cost of Risk	414	436	458	473	480
The "Below-the-line" Block					
Income from Ownership Interests incl. Dividends	448	459	470	479	488
Adjusted and Normalized Pretax Earnings	2 919	3 140	3 347	3 540	3 095
Income Tax	-701	-754	-803	-850	-743
Adjusted and Normalized Total Comprehensive Income	2 218	2 387	2 544	2 691	2 352
EPS	8,67	9,33	9,95	10,52	9,20

Table 47 - Forecasted balance sheet

NOK Million	FY 2018E	FY 2019E	FY 2020E	FY 2021E	FY 2022E
Assets					
Retail Market	111 600	117 904	122 970	126 592	128 610
Corporate Market	70 598	74 128	78 576	81 559	82 860
Total Gross Loans	182 198	192 032	201 546	208 152	211 469
<i>Reserve For Loan Losses</i>	1 317	1 317	1 317	1 317	1 317
Total Net Loans	180 881	190 715	200 229	206 835	210 152
Total Derivative Assets	6 850	7 176	7 493	7 724	7 853
Total Other Assets	1 477	1 502	1 530	1 561	1 592
Investments in Associates	4 037	4 107	4 181	4 267	4 352
Total Securities	3 337	3 395	3 457	3 527	3 598
"Balancing Post"	31 834	32 385	32 974	33 647	34 320
Total Assets	228 416	239 279	249 864	257 560	261 867
Liabilities					
Total Deposits	102 061	107 826	112 459	115 772	117 617
Total Wholesale Funding	98 215	100 681	102 978	105 092	107 008
Total Derivative Liabilities	3 423	3 563	3 681	3 774	3 838
Deferred Tax Liabilities	393	393	393	393	393
Balancing Post	497	506	515	526	536
Total Liabilities	204 197	212 576	219 634	225 163	228 999
Shareholders' Equity					
<i>Share Capital</i>	6 394	6 394	6 394	6 394	6 394
<i>Share Premium Reserve</i>	1 587	1 587	1 587	1 587	1 587
<i>Years Comprehensive Income</i>	2 218	2 387	2 544	2 691	2 352
<i>Dividend from Y-1</i>	1 087	1 331	1 432	1 526	1 883
<i>Other Equity</i>					
Total Shareholders' Equity	21 020	22 076	23 187	24 352	24 820
Total Common Equity Tier 1 Capital	18 964	19 909	20 916	21 711	22 404
Risk Weighted Assets	126 876	133 724	140 349	144 949	147 259
Common Equity Tier 1 Capital Ratio	0,15	0,15	0,15	0,15	0,15
Dividend Payout Ratio	0,50	0,60	0,60	0,60	0,70

7.5 Result of the FCFE model

The forecasted financial statements in conjuncture with the identified cost of equity will be used to apply the FCFE model and identify SR-BANK`s equity value. The value of SR-BANK`s equity is defined by equation 23.

Equation 23 - Value of equity

$$\text{Value of equity} = V_{FCFE} + V_{Terminal Value} + V_{Marketable Securities}$$

First, the value of SR-BANK`s free cash flow to equity (V_{FCFE}) must be obtained. The FCFE for SR-BANK can be estimated as in equation 24.

Equation 24 - Free cash flow to equity (FCFE) for financial firms

$$\text{Free Cash Flow to Equity}_{Financial Firms} = \text{Net Income} - \text{Reinvestment in Regulatory Capital}$$

The year on year difference in the forecasted CET1 capital from chapter 7.4.4 is defined as reinvestment in regulatory capital. Thus, the FCFE can be calculated as

presented in table 48. Further, by applying the cost of equity identified in chapter 7.1 the discounted FCFE is obtained.

Table 48 – SR-BANK` s discounted free cash flow to equity

NOK Million	FY 2018E	FY 2019E	FY 2020E	FY 2021E	FY 2022E
Net Income	2 218	2 387	2 544	2 691	2 352
Reinvestment in Regulatory Capital	875	945	1 007	795	693
FCFE	1 343	1 442	1 537	1 896	1 658
<i>Discount Factor</i>	1,08	1,17	1,26	1,36	1,47
Discounted FCFE	1 243	1 236	1 220	1 393	1 129

By summing up the expected discounted FCFE in the forecasting period, V_{FCFE} is obtained. Table 49 presents the calculated V_{FCFE} .

Table 49 – SR-BANK` s free cash flow to equity

NOK Million	FY 2017E
V_{FCFE}	6 222

The second step is to identify the terminal value ($V_{Discounted\ Terminal\ Value}$). The strategic analysis in chapter 5 indicated that SR-BANK have no sustainable competitive advantage. Thus, it is natural to assume that no excess return is obtained into perpetuity from investing in SR-BANK. Hence, in the calculations of the terminal value (equation 4), ROE is set equal to cost of equity. Moreover, the steady state growth is set equal to the expected GDP growth of 1,59 %. The calculated $V_{Discounted\ Terminal\ Value}$ is presented in table 50.

Table 50 – SR-BANK` s discounted terminal value

NOK Million	FY 2017E
$V_{Discounted\ Terminal\ Value}$	20 015

Lastly, the value of marketable securities ($V_{Marketable\ Securities}$) must be added. Since income from marketable securities was deducted from the adjusted and normalized income statement (7.2.2.1), the market value of marketable securities must be added back to retrieve at the final equity value. Marketable securities were valued separately at a risk-free rate of 1,59 %. $V_{Marketable\ Securities}$ is presented in table 51.

Table 51- SR-BANK`s marketable securities

NOK	FY 2017E
<i>V_{Marketable Securities}</i>	657

By summing up the V_{FCFE} , $V_{Discounted\ Terminal\ Value}$ and $V_{Marketable\ Securities}$, the value of SR-BANK`s equity is obtained. Hence, SR-BANK`s equity value is presented in table 52.

Table 52 – SR-BANK`s intrinsic share price

NOK Million except per share	31.12.2017
<i>V_{FCFE}</i>	6 222
+ <i>V_{Discounted Terminal Value}</i>	20 015
+ <i>V_{Marketable Securities}</i>	657
Intrinsic Value	26 894
Outstanding Shares	256
Intrinsic Share Price	105
Market Share Price	87
<i>Share Discount</i>	21 %

The FCFE model has identified how much cash is available to SR-BANK`s equity shareholders after all expenses, reinvestment, and debt are paid. The FCFE model indicates that the intrinsic value of SR-BANK`s equity is NOK 26 894 million as of 31.12.2017. Thus, the intrinsic share price is NOK 105 as of 31.12.2017. This indicates that the SR-BANK`s share was sold at a 21 % discount as of 31.12.2017.

7.6 Criticism of the Assumptions

The FCFE model is calculated as the expected FCFE discounted with the cost of equity. Hence, assumptions regarding expected FCFE and cost of equity determines the quality of the model. Moreover, the value of SR-BANK`s equity mainly consists of the value of the explicit forecast period and the terminal value.

The value from the explicit forecast period was NOK 6.222 million. Thus, it constitutes 26 % of the total equity value of SR-BANK. The explicit forecast period was set to 6 years and the calculated cash flows in this period was based on assumptions from the strategic analysis. The assumptions in this part e.g. growth in the economy, population growth, growth in loans, growth in deposits and

growth in net interest margin, are therefore important determinants in the value derived for SR-BANK. However, the cash flows derived from the explicit forecast period have decreasing predictability further out in the forecast period. Hence, this will again affect the terminal value which is based on the last net income (NI) in the explicit forecast period.

The calculated terminal value was NOK 20.015 million. Thus, it constitutes 74 % of the total equity value of SR-BANK. The Terminal value was calculated using the mathematical model of constant perpetuity (equation 4). Thus, it is based on an infinite extrapolation of the of the last NI in the explicit forecast period.

