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**DETERMINANTS OF NORDIC STAKEHOLDER BANK  
PERFORMANCE DURING AND AFTER THE FINANCIAL CRISIS**

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<b>TABLE OF CONTENTS</b>	<b>page</b>
<b>1. INTRODUCTION</b>	<b>7</b>
1.1. Purpose of the study	8
1.2. Structure of the study	9
<b>2. THE BANKING SECTOR</b>	<b>11</b>
2.1. Banks as financial intermediaries	11
2.2. Banking balance sheets and income statements	12
2.3. Stakeholder banking	15
2.4. Banking related risks	16
2.4.1. Credit risk	17
2.4.2. Liquidity risk	18
2.4.3. Interest rate risk	19
2.4.4. Market risk	20
2.4.5. Other risks	20
2.5. The Nordic banking sector	21
<b>3. THE GLOBAL FINANCIAL CRISIS</b>	<b>25</b>
3.1. Financial crises as a phenomenon	25
3.2. Evolution of the global financial crisis	26
3.3. Effects of the global financial crisis on the Nordic countries	28
<b>4. PREVIOUS LITERATURE AND RESEARCH HYPOTHESES</b>	<b>31</b>
4.1. Previous literature	31
4.2. Research hypotheses	34
<b>5. DATA AND METHODOLOGY</b>	<b>37</b>
5.1. Valuation of banks	37
5.2. Measuring bank performance	39
5.3. Dependent variables	40
5.4. Independent variables	41
5.4.1. Bank-specific variables	41
5.4.2. Macroeconomic variables	43
5.5. Data	44
5.6. Methodology	44
<b>6. RESULTS</b>	<b>47</b>
<b>7. CONCLUSIONS</b>	<b>61</b>
<b>REFERENCES</b>	<b>64</b>
<b>APPENDIX</b>	<b>69</b>
Appendix 1. List of banks	69



## LIST OF TABLES

Table 1. Expected coefficients of the independent variables.	43
Table 2. Descriptive statistics of the Nordic banking sector.	47
Table 3. Correlation matrix for the variables used.	49
Table 4. Fixed effects panel data regression results for profitability during the financial crisis.	50
Table 5. Fixed effects panel data regression results for profitability after the financial crisis.	52
Table 6. Fixed effects panel data regression results for cost efficiency during the financial crisis.	54
Table 7. Fixed effects panel data regression results for cost efficiency after the financial crisis.	56
Table 8. Fixed effects panel data regression results for loan quality during the financial crisis.	57
Table 9. Fixed effects panel data regression results for loan quality after the financial crisis.	59

## LIST OF FIGURES

Figure 1. Simplified commercial bank balance sheet.	13
Figure 2. A simplified bank income statement.	14
Figure 3. Generic Value Driver Tree for Retail Banking: Economic Spread.	38



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**ABSTRACT**

Stakeholder banking is an umbrella terms that is used to describe cooperative and savings banks. They differ from other commercial mainly through their ownership form, as they are owned by their customers. Because of this unique characteristic stakeholder banks are not able to use the capital markets to fund their business. Furthermore, they are often considered to run their business with a focus on stakeholder surplus maximization rather than pure profit maximization. These factors highly affect their business model, business capitalization, and risk taking. Owners, with their simultaneous role as customers, are reluctant to allow the bank to take risky positions in their operations with the fear of losing their savings.

This thesis focuses on how stakeholder banks differ from their shareholder bank counterparts in the Nordic countries during and after the period of the most recent financial crisis. The effect of being a stakeholder bank, as well as differences in the micro- and macroeconomic performance determinants of the two groups, is examined through three performance variables: profitability, cost efficiency, and loan quality. This study finds stakeholder banks to be more profitable and cost efficient than shareholder banks during the crisis, as well as having better quality loans in the post-crisis period.

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**KEYWORDS:** Stakeholder Banking, Bank Performance, Financial Crisis





## 1. INTRODUCTION

The aim of this paper is to examine whether the ownership structure of Nordic banks has had an effect on their performance during the most recent financial crisis, as well as the subsequent period after it. The purpose is to find whether stakeholder banks performed better than shareholder banks during and after the recent financial crisis. The performance of banks will be measured by three different criteria: profitability, cost efficiency, and loan quality. The thesis will also highlight the specific determinants behind the possible differences found between ownership types, shedding further light onto the differences between Nordic stakeholder and shareholder banks.

Banks are in the epicenter of money markets that allow the constant flow of monetary resources internationally between both companies and individuals. While for the most part this model of a global financial system can be seen as a positive phenomenon for the global markets, it also has its downsides. The interconnected markets were a major reason for the magnitude of the financial crisis that started in 2008. Consequently, many banks suffered great losses during the period of the financial crisis. However, some banks seemed to outperform others. Previous research has shown that certain characteristics, such as a higher capital ratio or non-interest income rate, have helped banks to endure the downturn in the economy. Banks that were more profitable before a crisis, and thus very likely carrying more risk, performed badly during the crisis period (Dietrich & Wanzenried 2011; Fahlenbrach, Prilmeier & Stulz 2012). Also, banks with specific ownership types were found to act countercyclically, thus being able to perform better during the crisis compared to its contemporaries (Ferri, Kalmi & Kerola 2014).

The European banking sector can be classified through examining the ownership structure of banks. Privately owned stock banks, mutual banks, and government-owned banks all have different characteristics and qualities due to the differences in their ownership structure, even though they all utilize a similar principal model of banking (Iannotta, Nocera & Sironi 2007: 21-28). In their paper regarding bank ownership structures and their effects on bank profitability, Stakeholder banks differ from shareholder banks due to the fact that they decrease their loan supply to a lesser extent than shareholder banks during financial contractions. Stakeholder banks and shareholder banks can be seen to have different objectives, as shareholder banks concentrate on maximizing profits for their shareholders, while stakeholder banks are focused on relationship-based banking and creating consumer surplus for all their stakeholders. In this context, the list of stakeholders a bank might have can include for example shareholders, customers,

employees, borrowers, depositors, communities and government. (Ferri et. al. 2014; Jensen 2010.)

Cooperative banks, which are considered as a type of stakeholder bank, are geographically important for socially committed businesses on a local level. Owners of cooperative banks are often simultaneously also customers of the bank, and are thus referred to as members of the bank. The owners or members are not able to increase their voting power by purchasing more shares. Therefore, cooperative banks often provide their customers with other means of profiting from the partnership, such as providing them with additional products and services, as well as competitive pricing. They are also seen as important vessels in transferring the effects of monetary policies all the way down to local economies and their benefactors. As such, the role stakeholder banks play in easing the negative effects of financial crises and implementing essential policies is vital to the economic landscape during economic downturns. (Fiordelisi & Mare 2014.)

During the past few decades, the prevalent trend in the Nordic banking sector has been the digitalization of banking services provided to customers. This progression has resulted in the drastic decline in the amount of branch offices, as well as the number of people employed by the banking sector. The changing competitive landscape has been a challenge especially for stakeholder banks, as they often provide regionally focused banking services, and are recognized as parts of the local communities. Conversely, stakeholder banks utilize their regionality to their advantage by creating long-lasting customer relationships, which benefit both the bank and its customers. Because of the way the banking sector is shaping up to be in the future, stakeholder banks in particular have had to adjust and renew their banking operations in order to keep up with the rest of the field.

### 1.1. Purpose of the study

The main purpose of this study is to find out whether Nordic stakeholder banks were able to outperform Nordic shareholder banks during the time period of the financial crisis or not and if so, whether they have been able to maintain that advantage after the financial crisis. Because stakeholder banks do not focus solely on profit maximization, it is justifiable to measure performance with more diversified metrics than just bank profitability. Thus, bank performance will be measured by three different metrics: profitability, cost efficiency, and loan quality. Additionally, the determinants of

stakeholder bank performance are investigated both during and after the financial crisis in order to determine whether the drivers behind stakeholder bank performance have significantly changed depending on the prevailing economic conditions.

The reasoning for the specifics of this study is that, while different ownership types and characteristics of European banks have been largely studied in the past, most of the research has focused on either countries with high concentrations of stakeholder banks compared to the entire population of banks, or a wide sample of European countries where different forms of stakeholder banking are encountered. While both of these constraint have their own advantages, they also have their shortcomings. In most of the literature, stakeholder banks are found to be very heterogeneous, with their traits and configurations depending on their specific environment. In this context, the Nordic banking sector is yet to be more rigorously studied. Furthermore, the research on bank performance after the financial crisis still remains limited, as the final ripples of the crisis faded out just a couple of years ago, making the collection of an adequate amount of data from the post-crisis period impossible until recently.

## 1.2. Structure of the study

This study continues followingly. After this introduction, the theoretical background of the banking sector is discussed. Special attention is paid to stakeholder banking and its different forms, banking risks and how stakeholder banks may approach them differently, as well as the personality traits of the Nordic banking sector and how it differs from other banking clusters around the world. In the second chapter, financial crises and their origins are discussed, with specific focus on the most recent financial crisis and its effects on the Scandinavian banking sector.

The third part goes through previous subject conducted on the subject of how different bank ownership types affect their decision-making, performance metrics, as well as their place in society. The data and methodology chapter first discusses how banks are valued in a theoretical framework, as well as how their performance can be measured. The data used in the study will be gone through, and specifications and expectations will be given to all the variables that are presented. The methodology will be presented, as well as the reasoning behind it.

The empirical research chapter first presents a table of the descriptive statistics for the used variables, as well as a correlation matrix for them. After that, the results derived from the regressions that were run are presented and analyzed in terms of Nordic stakeholder bank performance and its determinants during and after the financial crisis, and how they differ from those of Nordic shareholder banks. Finally, this paper provides conclusions that can be drawn from the regression results, as well as suggestions for further lines of research regarding this topic.

## 2. THE BANKING SECTOR

Banks can be described as financial intermediaries who offer their clients deposits, loans and other payment services. This chapter discusses the banking sector and its role in modern society. Topics that will be discussed are financial intermediation, stakeholder banking and how it differs from shareholder banking, as well as the risks involved in common banking practices and how the risk minimization strategies of stakeholder banks differ from those of commercial banks. The Nordic banking sector and its unique traits compared to other global banking clusters are also presented.

### 2.1. Banks as financial intermediaries

One of the most important tasks the banking industry has had for all its existence has been the allocation of surplus funds to those with deficit funds. Both groups can include households, companies, foreign investments, government funds, and other financial institutions. This could be done without the involvement of banks, but it would be highly inefficient because of the differing requirements each side might have. This is believed to be the main reason banks have come to existence in the first place. (Casu, Girardone & Molyneux 2015: 3-19.)

Banks have three clear main functions in the intermediation process. First, the amount of money a depositor is willing to lend and how much a borrower asks for are usually very far apart. Loan sizes are typically much larger than the normal balance of a savings account. The same also holds true for the maturity of deposits and loans. Depositors are willing to lend money for only short periods of time, whereas lenders demand longer loan periods. Banks are able to combine multiple deposits, package them together and hand them out as larger sized loans. This function is called asset pooling. The bank is also able to address the problem of maturity by ‘mismatching’, or enabling short-term deposits and using them to finance medium and long term loans. (Casu et. al. 2015: 3-19.)