Further, it is extrapolated with a proxy for constant growth and discounted with the cost of equity. Even though the terminal value consists of the most unpredictable cash flows, it represents the largest part of the total equity value for SR-BANK.

To highlight how the assumptions in the terminal value will affect the value of SR-BANK, two sensitivity analysis has been conducted. Table 53 highlights how changes in cost of equity and the growth rate of the economy (G) will affect the value of SR-BANK.

Table 53 - Sensitivity analysis of cost of equity and growth in the economy (G)

		Cost of Equity						
		6,0 %	6,7 %	7,3 %	8,0 %	8,7 %	9,1 %	10,0 %
G	1,00 %	141	127	115	105	97	92	84
	1,20 %	141	127	115	105	97	92	84
	1,40 %	141	127	115	105	97	92	84
	1,59 %	141	127	115	105	97	92	84
	2,06 %	141	127	115	105	97	92	84
	2,53 %	141	127	115	105	97	92	84
	3,00 %	141	127	115	105	97	92	84

The identified share price of NOK 105 for SR-BANK consists of a cost of equity of 8,00 % and a perpetual growth rate of 1,59 %. The share price remains constant with changes in the perpetual growth rate. This is because the cost of equity is set equal to ROE in perpetuity (equation 4), and is considered one of the advantages of using the key value driver formula from Koller et al., (2015). However, the value of SR-BANK is still sensitive to changes in the cost of equity. Table 53 indicates that by changing cost of equity, the share price can fluctuate between NOK 84 and NOK 141.

Furthermore, the terminal value is deeply dependent on the last NI of the explicit forecast period. This is highlighted by table 54 which presents how the share price of SR-BANK changes with alteration in cost of equity and NI in the last year of the explicit forecast period.

Table 54 – Sensitivity analysis cost of equity and net income (NI)

		Cost of Equity						
		6,0 %	6,7 %	7,3 %	8,0 %	8,7 %	9,1 %	10,0 %
NI	2 117	130	117	106	97	90	86	78
	2 195	134	120	109	100	92	88	80
	2 273	138	123	112	103	95	90	82
	2 352	141	127	115	105	97	92	84
	2 430	145	130	118	108	99	94	86
	2 509	149	133	121	110	102	97	88
	2 587	153	137	124	113	104	99	90

The table indicates that assumptions about NI in conjuncture with cost of equity will heavily affect the share price of SR-BANK. By changing cost of equity and NI, the share price can fluctuate between NOK 78 and NOK 153.

Hence, the equity value of SR-BANK is severely dependent on the assumptions in the model. Minor changes in the assumptions will lead to large deviations in the equity value and is one of the limitations in the FCFE model.

8.0 The Treasury Model

This chapter presents the valuation of SR-BANK by applying the Treasury model. Firstly, central assumptions in the model are presented. Secondly, the model is applied, and the liquidation value is obtained. Lastly, the assumptions in the model are discussed and analyzed in conjunction with a sensitivity analysis.

8.1 Central Assumptions in the Treasury Model

The treasury model arrives at a liquidation value of the bank. Thus, there is no need for a terminal value with assumptions regarding future growth. However, assumptions regarding the maturity and yield of existing contracts and risk-free rates will be central for the exactness for the model. Hence, before the model is applied to SR-BANK, a discussion of the central assumptions will be presented.

8.1.1 Risk Free Rate / Zero-Bond Discount Factors

The model consists of cash flows from existing contracts only. Thus, all cash flows are certain and the CAPM can be avoided. Hence, risk-free rates can be applied as discount factor. Reuse (2007) argues that the zero-bond discount factors (ZDFs) should be applied. While classical discounting models use a single risk-free rate for all cash flows, the ZDFs are used consistently with the maturity. Thus, every cash flow is discounted with the interest rate of the related maturity (Reuse, 2007).

In order to apply ZDFs to SR-BANK's cash flows, investable US treasury strips have been identified. This is because Norwegian treasury strips have not been identified. The US treasury strips have been converted into ZDFs for the Norwegian market by applying equation 25, recommended by Damodaran (2016b). This approach makes it possible to convert ZDFs between currencies by correcting for differences in inflation levels (Damodaran, 2016b). Table 55 presents the converted ZDFs that will be applied to SR-BANK's cash flows.

Equation 25 – Converting formula

$$\text{Risk free rate}_{NOK} = (1 + \text{Risk free rate}_{US}) * \left[\frac{1 + \text{Expected Inflation}_{NOK}}{1 + \text{Expected Inflation}_{US}} \right] - 1$$

Table 55 – Converted ZDFs

	31.12.2017	2018	2019	2020	2021	2022	2023	...	2046
Price	100	98,65	96,09	93,28	90,43	87,61	84,90		41,32
Zero-Bond Discount Factors	1	0,987	0,961	0,933	0,904	0,876	0,849		0,413

8.1.2 Maturity and Yield of Existing Contracts

Each position in SR-BANK`s yield book should be calculated with its actual yield and maturity. However, with no internal information, assumptions regarding yield and maturity must be conducted

Regarding the maturity, SR-BANK have performed a partial maturity analysis of the balance sheet items in their annual report. However, this analysis does not contain enough precision to be applied in the Treasury model. Thus, a more precise maturity analysis has been conducted where the strategic analysis from chapter 5 has been applied in conjuncture with the SR-BANK`s own analysis. A central assumption in the maturity analysis is that SR-BANK`s longest positions ceases to exist in the year 2047. This is based on an examination of the maturities of positions for Norwegian banks in general. This assumption will heavily influence the result of the model as a longer (shorter) time horizon would reduce the present value of each position that is positive (negative). The new maturity analysis that will be applied in the model is presented in table 56. The table presents the banks` balance sheet value as of 31.12.2017 and how the values matures until 2047. The full maturity analysis can be presented upon request.

Table 56 - Maturity analysis of existing contracts

NOK Million	31.12.2017	2018	2019	***	2047
Assets	204 961	9 229	9 229		5 634
Certificates and Bonds	31 909	1 064	1 064		1 064
Loans to and receivables from financial institutions	1 608	54	54		54
Loan to Customers	171 237	8 105	8 105		4 509
<i>Instalment Loans</i>	135 281	4 509	4 509		4 509
<i>Other Loans (industry)</i>	35 956	3 596	3 596		0
Cash and Receivables from the Central Bank	207	7	7		7
Liabilities	190 980	11 187	11 542		95 933
Deposits from Customers	95 384	0	0		95 384
Debt to financial institutions	2 335	78	78		78
Securities Issued	90 497	10 860	11 464		471
Subordinated Loan Capital	2 764	250	0		0
3-month NIBOR + 1,45%	300	0	0		0
3-month NIBOR + 1,52%	625	0	0		0
3-month NIBOR + 1,80%	499	250	0		0
6-month EURIBOR + 1,725%	492	0	0		0
Total non-perpetual Sub Loan Capital	1 916	250	0		0
9,35% until 31.12.2018, then NIBOR + 5,75%	723	0	0		0
NIBOR + 4,75% until 31.12.2018, then NIBOR + 5,75%	116	0	0		0
Total Perpetual Sub Loan Capital	839	0	0		0

Further, the yield of all items in table 56 must be obtained. In order find the yield of each item until the year 2047, the strategic analysis from chapter 5 has been applied in conjuncture with SR-BANK`s annual report. The strategic analysis has been used to forecast the uncertain yields. Other yields have been identified in SR-BANK`s annual report and this is classified as certain yields. The identified yield assumptions that will be applied in the model are presented in table 57. The full yield analysis can be presented upon request.