The final function is minimizing a borrower’s credit risk, meaning the risk that a borrower might default. In order to minimize their credit risks, banks diversify investments, pool risks, screen and monitor loan takers and hold capital reserves in case of sudden losses. Combined, these three factors decrease loan costs and boost deposit earnings, making the use of financial intermediation beneficial for all parties involved. (Casu et. al. 2015: 3-19.)

## 2.2. Banking balance sheets and income statements

The balance sheet of a bank reveals how it has amassed its funds and how it has used them in the financial market. The most important sources for funds are individual deposits from both people and businesses, and also loan taking from other financial institutions and the financial markets. A bank uses its funds, also known as its liabilities, to hand out loans to customers, buy marketable securities, and keep money reserves. These are called the assets of a bank, and they are used to make profit by demanding an interest rate on loans and securities they own that is higher than the interest rate and other costs the bank has to pay for its liabilities. (Cecchetti 2008: 272-300; Mishkin & Eakins 2012: 439-455.)

The assets of a bank consist of four main categories: cash items, securities, loans and other assets. Cash assets are further divided into three subcategories: cash reserves, which are mandated via regulations for a bank to hold, 'cash items in process of collection', meaning deposits that the bank is certain to obtain in the future, and the balances banks possess in other banks, which is more common for smaller banks. Cash reserves are the most liquid form of assets, and it includes the deposits a bank has in its vaults and in a central bank. Banks aim to minimize their cash reserves since cash can be funneled to more profitable assets. Securities show how much stocks and bonds a bank owns. Securities are mostly liquid, and they are often called the secondary reserves. Loans are the most important type of assets a bank owns, and on average they make up almost two-thirds of all bank assets. Different types of loans can be roughly divided into different categories: commercial and industrial loans, or C&I loans, real estate loans, consumer loans, interbank loans and other loans. Depending on the type of loan, their liquidity can vary significantly. For example, mortgages and consumer loans can easily be securitized and sold forward, whereas some business loans can be extremely hard to sell. Other assets cover assets like equipment and buildings, but also repossessed collateral from defaulted borrowers. (Cecchetti 2008: 272-300; Mishkin & Eakins 2012: 439-455.)

Liabilities tell how banks finance their operations. It can be split into checkable deposits, nontransaction deposits, borrowings and bank capital. Checkable deposits means borrower accounts from which money can be withdrawn instantaneously if the borrower so chooses. Its importance as a means of funding for banks has declined in recent years due to its low interest rates and new, more intriguing instruments. Nontransaction deposits grant the borrower bigger interest rates, but they also have more restrictions than checkable deposits. Most common types of non-transaction deposits are savings accounts and time accounts. Borrowings state the different loans a bank has from other banks,

financial institutions and central banks. These loans can be overnight loans, repurchase agreements or standard loans. Bank capital is the same as a bank's net worth. It consists of the bank's previously retained earnings and raised equity. Bank capital acts as a cushion against possible loan defaults. (Casu et. al. 2015: 260-274; Cecchetti 2008: 272-300; Mishkin & Eakins 2012: 439-455.) Figure 1 provides a simplified version of a bank's balance sheet.

<b>Assets</b>	<b>Liabilities</b>
Cash	Deposits: retail
Liquid Assets	Deposits: wholesale
Loans	
Other investments	Equity
Fixed Assets	Other capital terms
<b>Total assets</b>	<b>Total liabilities and equity</b>

**Figure 1.** Simplified commercial bank balance sheet. (Casu, Girardone & Molyneux 2015: 271.)

Some of the businesses a bank undergoes are not shown on its balance sheet. These so-called off-balance sheet activities (OBS) are a way to increase a bank's profitability and capital structure through fee incomes. The main forms of OBS activities are loan commitments, loan sales, financial guarantees and securities underwriting. A bank may grant a loan commitment to a company, in which case the company is able to loan money from the bank up to a set amount during a set amount of time for a specific investment. The company pays a fee for this pledge, and it can choose to use all, some or none of the guaranteed money during this time. In a loan sale, a bank forwards a loan to a third party, thus erasing it from the bank's balance sheet. The interest paid to the third party is slightly lower than the original interest on the loan, making it profitable for the bank. Financial guarantees, such as letters of credit, are ways for a bank to ensure a company's credit standing. They are used to promise a third party that a company it is dealing with will repay its debts. If the company defaults, the bank is responsible for paying the third party. These guarantees aim to reduce asymmetric information between two businesses. (Casu et. al. 2015: 303-310; Mishkin & Eakins 2012: 454-455.) OBS-activities have been scrutinized recently due to their high risks, but they have also proven to be a source of high risk-adjusted profits in modern banking (Cecchetti 2008: 283; Lozano-vivas & Pasiouras 2014: 1436-1437).

In general, bank income statements show how they have accumulated their income as well as their expenses. Along with the information from the balance sheet, it can be used

to evaluate how well a bank is performing. Banks generate income mainly through either interest generating income or non-interest generating income. Interest income includes income from loans and investments, while non-interest income mainly consists of fees and commissions from other forms of banking services the bank might provide. Interest income can be thought to be a more traditional form of income for banks, while non-interest income is usually associated with more modern or exotic banking services. Typically, stakeholder banks are thought to operate more on the traditional side of banking. Their smaller size make them more dependent on the income generated through term transformation, where short-term deposits from customers are turned into long-term loans. (Bhattacharya & Thakor 1993; Memmel 2011.)

The operating expenses of a bank usually arise from its current operations. Expenses can be divided in two based on whether or not they are interest or non-interest expenses. Interest expenses include payments to customers for their deposits in the bank. Non-interest expenses contain the typical costs that arise from running any sort of business, such as salaries for employees, rents on premises, or purchases for equipment. (Mishkin & Eakins 2012: 457-459.) Table 2 presents a simplified version of a commercial banks income statement.

A	Interest income
B	Interest expenses
C (= A - B)	Net interest income (or spread)
D	Loan loss provisions (LLP)
E (= C - D)	Net interest income after LLP
F	Non-interest income
G	Non-interest expense
H (= F - G)	Net non-interest income
I (= E + H)	Pre-tax net operating profit
L	Securities gains (losses)
M (= I + L)	Profits before taxes
N	Taxes
O	Extraordinary items
P (= M - N - O)	Net profit
Q	Cash dividends
R (= P - Q)	Retained profit

**Figure 2.** A simplified bank income statement. (Casu, Girardone & Molyneux 2015: 280.)



### 2.3. Stakeholder banking

For the purpose of this thesis, it is important to differentiate between the different bank ownership types that are prevalent in the European banking sector. The four main bank ownership types are public (or government-owned) banks, commercial (or shareholder) banks, savings banks, and cooperative banks. Due to similarities in their ownership form as well as their organizational objectives, the last two ownership types can be merged together to compose a group called stakeholder banks. The characteristics of these types of banks will be discussed in this chapter.

Stakeholder banking, also referred to in some literary reviews as mutual banking, differs from commercial banking in that the banks in the group are mutually owned by their members. Every member of a stakeholder bank holds equal voting rights concerning the corporate governance of the bank, meaning that no entity has more power over another concerning its decision making. This ownership entitlement cannot be sold or transferred forward to any third party member. Due to the dispersion of ownership and decision-making, stakeholder banks typically defer these responsibilities to their board members. Unlike ownership of shareholder banks, stakeholder banks do not pay dividends on their accumulated profits, but rather use their retained earnings to reinvest in the business. This is understandable, since stakeholder banks are unable to raise money from the capital markets. This also entails that, since ownership rights or capital cannot be traded externally, stakeholder banks face little to no market discipline compared to their shareholder contemporaries. (Goddard, McKillop & Wilson 2016: 103-108.)

The difference in the ownership model also affects the business model of stakeholder banks compared to shareholder banks; instead of focusing on simply maximizing shareholder value (i.e. their profitability), stakeholder banks aim to maximize the surplus of their stakeholders. The list of different stakeholders may include (but are not limited to) some or all of the following main groups: shareholders, customers, employees, local communities, and government (Jensen 2010). As the owners of stakeholder banks are typically also its customers, they are more inclined to be deterred from any risky business ventures, and instead focus on more traditional forms of banking activities. This effect is amplified by the fact that individual owners have little chances to affect the bank's behaviour, and also because management cannot be incentivized towards risky investments, since their bonuses cannot be linked to shareholder value. (Goddard et. al. 2016: 103-108.)

Members of savings banks mutually are their mutual owners at the same time. Generally, members are also depositors or savers in the banks they own at the same time. The business endeavours of savings banks are often associated with the socio-economic development of the local area in which they operate. Due to this regional focus, savings banks do not tend to directly compete with each other. Savings banks have been historically regarded as public banks, with ownership being held at least partly by a government entity. In recent years, many countries have witnessed the privatization of savings banks. According to Ferri, Kalmi, and Kerola (2014), savings banks have three distinctive features, regardless of any possible differences in business model and structure of ownership: they are not-for-profit financial institutions, and they (or the entities owning them) have a social mission. They can also be decentralized pieces of a larger network of banks. (Goddard et. al. 2016.: 114-116)

Similar to savings banks, cooperative banks are also mutually owned by entities that most often can also be considered as customers of the banks. Their membership may sometimes be highly dispersed, while some cooperative banks have a very localized ownership. They are focused on offering retail and banking services to small and medium-sized businesses. Cooperative banking is based on three essential principles that shape its structure: first, they are self-governed by their members, who also provide the banks their equity. Second, the banks primary customers are its members. Third, every member has only one vote, regardless of the number of bank shares a member might have. Like savings banks, regional cooperative banks are usually part of larger networks of a cooperative organization. The purest form of cooperative banks are credit unions, where all customers are demanded to be members of the credit union at the same time. However, these types of cooperative banks are not found in Nordic countries. (Goddard et. al. 2016: 118-124.)

#### 2.4. Banking related risks

Like any other win-seeking financial organization, a commercial bank's goal is to maximize company value for its shareholders. The same holds also true with stakeholder banks, but to a lesser extent. Their strive for profitability is mainly driven by their primary objective of stakeholder value maximization. In modern global markets, finding high returns for safe investments is getting increasingly hard. Furthermore, due to the nature of their value creation, banks are inherently more leveraged than normal privately owned companies. Thus, banks must be able to maximize its profits, all the while keeping its aggregate risk in check. (Cecchetti 2008: 284.) This chapter discusses the different types

of risks banks face, how they aim to manage it, and how stakeholder banks possibly differ from shareholder banks in their way of preventing these risks. It should be noted that, though being presented separately, these risks usually correlate between one another, rather than occurring independently (Casu et. al. 2015: 349-350).

#### 2.4.1. Credit risk

Credit risk is the most common type of risk linked with banking. Because of its connection to the fundamentals of financial intermediation, credit risk has historically been a very important risk for banks to control. It is characterized as the possibility that a borrower is unable to handle its loan obligations to the bank. This in turn implies decline in the client's credit standing. However, this decline doesn't directly suggest default, but rather an increased possibility of default. Credit risk isn't limited to the clients of a bank; it can be a result of holding bonds, guarantees, derivatives or other securities that experience a drop in their credit standing. This can happen if for example a credit-rating agency lowers the credit rating of a security. (Casu et. al. 2015: 329-332; Cecchetti 2008: 287-288; Choudry 2012: 40-41.)