Table 57 - Yield analysis

Yield	31.12.2017	2018	2019	...	2047
Uncertain Yields					
3 mth NIBOR	0,80 %	1,03 %	1,47 %		1,87 %
3 mth EURIBOR	-0,30 %	-0,30 %	-0,10 %		0,40 %
Long-term Funding: NIBOR +	2 %				
Lending Rate (Lending Margin + 3 mth NIBOR)					
Corporate Market	3,63 %	3,86 %	4,30 %		4,70 %
Retail Market	2,59 %	2,82 %	3,26 %		3,66 %
Deposit rate (Deposit Margin + 3 mth NIBOR)	0,80 %	1,03 %	1,47 %		1,87 %
Certain Yields					
Subordinated Loan Capital					
3-month NIBOR + 1,45%	2,25 %	2,48 %	2,92 %		3,32 %
3-month NIBOR + 1,52%	2,32 %	2,55 %	2,99 %		3,39 %
3-month NIBOR + 1,80%	2,60 %	2,83 %	3,27 %		3,67 %
6-month EURIBOR + 1,725%	1,43 %	1,43 %	1,63 %		2,13 %
Perpetual Subordinated Loan Capital					
1)Until 31.12.2018	9,35 %	9,35 %			
2)After 31.12.2018	0 %	0 %	7,22 %		7,62 %
3)Until 31.12.2018	5,55 %	5,78 %			
4) After 31.12.2018	0 %	0 %	7,22 %		7,62 %

Further, the main components of the model will be discussed and applied to SR-BANK as presented in chapter 4.3.

8.2 The Yield Book

The yield book lists all parts of the balance sheet on which a bank receives or pays interests, and is considered the most important part of a bank's balance sheet (Reuse, 2007).

In order to identify SR-BANK's yield book, a thorough analysis of the bank's annual reports have been conducted. The analysis has identified all parts of SR-BANK's balance sheet which generates interests. The book value of each balance sheet item are presented in table 58. Thus, table 58 represents SR-BANK's yield book. The table indicates that loans to customers constitutes 84 % of total assets. Further, deposits from customers and securities issued constitutes 97 % of total liabilities. Hence, these positions will have a big impact on the value of SR-BANK.

Table 58 - SR-BANK's yield book

NOK Million	31.12.2017	Common Size Yield Book
Total Assets	204 961	100 %
Certificates and Bonds	31 909	16 %
Loans to and receivables from financial institutions	1 608	1 %
Loans to Customers	171 237	84 %
<i>Instalment Loans (Retail)</i>	135 281	66 %
<i>Other Loans (industry)</i>	35 956	18 %
Cash and Receivables from the Central Bank	207	0 %
Total Liabilities	190 980	100 %
Deposits from Customers	95 384	50 %
Deposits from and liabilities at call	79317	42 %
Deposits from and liabilities with agreed maturity	16054	8 %
Debt to financial institutions	2 335	1 %
Securities Issued	90 497	47 %
Other long-term borrowing	2 336	1 %
Bond debt	86 148	45 %
Other	721	0 %
Subordinated Loan Capital	2 764	1 %
3-month NIBOR + 1,45%	300	0 %
3-month NIBOR + 1,52%	625	0 %
3-month NIBOR + 1,80%	499	0 %
6-month EURIBOR + 1,725%	492	0 %
Total non-perpetual Sub Loan Capital	1 916	1 %
9,35% until 31.12.2018, then NIBOR + 5,75%	723	0 %
NIBOR + 4,75% until 31.12.2018, then NIBOR + 5,75%	116	0 %
Total Perpetual Sub Loan Capital	839	0 %

Every loan, bond, deposit and savings that are identified in SR-BANK's yield book generate cash flows. These cash flows must then be discounted. The sum of the present values represents the yield book value (Reuse, 2011).

In order to identify the cash flows generated from the yield book, each position from table 58 is transformed into cash flows by applying the maturity and yield identified in table 56 and 57. Hence, the yield book has been transformed into a cash flow analysis. The cash flows generated from the yield book are presented in table 59. The full set of cash flows can be presented upon request.

Table 59 - Cash flows generated from SR-BANK's yield book

NOK Million	31.12.2017	2018	2019	...	2047
Total Assets	204 961				
Certificates and Bonds	31 909	30 845	29 782		0
Loans to and receivables from financial institutions	1 608	1 554	1 501		0
Loans to Customers	171 237				
<i>Instalment Loans (Retail)</i>	135 281	130 772	126 262		0
<i>Other Loans (industry)</i>	35 956	32 360	28 765		0
Cash and Receivables from the Central Bank	207	200	193		0
Total Liabilities	190 980				
Deposits from Customers	95 384	95 384	95 384		0
Deposits from and liabilities at call	79317				
Deposits from and liabilities with agreed maturity	16054				
Debt to financial institutions	2 335	2 257	2 179		0
Securities Issued	90 497	79 637	68 173		0
Other long-term borrowing	2 336				
Bond debt	86 148				
Other	721				
Subordinated Loan Capital	2 764				
3-month NIBOR + 1,45%	300	300	300		0
3-month NIBOR + 1,52%	625	625	625		0
3-month NIBOR + 1,80%	499	250	250		0
6-month EURIBOR + 1,725%	492	492	492		0
Total non-perpetual Sub Loan Capital	1 916	1 667	1 667		0
9,35% until 31.12.2018, then NIBOR + 5,75%	723	723	723		723
NIBOR + 4,75% until 31.12.2018, then NIBOR + 5,75%	116	116	116		116
Total Perpetual Sub Loan Capital	839	839	839		839

Further, each cash flow is discounted with the ZDFs identified in chapter 8.1.1. Thus, every cash flow is discounted with the ZDF of the related maturity. Table 60 presents the present values of each position in SR-BANK's yield book. Hence, the present value of SR-BANK's yield book amounts to NOK 20.005 million.

Table 60 - Present value of the yield book

NOK Million	31.12.2017
Assets	
Certificates and Bonds	8 529
Loans to and receivables from financial institutions	430
Loans to Customers	
<i>Retail Loans</i>	73 694
<i>Corporate Loans</i>	8 523
Cash and Receivables from the Central Bank	51
Liabilities	
Deposits from Customers	-51 307
Debt to financial institutions	-624
Securities Issued	-16 803
Total non-perpetual Sub Loan Capital	-489
Total Perpetual Sub Loan Capital	-1 999
PV Yield Book	20 005

8.3 The Trading Book

To identify SR-BANK's trading book, the Bank for International Settlement's definition for the trading book have been used (BIS, 2016). In order to identify the positions in the trading book, a thorough analysis of SR-BANK's annual report have been conducted. The identified positions that constitutes SR-BANK's trading book are presented in table 61. The table indicates that net financial derivatives constitutes 80 % of the trading book. This position mostly consists of currency instruments and interest rate instruments. The fair value of financial derivatives is determined by using valuation methods where the price of the underlying objects is obtained from the market (Sparebank 1 SR-Bank, 2017). Thus, the value reported in SR-BANK's balance sheet represents the market value of the asset. Equities, units and other equities interest less unlisted represents the last 20 % of the trading book. Ideally, the expected cash flows of the companies that SR-BANK has a stake in should be identified. However, as this information is difficult to obtain, book values have been used. Furthermore, this position is valued in the books according to the market value as of 31.12.2017. The total sum of the trading book amounts to NOK 2.174 million.

Table 61 - SR-BANK's trading book

NOK Million	
Trading Book	31.12.2017
Equities, units and other equity interests less unlisted	420
Net Financial Derivatives	1 754
Sum Trading Book	2 174

8.4 Investment or Stake in a Company

Banks often have investments or stakes in other companies. Normally, these positions have a book value in the bank's balance sheet, but the present value shall be used if available. (Reuse, 2011).

SR-BANK's annual report indicates that the bank has ownership interests in several subsidiaries and associated companies. The ownership interest ranges from 7,96 % in Sparebank 1 Boligkreditt to 100 % in several companies (e.g. SR-Forvatning, and SinStart Nordic). Reuse (2007) argues that the present value of the companies should be used to assess the value of each company if possible. However, as most of the companies that SR-BANK have ownership interests in

are unlisted companies, an individual valuation will be difficult. Hence, book values are used. The total value of SR-BANK's ownership interests amounts to NOK 3.953 million as presented in table 62.

Table 62 - SR-BANK's investment or stake in other companies

NOK Million	31.12.2017
Investments in Ownership Interests	3 953

8.5 All Other Assets

The most important positions in this category are buildings and branches. In an ideal case, market values would be used to quantify these positions (Reuse, 2007).

SR-BANK's annual report indicates that the bank has tangible fixed assets amounting to NOK 572 million. This position mainly consists of buildings, real estate and machinery. As the market value of these fixed assets are difficult to obtain, the book values are used. Furthermore, intangible assets which relates to the differences between identifiable assets inclusive of excess values and the cost price of the identifiable assets, are added (Sparebank 1 SR-Bank, 2017b). Lastly, other assets, which mainly consist of prepaid costs, unsettled trades and over-funding of pension liabilities, are added. Hence, all other assets amount to a book value of NOK 1.446 million presented in table 63.

Table 63 - SR-BANK's all other assets

NOK Million	31.12.2017
Tangible Fixed assets	572
<i>Buldings and Real Estate</i>	353
<i>Machinery, Fixtures and Vehicles</i>	219
Intangible Assets	96
Other Assets	778
Sum All Other Assets	1 446

8.6 Other Liabilities

Other liabilities mainly consist of pension liabilities, accrued holiday pay and other accrued costs. These positions are quantified with their book values. SR-BANK's annual report indicates that other liabilities amount to NOK 1082 million. Moreover, deferred tax liabilities amounting to NOK 393 million are

added. Hence, SR-BANK`s total other liabilities amount to NOK 1.475 million and are presented in table 64.

Table 64 - SR-BANK`s total other liabilities

NOK Million	31.12.2017
Deferred Tax Liabilities	393
Other Liabilities	1 082
Total Liabilities	1 475

8.7 Expected Losses of Taken Risk

An important part of banks value creation stem from maturity and risk transformation. Further, this implies that various risks must be deducted from the banks value. Reuse (2011) argues that the credit risk and the operational risk should be identified and discounted.

The strategic analysis from chapter 5 indicated that SR-BANK is primarily exposed to credit risk through its loan portfolio in the retail and corporate market. The bank is also exposed to credit risk through the liquidity portfolio which mainly consists of low risk commercial paper and bonds. Hence, the main risks that will be analyzed are credit risk in the loan portfolio, credit risk in the bond portfolio and operational risk.

8.7.1 PV of Credit Risk in the Loan Portfolio

Generally, the credit risk in the loan portfolio is the most important risk. Every year some parts of the credit exposure will come to bankruptcy, and this must be deducted from the bank`s value (Reuse, 2007). The PV of credit risk in the loan portfolio can be quantified in three steps. Firstly, the bank`s credit exposure must be defined. Secondly, an average of credit losses that will occur in the future has to be forecasted and divided by the credit exposure. This ratio defines which percentage of the total credit exposure that will be lost per year. Lastly, these cash flows must be discounted. These cash flows could be defined as the present value of the expected losses of the current credit exposure (Reuse, 2011).

In order to identify SR-BANK`s credit exposure, the bank`s annual report have been used. It states that maximum credit risk exposure as of 31.12.2017 is NOK 210.308 million (Sparebank 1 SR-Bank, 2017b). Further, the maturity analysis

developed in chapter 8.1.2 has been used to identify how the risk exposure will evolve until 2047. This has led to the prediction of the development in SR-BANK's credit risk exposure presented in table 65.

Table 65 - Development of SR-BANK's credit risk exposure

NOK Million	31.12.2017	2018	2019	2020	2021	...	2047
Total Credit Risk Exposure Balance Sheet Items	210 308	165 967	154 317	142 667	131 016		0
Total Financial Guarantees and Loan Commitments	37 169	29 332	27 273	25 214	23 155		0
Sum Credit Exposure	247 477	195 299	181 590	167 881	154 172		0
Percentage of Total Balance Sheet Items		79 %	73 %	68 %	62 %		0 %

In order to identify which percentage of the credit risk exposure that will be lost per year, the loan-loss provision (LLP) analysis from chapter 7.2.3 have been applied. It was identified that SR-BANK's expected average loss was 0,23 %. Further, the cash flows from the credit risk exposure are discounted with ZDFs. The present value of the credit expected losses amounts to NOK -4.784 million and is presented in table 66.

Table 66 - Present value of credit expected losses

NOK Million	31.12.2017	2017	2018	2019	2020	...	2045	2046
Expected Annual Losses	0,23 %							
Cash Flows Expected Loss		-562	-443	-412	-381		-24	-12
PV of Credit Expected Losses	-4 784	-562	-438	-396	-356		-10	-5

8.7.2 PV of Credit Risk in the Bond Portfolio

To find the expected loss of SR-BANK's bond portfolio, the financial statements analysis from chapter 6.6 have been applied. The strategic analysis of SR-BANK's credit quality indicated that 98 % of the bank's bond portfolio is within the lowest category for probability of default (PD of 0,00 – 0,50 %). Thus, a PD of 0,25 % have been used as a proxy for the credit risk in the bond portfolio. Further, the cash flows have been discounted with ZDFs. Hence, the present value of the credit risk in the bond portfolio amounts to NOK -955 million and is presented in table 67.

Table 67 - PV of credit risk in the bond portfolio

NOK Million	31.12.2017	2017	2018	2019	2020	2021	...	2047
Bond Portfolio								
Certificates and Bonds		31 909	30 845	29 782	28 718	27 654		0
PD	0,25 %							
Cash Flow to Default		-80	-77	-74	-72	-69		0
PV Of Bond Portfolio	-955	-80	-76	-72	-67	-63		0

8.7.3 PV of Operational Risks

Operational risk is quantified similarly to the method of discounting the expected credit losses. First, the average sum spent onto operational risk must be quantified. Second, total transactions must be identified. The result is a relation between the expenditures on operational risks and the sum of all transactions (Reuse, 2011).

For SR-BANK, the total loss from registered unwanted incidents in 2017 amounted to NOK 5 million (Sparebank 1 SR-Bank, 2017c). This amount is in line with the amount spent in the previous years and will thus be used as a benchmark for the sum spent onto operational risk going forward. Moreover, total assets + total liabilities as of 31.12.2017 was NOK 413.347 million and will represent total transactions for SR-BANK (Sparebank 1 SR-Bank, 2017b). In order to find the development in total transaction, the maturity analysis from chapter 8.1.2 has been applied. Furthermore, the registered unwanted incidents in 2017 (NOK 5 million) as % of total transactions have been used as a proxy for further annual losses. Thus, 0,0012 % will represent annual losses due to operational risk. Lastly, the cash flows have been discounted with ZDFs. Hence, the present value of operational risk amounts to NOK -43 million and is presented in table 68.

Table 68 – Present Value of operational risk

NOK Million	31.12.2017	2017	2018	2019	2020	2021	...	2047
Total loss from registred unwanted incidents in 2017 (Operational Risk)	5							
Total Transactions	413 347	413 347	326 198	303 300	280 402	257 504		0
Expected Annual Loss	0,0012 %							
Cash Flows Operational Risk	0	-5,00	-3,95	-3,67	-3,39	-3,11		0
PV Of Operational Risk	-43	-5,00	-3,89	-3,53	-3,16	-2,82		0

8.8 Costs and Earnings related to Active Transactions

Only costs and earnings regarding existing contracts are considered as the Treasury model calculates a liquidation value. This is to ensure consistency in the model (Reuse, 2011).