A basic way for banks to manage their credit risk is by diversifying their loan portfolio so that they offer a large variety of loans. This means spreading their loans both geographically and across different industries, protecting itself from local or industry-specific economic declines. This can however conflict with the value creation of a bank: it would be much easier to gather information and achieve a competitive edge over a specific niche. Loan portfolios should also be diversified to match the amount of risk banks are willing to hold. (Mishkin & Eakins 2012: 609-613.)

Banks use credit risk analysis to figure out a possible borrower's credit risk. This means looking at possible problems with previous loans, as well as gathering personal information. Using the analysis data a bank is then able to approximate the default risk of a specific borrower. Loans are then granted or denied in relation to the amount of default risk the bank wants to hold. Borrowers are also monitored afterwards in order to detect unwanted behaviour like moral hazard. It is important to remember that higher default risk means higher interest rates, which in turn enables bigger return potential for the bank. How much risk a bank is willing to endure varies greatly between institutions, and is determined by bank-specific loan policies. (Mishkin & Eakins 2012: 609-613.)

The nature of stakeholder banks make them both more equipped to dealing with, but also more susceptible to the dangers of credit risk. Since stakeholder banks are typically geographically centered, their customer base is also limited because of this. Stakeholder banks are often regarded as local operatives within the community, which in turn results in long customer relationships between the local people and businesses and the banks. This allows stakeholder banks to gather more soft information on their clients over a longer period of time than commercial banks, providing them with more knowledge about their customers compared to their contemporaries and giving them a competitive advantage on the segment in question. Conversely, this geographical concentration can also increase credit risk, since banks are more reluctant to do business outside the area which they consider their own comfort zone, thus limiting the possibility of geographically diversifying their loan portfolios. (Boot & Thakor 2000; Ferri et. al. 2014.)

#### 2.4.2. Liquidity risk

Liquidity risk arises from the way banks fund their operations through customer deposits. Most of these lenders can demand the bank to pay them their deposits in cash anytime they like. To be able to manage these sudden requests banks hold a partial amount of its assets as cash reserves. If, however, the lenders would demand payment on their deposits simultaneously, the bank's cash reserves would most likely not cover every depositor. One reason for the banks' inability to pay is the mismatching they undergo when combining deposits and loans of different size and maturity. And while the assets of the depositors are liquid, most of the loans banks hold are not and they cannot be liquidated easily. What makes liquidity risk even more hazardous is its way of being self-perpetuating in worst cases; a bank not being able to pay its lenders their deposits creates distrust. This in turn causes people to fear for the safety of their deposits and wanting to cash in immediately. This so-called "bank run" worsens the bank's financial situation and in worst cases might cause insolvency or bankruptcy. (Casu et. al. 2015: 336-338; Cecchetti 2008: 284-287.)

When managing liquidity risk it is important to differentiate between day-to-day liquidity risk and a liquidity crisis. Day-to-day liquidity risk is the average amount of deposits withdrawn daily from a bank. This is usually easily managed by the bank, since only a small portion of deposits are usually cashed out, and the amount doesn't vary much on a daily basis. Liquidity crisis refers to a situation where these normal amounts are surpassed. These events are highly unpredictable and are caused by situations described in the previous paragraph. Banks can prepare for such events either by holding more cash

reserves or other easily marketable assets like treasury bills or other government securities, or by financing their operations by long-period liabilities. However, this is problematic because cash reserves yield little to no profit and longer loan periods are more costly. The bank has to decide how much cost inefficiency they are willing to withstand compared to their liquidity risk. Banks can also use different types of analysis methods to establish their needs for liquidity. These methods include the loan/deposits - ratio and short-term securities to total deposits. (Casu et. al. 2015: 336-339.)

#### 2.4.3. Interest rate risk

Interest rate risk derives from the fact that banks receive and pay interest on their assets and liabilities, respectively. The interest rate of these securities can be either fixed to a specific interest rate, or it can be re-priced in a certain time period, making it interest-rate sensitive. Due to the mismatching of assets and liabilities the different rates on assets and liabilities are unbalanced. This causes banks to be susceptible to possible interest rate alterations in the future. If for example a bank has more interest rate sensitive liabilities than assets, which is often true due to the length of loans compared to deposits, a rise in interest rates most likely decreases banks' net interest margin, and vice-versa. Interest rate risk can be further divided into refinancing risk and reinvestment risk. Refinancing risk refers to a situation where the maturity of a bank's assets is longer than the maturity of its liabilities, so it has to refinance its assets more often. This exposes the bank to unexpected interest rate changes. The same holds inversely true for reinvestment risk; if a bank has longer-maturity liabilities than assets, it runs the risk of reinvesting its assets at a lower interest rate than before. (Casu et. al. 2015: 332-336; Cecchetti 2008: 288-291.)

The traditional way for a bank to measure interest rate is gap analysis. It compares the amount of interest rate sensitive assets and liabilities a bank holds, giving a crude ratio that tells how much the net interest margin (or NIM) of the bank changes in relation to a change in interest rates. Banks have several different ways of managing interest rate risk. The most obvious course of action is trying to match the rate sensitivity of assets and liabilities. This method, however, goes against the basic banking activity of asset transformation. Other ways to combat interest rate risk is the use of derivative instruments, such as swaps, futures and options to mitigate possible interest rate changes. (Freixas & Rochet 2008: 284; Mishkin & Eakins 2012: 613-624.)

#### 2.4.4. Market risk

Also known as trading risk, market risk depicts the possibility of price movement that involves securities a bank might own. Since banking has come a long way from its original business model of financial intermediation, banks nowadays attempt to accumulate additional profits through trading securities, loans and derivatives. Market risk can be divided into general (or systematic) risk, meaning macroeconomic risks that affect all market instruments, and specific (or unsystematic) risk, which means unexpected price moves of a single instrument without any greater effect on the prices of other instruments (Heffernan 2005: 107-108). A bank can also be subject to market risk through lending to a company that invests in securities, so the credit risk of the loan in question correlates with the market risk of the company. (Casu et. al. 2015: 342-344; Cecchetti 2008: 291.)