8.8.1 PV of Costs of Existing Contracts

Costs should be divided into several categories to define whether they belong to existing transactions or future deals (Reuse, 2011). Sales and marketing services are considered to be related to generating new contracts. Cost regarding sales and marketing do not generate additional value for the bank concerning existing deals. Thus, they have not been considered when discounting costs of existing transactions. Table 69 presents the costs that have been identified as costs relating to existing contracts for SR-BANK.

Table 69 - Costs of existing contracts

NOK Million	31.12.2017
+ Personell Costs	1263
- Sales Services	632
+ Other Operating Costs	904
- Marketing	73
Costs of Existing Contracts	1 463

The maturity analysis from chapter 8.1.2 has been applied to calculate the development in the existing costs. Lastly, the cash flows have been discounted with ZDFs. Hence, the present value of costs of existing contracts amounts to NOK -12.450 million and is presented in table 70.

Table 70 - PV of costs of existing contracts

NOK Million	31.12.2017	2017	2018	2019	2020	2021	...	2047
Costs of Existing Contracts	-1 463	-1 463	-1 154	-1 073	-992	-911		0
PV of Costs of Existing Contracts	-12 450	-1 463	-1 139	-1 031	-925	-824		0

8.8.2 PV of Earnings of Existing Contracts

Earnings of existing contracts that have not been captured by the yield book has to be added to the value of the bank. The procedure is the same as for the costs (Reuse, 2011). For SR-BANK, commissions, other operating income and net

income from financial investments are identified to belong to existing contracts as presented in table 71.

Table 71 - Earnings of existing contracts

NOK Million	31.12.2017
Commissions	1597
Other Operating Income	6
Net Income from Financial Investments	634
Earnings	2237

The maturity analysis in chapter 8.1.2 has been applied to calculate the development in existing earnings. Lastly, the cash flows have been discounted with ZDFs. Hence, the present value of earnings of existing contracts amounts to NOK 19.043 million and is presented in table 72.

Table 72 - Present value of earnings of existing contracts

NOK Million	31.12.2017	2017	2018	2019	2020	2021	...	2047
Earnings	2237	2237	1 765	1 641	1 518	1 394		0
PV of Earnings	19 043	2 237	1 742	1 577	1 416	1 260		0

8.8.3 Tax Effect

To quantify the effect of taxes, a tax rate must be estimated. If no historical data is available, the standard tax rate that fits to the tax legislation of the bank's main headquarters must be chosen (Reus, 2011). SR-BANK's tax expenses of NOK 524 million as of 31.12.2017 are used. Furthermore, the maturity analysis from chapter 8.1.2 has been used to calculate the development in the tax expenses. The cash flows regarding taxes are then discounted using ZDFs. Hence, the PV effect of taxes amount to NOK -4.461 million and is presented in table 73.

Table 73 – Present value of taxes

NOK Million	31.12.2017	2017	2018	2019	2020	2021	...	2047
Tax	-524	-524	-414	-384	-355	-326		0
PV of Tax	-4 461	-524	-408	-369	-332	-295		0

8.8.4 Treasury, Trading and Future Deals

Treasury, trading and future deals must be identified to see whether these positions will bring additional earnings (Reuse, 2011). Reuse (2011) argues that positioning in a maturity transformation structure does not generate additional

value. The maturity transformation can be duplicated by going long a long-term bond, and short a shorter-term bond. As everyone who has access to the capital market would be able to duplicate the maturity transformation portfolio of a bank, the expected earnings do not increase the value of the bank. Thus, this argument implies that both the treasury and trading sectors can be replicated, and should not bring any additional value to the bank.

Regarding future deals with customers, Reuse (2011) argues that new loans and new savings will generate an additional interest margin in the future. However, they also generate new cash flows of costs, which is not considered in the model. This is not an individual advantage of a bank and should not generate additional value. Thus, future deals with customers does not add additional value and can be neglected.

Hence, treasury, trading and future deals with customers does not generate additional value for SR-BANK and will not be incorporated in the model.

8.9 Result of the Treasury Model

The treasury model has divided SR-BANK into several value centers where only existing contracted transfers are considered. Table 74 presents the value centers that sums up to the present value of SR-BANK by using the Treasury model. The table indicates that the liquidation value of SR-BANK amounts to NOK 22.453 million. Thus, the share price of SR-BANK amounts to NOK 88 as of 31.12.2017.

Table 74 - Result of the Treasury model

31.12.2017	NOK Million
Yield Book	20 005
Trading Book	2 174
Investments in Ownership Interests	3 953
All Other Assets	1 446
PV of Expected Losses	-4 784
PV of Bond Portfolio	-955
PV of Operational Risk	-44
PV of Costs of Existing Contracts	-12 450
PV of Earnings	19 043
PV of Tax	-4 461
Liquidation Value of SR-BANK	22 453
Price Per Share	88

8.10 Criticism of the Assumptions

The Treasury model calculates the liquidation value of SR-BANK and is applied with only external information. The bank’s annual report in conjuncture with assumptions from the strategic analysis in chapter 5 are used to arrive at the banks value. Hence, the assumptions applied determines the quality of the model.

Optimally, each position in SR-BANK’s yield book should be calculated with its actual yield and maturity. However, with no internal information, assumptions regarding yield and maturity of the banks positions must be conducted. Regarding SR-BANK’s maturity, the maturity analysis from the bank’s annual report was used as a reference for the creation of a new comprehensive maturity analysis that tries to replicate the actual maturity of the banks existing positions (table 56). A central assumption in the maturity analysis is that SR-BANK’s longest positions ceases to exist in the year 2047. This is based on an examination of the maturities of positions for Norwegian banks in general. This assumption will heavily influence the result of the model as a longer (shorter) time horizon would reduce the present value of each position that is positive (negative).

Moreover, assumptions regarding each cash flow’s yield have been conducted. SR-BANK’s annual report identifies yields for specific positions. When actual yields are not identified, findings from the strategic analysis (e.g. growth in the economy, inflation and interest rates expectations) have been applied as assumptions for yields. To highlight how these assumptions will affect the value of SR-BANK, a sensitivity analysis has been conducted. Table 75 highlights how changes in 3 mth NIBOR and the long-term funding rate applied in SR-BANK’s yield book will affect the share price calculated for SR-BANK.

Table 75 – Sensitivity analysis of 3 mth NIBOR and long-term funding rate

		3 mth NIBOR 2022						
		1,090 %	1,350 %	1,610 %	1,870 %	1,920 %	1,970 %	2,020 %
Long term Funding Rate: 3 mth NIBOR +	1,50 %	117	111	104	97	96	95	93
	1,67 %	114	107	101	94	93	92	90
	1,83 %	111	104	98	91	90	88	87
	2,00 %	108	101	94	88	87	85	84
	2,17 %	105	98	91	85	83	82	81
	2,33 %	101	95	88	81	80	79	78
	2,50 %	98	92	85	78	77	76	75

The identified share price of NOK 88 for SR-BANK consists of a 3 mth NIBOR of 1,87 % and a long-term funding rate of 2,00 % + 3 mth NIBOR. The 3 mth NIBOR range is set based on Norges Bank upper and lower 30 % projections. The table indicates that by changing 3 mth NIBOR and the long-term funding rate the share price can fluctuate between NOK 75 and NOK 117. Hence, the value of SR-BANK is sensitive to changes in these assumptions.

Furthermore, to calculate the present value of expected losses, the loan-loss provision (LLP) analysis from chapter 7.2.3 have been applied. It was identified that SR-BANK's expected average loss was 0,23 %. Furthermore, the strategic analysis was applied to find the expected losses of SR-BANK's bond portfolio. Thus, a probability of default (PD) of 0,25 % have been used as an assumption for the credit risk in the bond portfolio. These assumptions will influence the result of the model as a higher (lower) expected loss average or PD would reduce (increase) the value of the bank.