Stakeholder banks typically refrain from participating in more exotic forms of banking. This stems directly from the fact that owners of stakeholder banks are also its customers. With their role as customers of the bank, the owners are more inclined to have the bank protect their savings by keeping away from more exotic (and possibly riskier) business strategies and rather focus on more traditional forms of banking. Another factor that contributes to stakeholder banks focusing on traditional banking forms is their limited access to the capital markets. Since they are unable to raise funding through market capitalization, stakeholder banks have a harder time achieving sufficient amounts of fresh financing for expanding their business portfolios.

Banks typically use value-at-risk (VaR) analysis together with stress testing to determine the amount of market risk they are exposed to. VaR estimates through historical data the probability of a maximal loss during a certain time period on a chosen portfolio. Stress testing is used to calculate probable losses in a case of unusually disadvantageous events. Through these and other analyses banks can calculate their own market risk and bring it to a level more suitable according to its own requirements. (Cecchetti 2008: 291; Heffernan 2008: 107-109, 142-154; Mishkin & Eakins 2012: 455, 475.)

#### 2.4.5. Other risks

Like any other industry, it is common for financial institutions to identify the possible risks they may face as risks created by themselves (micro risks) or by changes in their operational environment (macro risks). Possible macro risks a bank might face include

changing currency exchange rates, government credit ratings and competitive environment, inflation, as well as industry deregulation. Potential micro risks cover unplanned operational costs, off-balance-sheet activities, legal disputes, reputation depreciation, poor lending choices and bad management. (Casu et. al. 2015: 339-348.)

Essentially, micro risks can be categorized as two separate bank performance measures: cost efficiency and risk management. They indicate how well a bank is able to minimize costs that are unnecessary to its success, as well as identify possible risks in its operations and act accordingly. In this study, efficiency and risk management are considered measures of bank performance, and they will be used to find out whether stakeholder banks are more cost efficient and/or better at handling riskiness in their operations than shareholder banks, and which specific determinants contribute to this specific outcome. Macro risks are treated as independent variables, and they are included in the study to find out whether stakeholder banks are better at forecasting current market conditions and reacting accordingly.

## 2.5. The Nordic banking sector

The Nordic banking sector is tightly interconnected between its member countries, all of which are also very open towards other global markets as well. The sum of Norwegian and Swedish exports are 62 and 70 percent of their GDP, respectively. Studies have shown the four Nordic economies to be very closely linked, and that only a part of this collaboration is due to their geographical location. They are also considered safe havens by international investors due to their relatively stable macroeconomic conditions and history of fiscal prudence. Additionally, Finland and Sweden act as financial gatekeepers to the Baltic countries. Since they form a financial cluster together, it also implies that the countries are more heavily linked together than with the rest of the world, and that serious financial shocks to one of the countries easily propagates between them. (IMF 2013.)

On top of strong financial integration, the Nordic countries also have large banking sectors relative to their GDP, with Sweden and Denmark's banking sectors holding three to four times their GDP's worth of financial assets. The large banking sectors are used to maintain the debt of the private sector and non-financial corporations, which are highly leveraged in Nordic countries. The Nordic banking sector is mostly dominated by a few publicly listed international banking institutions that operate in all Nordic countries. They are large in terms of GDP, and they rely strongly on the wholesale markets for their

funding. Even though these large institutions operate internationally, nearly 80 percent of their operating income is generated within the Nordic region. Of the six largest banks, four have their parent companies based in Sweden. (IMF 2013.)

Along with their macroeconomical benefits, the banking sectors in Nordic countries also serve the purpose of providing an efficient and reliable financial system for their economies. In recent years, the Nordic banking sector has been evolving because of large investments by banks in new digitalization solutions and a shift towards automatization of normal banking services. These investments have decreased the number of branch offices located around the country, as online banking services have become the new norm. Consequently, the remaining branch offices have shifted their orientation from providing banking services to advisory services and selling products and services. (Swedish Bankers' Association 2019; Finance Finland 2018; Norges Bank 2018; Finance Denmark 2018.)

By the end of 2017, the Finnish banking sector was populated by 267 banks, a decrease of 12 banks from the previous year due to mergers and acquisitions. Most of these banks belonged to one of the 12 Finnish banking groups or amalgamations. The banking sector employed nearly 21 000 workers, and had 970 branch offices around Finland. The number of both employees and branch offices has been steadily declining since the mid-2000s. In 2017, Finnish banks held 157 billion euros worth of customer deposit, 56 and 23 percent of which were from households and companies, respectively. They also had 225 billion euros worth of outstanding loans to their customers, with respective household and company shares of 57 and 35 percent. Overall, the Finnish banking sector had one of the best capital adequacy ratios in the EU, with 21 percent of their capital being rated as the best possible kind. Also, the ratio of non-performing loans was only 1,4 percent, which is very low compared to other European countries. (Finance Finland 2018.)

Of the four Nordic countries, Finland's banking sector has one of the largest share of stakeholder banks. The three largest stakeholder banking groups, cooperative bank Osuuspankki and savings banks Säästöpankkiryhmä and Oma Säästöpankki held market shares of 40 percent of total outstanding loan shares and 42 percent of all domestic non-MFI deposits. Finnish stakeholder banks typically have regional focuses, and are considered essential parts of local communities. Osuuspankki, the most prominent cooperative bank in the Nordic countries, is characterized by high level of executive function integration and centralization of its common services. (Finance Finland 2018.)