Hence, the result of the Treasury model is highly affected by the quality of the assumptions in the model if not internal information has been applied.

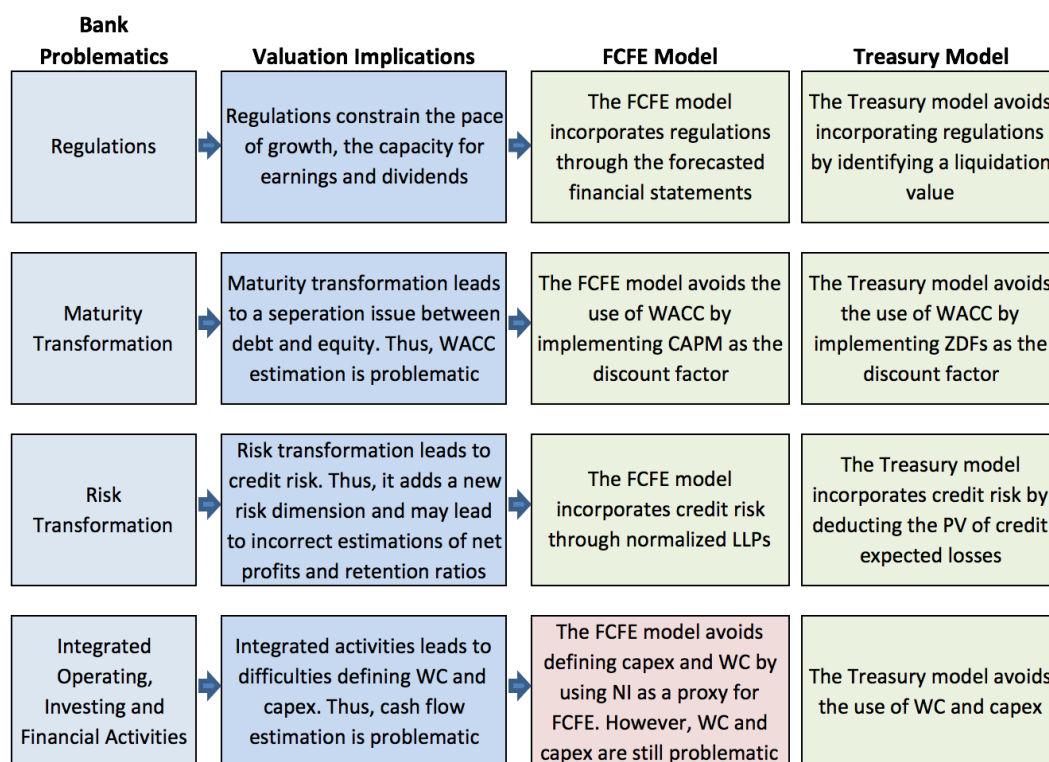
9.0 How the Models Incorporates the Problematics with Bank Valuation

This chapter presents an analysis of how the FCFE model and the Treasury model have incorporated the problematics with bank valuation, identified in chapter 2.

The first part of literature review in chapter 2 identified four main aspects that complicates bank valuation. These four aspects are presented in figure 31.

Moreover, the figure presents how the FCFE model and the Treasury model applied to SR-BANK have incorporated the identified problematics with bank valuation. Further in this section, each of the identified aspects that complicates bank valuation will be discussed.

Figure 31 – How the FCFE model and the Treasury model incorporates the problematics with bank valuation.



9.1.1 Regulatory Constraints

Banks operate under strict regulations, which constrain the pace of growth, the capacity for earnings and dividends. Hence, when valuing banks, the regulatory constraints must be considered in order to project growth.

The FCFE model incorporates the problematics with bank regulations by implementing current regulations in the forecasted financial statements. Hence, all important regulatory restrictions that SR-BANK is currently facing are incorporated throughout the forecasting period. Furthermore, possible regulatory changes that are identified in the strategic analysis, can be incorporated in the forecasted financial statements. The most important regulatory restrictions that SR-BANK is currently facing is the CET1 capital requirement. This ratio has been fixed at 15 % in order to meet the banks future restrictions. As the CET1 capital ratio consist of Risk-Weighted Assets (RWA) and CET1 capital (table 76), these items must be projected. However, projecting RWA is challenging as it is based on internal information.

Table 76 - CET1 ratio

NOK Million	FY 2017	FY 2018E	FY 2019E	FY 2020E	FY 2021E	FY 2022E
Risk-Weighted Assets	120 160	123 498	129 673	138 750	144 931	147 699
Total Common Equity Tier 1 Capital	18 089	18 964	19 909	20 916	21 711	22 404
Common Equity Tier 1 Capital Ratio	15 %	15 %	15 %	15 %	15 %	15 %

Hence, the FCFE model is flexible and incorporates regulatory restrictions which captures the effects the regulatory restrictions have on the value of SR-BANK.

The Treasury model does not consider regulatory restrictions as it calculates a liquidation value of SR-BANK. Only existing transactions are considered and thus growth is not incorporated in the model. This is considered one of the advantages of the model.

9.1.2 Maturity Transformation

Banks create value through maturity transformation. Value is created by transforming short-term debt into long-term debt. This leads to a separation issue between operation debt and financial debt. Moreover, it complicates the separation of equity and WACC estimation is problematic.

In the FCFE model, the FCFE is discounted with the CAPM. Thus, the model avoids the usage of WACC. However, the calculated CAPM is based solely on assumptions, and small changes in the assumptions will heavily affect the value of SR-BANK as indicated by the sensitivity analysis in chapter 7.6. Furthermore, instead of having to separate the equity value of the company from the corporate

value, the model values the equity in the company directly. Thus, the model avoids the separation issue between operational debt and financial debt.

In the Treasury model, all cash flows originate from existing contracts. Therefore, all cash flows are certain and risk-free rates as discount factors can be applied. The Treasury model applies ZDFs which increases the quality of the model as these discount factors are the actual maturity specific risk-free rates that is traded in the market (Table 77). Hence, WACC is avoided. Further, the Treasury model calculates the equity value of SR-BANK directly and avoids the separation issue of debt.

Table 77 - ZDFs

	31.12.2017	2018	2019	2020	2021	...	2047
Price	100	98,65	96,09	93,28	90,43		40,1
Zero-Bond Discount Factors	1	0,987	0,961	0,933	0,904		0,4

9.1.3 Risk Transformation

Banks create value through risk transformation. This means that liabilities in form of customer savings, are transformed into loans and other financial products. However, credit may be lost due to default risk, and must be incorporated in the valuation model.

The FCFE model incorporates credit risk in the loan portfolio by applying the normalized LLPs identified from the strategic analysis. Therefore, the net income will be reduced by the normalized LLPs.

Table 78 - LLPs

NOK Million	FY 2018E	FY 2019E	FY 2020E	FY 2021E	FY 2022E
Total Gross Loans	182 198	192 032	201 546	208 152	211 469
Normalized LLPs in %	0,23 %	0,23 %	0,23 %	0,23 %	0,23 %
LLPs	414	436	458	473	480

Hence, the FCFE model incorporates credit risk and more accurate estimations of net profits and retention ratios will be attained. Thus, the accuracy of the calculated value increases.

The Treasury model incorporates credit risk in the loan portfolio by subtracting the PV of credit expected losses from the bank's value. The PV of credit risk in

the Treasury models is quantified in two steps. Firstly, the bank's credit exposure is defined from the strategic analysis. Secondly, the identified credit exposure is multiplied with the normalized LLPs in order to identify cash flows from expected losses in the loan portfolio (Table 79).

Table 79 - PV of credit expected losses

NOK Million	31.12.2017	2017	2018	2019	2020	...	2045	2046
Expected Annual Losses	0,23 %							
Cash Flows Expected Loss		-562	-443	-412	-381		-24	-12
PV of Credit Expected Losses	-4 784	-562	-438	-396	-356		-10	-5

Furthermore, the Treasury model incorporates the credit risk in the bond portfolio. Firstly, the probability of default (PD) in the bond portfolio is identified by applying the internal credit analysis from the strategic analysis. Secondly, the PD is multiplied by the book value of the bond portfolio to arrive at the cash flow from expected losses in the bond portfolio (Table 80).

Table 80 - PV of bond portfolio

NOK Million	31.12.2017	2017	2018	2019	2020	2021	...	2047
Bond Portfolio								
Certificates and Bonds		31 909	30 845	29 782	28 718	27 654		0
PD	0,25 %							
Cash Flow to Default		-80	-77	-74	-72	-69		0
PV Of Bond Portfolio	-955	-80	-76	-72	-67	-63		0

Hence, the Treasury model quantify the cost of credit risk and this increases the accuracy of the calculated value of SR-BANK.

9.1.4 Integrated Operating, Investing and Financial Activities

Banks have integrated operating, investing and financial activities. This leads to difficulties defining working capital and capex. Hence, cash flow estimation is problematic.

In the FCFE model, the cash flow to shareholders must be calculated. However, as net working capital and capex is undefinable, net income (NI) less reinvestment in regulatory capital is used as a proxy for the cash flows to shareholders (table 81). This simplification reduces the accuracy of the model.

Table 81 - FCFE

NOK Million	FY 2017	FY 2018E	FY 2019E	FY 2020E	FY 2021E
Net Income	2 218	2 387	2 544	2 691	2 352
Reinvestment in Regulatory Capital	875	945	1 007	795	693
FCFE	1 343	1 442	1 537	1 896	1 658

In the Treasury model, only existing contracts are considered. Bank`s capex mainly consists of investments in human capital, IT-solution and branding. Thus, these costs relate to future contracts and can be neglected. However, cost of existing contracts must be defined, and this is difficult with external information. Assumptions have been used to define what costs belong to existing and new contracts (table 82). These assumptions reduce the quality of the model.

Table 82 - Costs of existing contracts

NOK Million	31.12.2017
+ Personell Costs	1263
- Sales Services	632
+ Other Operating Costs	904
- Marketing	73
Costs of Existing Contracts	1 463

Furthermore, the Treasury model avoids the definition of working capital. This is done by calculating separate cash flows from operating, investing and financial activities. Hence, the Treasury model avoids the problems with identifying WC and capex.

10.0 Conclusion

The first purpose of this thesis is to identify why bank valuation is problematic and which approaches the literature recommends for bank valuation. Four main aspects that complicates bank valuation have been identified. Firstly, banks are highly regulated. This constrains the pace of growth, the capacity for earnings and dividend. Secondly, banks perform maturity transformation. This leads to a separation issue between debt and equity. Thus, WACC estimation is problematic. Thirdly, banks create value through risk transformation. This leads to credit risk. Thus, it adds a new risk dimension and may lead to incorrect estimations of retention ratios and net profits. Lastly, banks have integrated financing, operating and investment activities. This leads to difficulties defining working capital and capex. Thus, cash flow estimation is problematic.

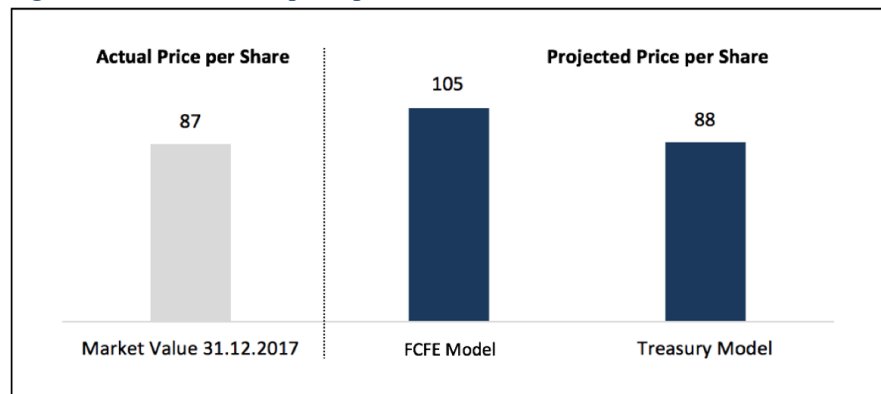
The literature review on bank valuation indicated that there has been a stream of academic contributions to bank valuation the last decade. However, most of the contributions tries to evolve existing valuation models instead of developing bank-specific models. From the existing valuation models, there is a general agreement that the FCFE model, with bank-specific adjustments, is the recommended model for bank valuation. Further, the literature review indicated that banks-specific models e.g. the Treasury model by Svend Reuse (2007), The Fundamental Valuation approach by Dermine (2009) and the Risk Neutral Valuation model by Adams and Rudolf (2010) have been developed. The authors of these models indicate that their models are constructed to handle all bank specific implications. However, after having assessed the bank-specific models, the Treasury model seems to be the most practical model to apply for bank valuation.

The second purpose of the thesis is to find the value of SR-BANK. The strategic analysis identified SR-BANK's location as a competitive advantage and that SR-BANK has embraced the technological development and positioned itself for the change in customer behavior. However, the products and services that SR-BANK offer is characterized by a high degree of comparability and low differentiation. This leads to increased mobility and reduced switching costs for the customers. Moreover, the internal competition in SR-BANK's area is characterized by a high degree of rivalry which puts pressure on margins. Furthermore, the financial

statements analysis indicated that SR-BANK has strong profitability, liquidity and solidity in the analysis period. Moreover, the internal credit rating indicated that the bank's loan related assets have a low PD overall and thus a high internal credit rating.

In conjuncture with the strategic analysis and the financial statements analysis, the FCFE model and the Treasury model have been applied to SR-BANK. Hence, the FCFE model identified the value of SR-BANK's equity to be NOK 26.894 million (NOK 105 per share) as of 31.12.2017. The Treasury model identified the liquidation value of SR-BANK to be NOK 22.453 million (NOK 88 per share). The results are presented in figure 32.

Figure 32 – SR-BANK's price per share as of 31.12.2017



The last purpose of the thesis is to identify how the applied models incorporate the problematics with bank valuation. The FCFE model incorporates the problems arising from regulations, maturity transformation and risk transformation. However, the cash flow estimation in the model remains a problem. The bank-specific Treasury model incorporates all four aspects that complicates bank valuation. However, this is mainly solved by separating the value centres and by calculating a liquidation value. Further, the valuation relies heavily on assumptions if not internal information is used. Moreover, as the Treasury model identifies the liquidation value, it is not directly comparable to the market value of SR-BANK as it leaves out growth. A further extension to the Treasury model could be to incorporate growth as it would further increase the model's relevance in the banking industry.