As of the end of 2018, the Swedish banking sector consisted of 124 banks. Of these banks, 75 were categorized as shareholder banks (both domestic and foreign), and 49 as stakeholder banks. Its financial sector employed over 90 000 people and made up 4,1 percent of the total Swedish GDP. In 2018, Swedish bank balance sheet items totaled 9 272 billion SEK. Collectively, they held 4 370 billion SEK in deposits from their customers, 44 percent of which came from households, 24 percent from domestic companies and 19 percent from foreign depositors. They also lended out 4,281 billion SEK worth of loans, 33 percent of which were to Swedish businesses, and 30 percent to both Swedish households and foreign borrowers. (Swedish Bankers' Association 2018.)

The Swedish banking sector is mainly dominated by its four biggest banks: Swedbank, Svenska Handelsbanken, Svenska Enskilda Banken, and Nordea. Collectively, the “big-four” have a market share of 62 percent of the total Swedish deposit market. The Swedish field of stakeholder banks consists mostly of savings banks, as well as two small cooperative banks. Most Swedish savings banks co-operate with Swedbank regarding their technical solutions as well as some of their products and services. Their collective share of the country's deposit market is over 10 percent. However, stakeholder bank market share in local areas can easily exceed that figure. (Swedish Bankers' Association 2018.)

Norway's banking sector is fairly small compared to other European countries, as the sector's total assets are about twice as much as the country's GDP. This is due to the fact that the Norwegian banking sector is mainly focused on its domestic operations, and the share of international operations are limited. Although the sector has historically been dominated domestic banks, international subsidiaries and branch offices have began to increase their market share in Norway recently. The banking sector is highly concentrated, with the largest bank, DNB, holding a 39 percent deposit market share and a 30 percent lending market share. The sector's total deposits from customers totaled 2 439 billion NOK, with savings banks holding a 35 percent market share of deposits. The size of the lending market was 2 489 billion NOK, of which savings banks held a 25 percent share. (Finans Norge 2018; Norges Bank 2018.)

Norwegian banks are either commercial or savings banks, but according to Norway's central bank, this classification has become increasingly irrelevant recently. Norwegian savings banks are mostly very small, but they have created alliances which allow them to operate more like commercial banks. The alliances jointly produce non-banking activities on their group level, while individual banks focus on providing regular banking services

in their local areas. In order to access the capital market more easily, Norwegian savings banks have started to issue so-called equity certificates. These certificates act much like shares, with the distinction that the owners of these certificates do not have ownership rights to the issuer's net assets. (Norges Bank 2018.)

Much like its Nordic contemporaries, the Danish banking sector is also known for its efficient financial system. In 2017, it employed almost 40 000 people, held a total of 1 759 billion DKK in deposits from their customers, and had 1 546 billion DKK in loans outstanding to their customers. The Danish banking sector is characterized by its large size when compared to the country's total GDP, a high level of concentration while having a significant number of small banks, and a dominant share of domestic banks over foreign banks which are represented in Denmark by a few large international groups. The total assets of the banking sector are three times the country's GDP, and the five largest companies comprise 81 percent of the total deposit market share. The number of banks operating in Denmark has halved since 2004, making it the largest decrease of the four countries during that time period. The number of branch offices has also decreased by 42 percent since 2008, a development that is understandable given that the Danish banking sector is particularly known for its active development of IT services and digitalization. (Danish FSA 2018; Finance Denmark 2018.)

### 3. THE GLOBAL FINANCIAL CRISIS

In all its severity and extensiveness, the global financial crisis of 2007-2009 continues to be a major talking point in modern financial studies. What were the causes of the crisis? What were the consequences? What can be done in order to prevent another global crisis from happening? This chapter will go through the main characteristics of financial crises, the birth of the global financial crisis of 2007-2009 and the role banks played in it, as well as the effects it has had on the financial sector.

#### 3.1. Financial crises as a phenomenon

Mishkin and Eakins (2012: 204) describe financial crises as a disorder in the financial system that causes excessive asymmetric information between financial institutions and consumers. This disorder obstructs the proper flow of funds from surplus units to deficit units. Claessens and Kose (2013: 3-4) view financial crises as, to a degree, ultimate instances of market interaction between the financial system and the economy. They are often preceded by periods of asset price and/or credit booms, such as the housing price bubble and credit boom prior to 2007. Booms are often fueled by changes in the market environment, such as deregulation and optimistic economic forecasts. The upward trends of booms are usually bigger and faster than situations seen in normal business cycles. (Mishkin & Eakins 2012: 204-206.)

The same holds true for busts: they are severe, and measured asset price and credit busts are 10 to 15 times larger than normal economic downturns. The severity of the bust does however vary according to the assets in question; equity asset busts tend to have smaller effects on the real economy than those involving bank financing, such as real estate mortgages. Asset price busts can be caused by small negative changes in asset prices, which can be a result of normal changes in the fundamental value of an asset. The fall may increase defaults in the real sector, which in turn causes bigger default risks on the financial markets. This so called 'adverse feedback loop' means both the financial system and the real economy is left with less capital, making the crisis even worse. (Claessens & Kose 2013: 4-11; Davis 2010: 2-6.)

What makes crisis situations even more problematic for banks is their increased risk-taking and higher leverage during credit booms. This situation is typically aided by low interest rates that attract banks to hand out riskier loans in hopes for higher profits. As

households become more leveraged during credit booms, the chances of them paying back their debts decreases. As credit losses increase, depositors become more worried for the safety of their assets and want to cash them in, causing bank runs. Because of asymmetric information, depositors are unable to determine the status of their own bank. This, as well as the interconnectedness of modern financial markets, causes the runs to spread to banks that weren't necessarily in bad shape in the first place. Bank runs generate fire sales as banks battle to sell their assets at any given price in order to cover for their credit losses and avoid insolvency. The failure of one financial institution further accelerates panic, causing more institutions to go insolvent. Banks that are struggling to increase their liquidity drive up the interest rate of their loans. This attempt is however ineffective due to adverse selection, meaning only the riskiest loan takers are willing to accept the high interest rates. After the dust settles, bankrupt banks are either sold or liquidated by the authorities, anxiety towards the financial market dissipates, the stock market recuperates and the crisis fades away. (Claessens & Kose 2013: 4-11; Mishkin & Eakins 2012: 204-208.)