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12.0 Appendix

12.1 Figures

Figure 1 - Overview of how the structure of banks complicates the valuation process.....	12
Figure 2 - Overview of academic contributions on bank valuation.....	16
Figure 3 - Central structure of the Treasury model.....	27
Figure 4 - SR-BANK's geographical presence	28
Figure 5 - SR-BANK's lending portfolio.....	29
Figure 6 – Development in SR-BANK`s share vs OSEBX in 2017.....	29
Figure 7 - The key policy rate in recent years and projections (Norges Bank, 2018a)	34
Figure 8 - Inflation rate in recent years and projections (Norges Bank, 2018a)....	35
Figure 9 - Gross domestic lending to the non-financial sector by credit source. In NOK billions, June 2017 (Norges Bank, 2017c).....	47
Figure 10 - Lending to Norwegian non-financial enterprises in the Norwegian bond market by industry (Norges Bank, 2018b).....	48
Figure 11 - Market share for the five largest banks in Norway (Finans Norge, 2018)	50
Figure 12 - VRIO framework (Barney, 1991)	53
Figure 13 – Stock of non-performing loans and doubtful commitments in relation to \$ price of Brent (Sparebank 1 SR-Bank, 2017b).....	58
Figure 14 - Summary of VRIO	59
Figure 15 - SWOT Framework.....	61
Figure 16 - SR-BANK`s ROE vs CA	64
Figure 17 - SR-BANK`s equity ratio vs CA.....	65
Figure 18 – SR-BANK`s cost/income ratio vs CA.....	66
Figure 19 - SR-BANK`s net interest income in % of total assets vs CA.....	67
Figure 20 - SR-BANK`s LCR vs CA	68
Figure 21 - SR-BANK`s DTL vs CA	69
Figure 22 - SR-BANK`s lending and deposits growth	70
Figure 23 - SR-BANK`s CET1 capital ratio vs CA.....	71
Figure 24 - SR-BANK`s leverage ratio vs CA	72
Figure 25 - SR-BANK`s loan exposure by sector (Sparebank 1 SR-Bank, 2017c)	73
Figure 26 - SR-BANK`s LTV ratio for the retail market portfolio (Capital Management, 2017)	74
Figure 27 - SR-BANK`s default level vs CA	75
Figure 28 - SR-BANK`s reorganized income statement	92
Figure 29 - SR-BANK`s reorganized balance sheet.....	93
Figure 30 - Deposits and wholesale funding in % of total liabilities.....	97
Figure 31 – How the FCFE model and the Treasury model incorporates the problematics with bank valuation	125
Figure 32 – SR-BANK`s price per share as of 31.12.2017	131

12.2 Tables

Table 1 - Basel III capital requirements (Finanstilsynet, 2017b).....	32
Table 2 - Yearly average of unemployment as percentage of the labour force (NAV, 2018)	34
Table 3 - Inflation rate base case projections (Norges Bank, 2018a)	35
Table 4 - Expected population growth in SR-BANK's counties (SSB, 2017a)	36
Table 5 - Total assets and gross lending for SR-BANK and comparable firms (Finans Norge, 2018).....	63
Table 6 - SR-BANK's probability of default (PD) in the Loan Portfolio	75
Table 7 - Survey premiums.....	80
Table 8 - Historical ERPs (arithmetic average)	80
Table 9 - Historical ERPs (geometric average)	80
Table 10 - ERP using multi-stage DDM.....	81
Table 11 - Summary of ERP models	82
Table 12 - 5-year beta	83
Table 13 - 6,25-year beta	83
Table 14 - 10-year beta	84
Table 15 – Comparable companies with their capital structure.....	85
Table 16 – Comparable companies with levered industry beta	85
Table 17 – Industry unlevered beta and capital structure	86
Table 18 – SR-BANK's levered beta and forecasted steady-state capital structure	86
Table 19 –Comparison of SR-BANK's bottom-up beta and single regression beta	86
Table 20 - SR-BANK's Marshall Blume adjusted beta.....	87
Table 21 - SR-BANK's cost of equity.....	87
Table 22 - Costs related to the new APF scheme	88
Table 23 - Cost related to personnel restructuring.....	88
Table 24 - SR-BANK's marketable securities.....	89
Table 25 - Excess cash.....	89
Table 26 - Income from excess cash.....	90
Table 27 - Loan loss provision for SR-Bank and peers	90
Table 28 - SR-Bank's loan-loss ratios	90
Table 29 - SR-BANK's abnormal losses.....	91
Table 30 - Adjusted and normalized pre-tax earnings	91
Table 31 - SR-BANK's gross loan portfolio	95
Table 32 - SR-BANK's gross loans to corporate customers divided by sectors ..	96
Table 33 - SR-BANK's growth in deposits	97
Table 34 - SR-BANK's growth in wholesale funding.....	98
Table 35 - Growth in SR-BANK's risk weighted assets	99
Table 36 - SR-Bank's shareholders' equity	100
Table 37 - SR-BANK's net interest margin.....	100
Table 38 - SR-BANK's expected net interest margin	101
Table 39 - SR-BANK's net commissions and fees.....	101
Table 40 - SR-BANK's commissions from property related activities	101
Table 41 - Expected other commissions and fees.....	102
Table 42 - SR-BANK's salaries.....	102
Table 43 – Expected growth in salaries	102
Table 44 – Expected LLPs.....	103
Table 45 – Expected corporate marginal tax rate	103
Table 46 – Forecasted income statement.....	103
Table 47 - Forecasted balance sheet	104

Table 48 – SR-BANK`s discounted free cash flow to equity	105
Table 49 – SR-BANK`s free cash flow to equity	105
Table 50 – SR-BANK`s discounted terminal value.....	105
Table 51- SR-BANK`s marketable securities.....	106
Table 52 – SR-BANK`s intrinsic share price	106
Table 53 - Sensitivity analysis of cost of equity and growth in the economy (G)	107
Table 54 – Sensitivity analysis cost of equity and net income (NI)	108
Table 55 – Converted ZDFs	110
Table 56 - Maturity analysis of existing contracts.....	111
Table 57 - Yield analysis	112
Table 58 - SR-BANK`s yield book	113
Table 59 - Cash flows generated from SR-BANK`s yield book	114
Table 60 - Present value of the yield book	114
Table 61 - SR-BANK`s trading book	115
Table 62 - SR-BANK`s investment or stake in other companies	116
Table 63 - SR-BANK`s all other assets.....	116
Table 64 - SR-BANK`s total other liabilities	117
Table 65 - Development of SR-BANK`s credit risk exposure	118
Table 66 - Present value of credit expected losses	118
Table 67 - PV of credit risk in the bond portfolio.....	119
Table 68 – Present Value of operational risk.....	119
Table 69 - Costs of existing contracts.....	120
Table 70 - PV of costs of existing contracts	120
Table 71 - Earnings of existing contracts	121
Table 72 - Present value of earnings of existing contracts	121
Table 73 – Present value of taxes	121
Table 74 - Result of the Treasury model	122
Table 75 – Sensitivity analysis of 3 mth NIBOR and long-term funding rate	123
Table 76 - CET1 ratio	126
Table 77 - ZDFs.....	127
Table 78 - LLPs	127
Table 79 - PV of credit expected losses.....	128
Table 80 - PV of bond portfolio	128
Table 81 - FCFE.....	129
Table 82 - Costs of existing contracts.....	129

12.3 Equations

Equation 1 - FCFE	24
Equation 2 - Bank specific FCFE	25
Equation 3 - Value of FCFE	25
Equation 4 - Terminal value (key value driver formula)	25
Equation 5 - Value of equity	26
Equation 6 - Return on equity	63
Equation 7 - Equity ratio	64
Equation 8 - Cost/income ratio	65
Equation 9 - Net interest margin in % of total assets	66
Equation 10 - Liquidity coverage ratio	68
Equation 11 - Deposits-to-loan ratio	69
Equation 12 - Common equity tier 1 capital ratio	71
Equation 13 - Leverage ratio	72
Equation 14 - Default level	74
Equation 15 - CAPM	78
Equation 16 - Multi-stage DDM	81
Equation 17 - Simple regression	82
Equation 18 - Standard error of the industry beta	84
Equation 19 - Unlevered beta	85
Equation 20 - Levered company beta (Damodaran, 2014)	86
Equation 21 - Marshall Blume Beta	87
Equation 22 - Common equity tier 1 ratio	99
Equation 23 - Value of equity	104
Equation 24 - Free cash flow to equity (FCFE) for financial firms	104
Equation 25 – Converting formula	109