### 3.2. Evolution of the global financial crisis

The global financial crisis of 2007-2009 can be seen to have begun over a decade earlier, as the prices of houses began to rise during the mid 1990s. In fact, there had been only one significant nominal decline in the OFHEO housing price index from 1975 to 2006. This further contributed to the idea of sustainable asset growth in the housing market. As the prices continued to grow for the next ten years, the boom was heavily assisted by increased lending activity on behalf of the financial institutions, as well as declining mortgage interest-rates that hit their lowest mark for the past 40 years in 2004. Furthermore, technological advancements, such as new data pooling methods enabled financial institutions to score potential borrowers based on their default risk. These factors aided in increasing the share of subprime mortgage loans on the mortgage markets from 15 percent in 2001 to almost half of all mortgages in 2006. (Baily, Litan & Johnson 2008: 11-13.)

The early part of the housing boom was accompanied by rising income levels in the United States. As income growth slowly decelerated throughout the early 2000s, housing prices continued their climb. It coincided with the economic growth of developing countries around the world. This meant that there was an unusually large numbers of foreign investments flowing into the US housing markets. Also, global GDP growth

meant that the prices of basic commodities such as energy and food started to rise globally, evidenced by the growth of the Goldman Sachs Commodities index in the mid 2000s. As US citizens had to spend more money on their food and electricity bills, their debt-to-income ratio started to rise. More and more subprime mortgages began to default due to this event and banks started to foreclose increasing amounts of mortgage collateral, finally resulting in the burst of the housing bubble. (Baily et. al. 2008: 12-20; Jagannathan, Kapoor & Schaumburg 2013: 23-25.)

In the early 2000s banks began to construct new types of financial instruments constructed from pools of mortgage- and other asset-backed securities called collateralized debt obligations. These obligations, often abbreviated as CDOs, packaged together mortgage-backed securities (MBS) and other asset-backed securities (ABS), and then sold the rights for the cash flows of these securities forward to investors, ultimately re-securitizing actual securities. They worked a lot like mortgage-backed securities in the sense that they were divided into tranches that differed in the amounts of risk and return they contained, making them more widely desired between both high- and low-risk investors. CDOs allowed private individual investors to join in on the mortgage market sweepstakes without having to buy actual property. CDO issuers were able to convince credit rating agency to hand out highest possible credit ratings for the highest CDO tranches, and the obligations became an immediate source of high reward with relatively low amounts of risk in the eyes of investors. (Baily et. al. 2008: 7-9, 25-26.)

As CDOs spread across the globe through global securities markets, insurance agencies, hedge funds, banks and other financial institutions began offering insurances to protect CDO holders from potential default risk. The buyers of these so-called credit default swaps (CDS) would pay their insurer a monthly fee for safety against possible defaults. In turn, the CDS seller would pay a reimbursement in the case of default to the CDS buyer. The CDS transactions were not managed by any regulatory institution, and all market interactions took place on over-the-counter markets. This made the oversight and evaluation of CDS markets even more challenging. Furthermore, the CDS buyer wasn't required to own the actual security being protected, hence making them a highly speculative financial instrument. Fooled by the steady income streams and high credit ratings of the CDOs, the CDS issuers did not believe they would endure losses from CDS trading until the turn of events in late 2007. (Baily et. al. 2008: 30-33.)

### 3.3. Effects of the global financial crisis on the Nordic countries

Before the most recent financial crisis, the Nordic countries had previously experienced a severe financial crisis in the beginning of the 1990s. The crisis hit the hardest in Finland and Sweden, a result stemming from liberalization and deregulation of the capital markets of the two countries. The overheating of the capital markets finally led to a financial crisis and a deep recession ensued. As a result of the crisis, banks suffered big losses, and the Finnish and Swedish banking sectors experienced many bankruptcies despite governmental care packages. Structural changes made in the industry, as well as governmental support, finally started to pay dividends in 1993 and 1994, as the Finnish and Swedish economies broke out of the recession and the financial environment finally normalized. (Jonung, Kiander & Vartia 2009: 19-25, 62-64, 268-274.)

Just like Finland and Sweden, Norway also suffered from a financial crisis in the 1990s. The crisis happened during the years 1991 and 1992 for a lot of the same reasons as the Finnish and Swedish crises, but it didn't materialize in the same extent. Norway was able to dodge the more severe consequences of the crisis by using their government surplus to fund and save the troubled banks. Unlike the other Nordic countries, Denmark didn't suffer from a severe crisis in the 1990s, especially when looking at the amount of bankrupt banks or bank losses. Their economy did struggle due to the general difficulties of other European economies, resulting in the decrease of employment and inflation figures. However, the Danish Central Bank didn't restrict bank loan-taking or deposit and loan interest rates, which has been attributed as one of the reasons why their banking sector managed to curb a more serious banking crisis and overcome the adversities quickly. (Jonung et. al. 2009: 202-204, 236-262.)

The Nordic countries were hit harder by the global financial crisis that started in 2007 than many other countries. As already stated in the previous chapter, the Nordic banking sectors, especially in Finland, Sweden and Denmark, are small and open to global economies, with a lot of their income depending on international operations. Before the start of the crisis the Nordic financial sectors were considered to be stable and low-risk. The crisis emanated to the countries from the outside when the export of investment goods and consumer products declined internationally. 2009 saw Finnish production, exports, and investments decrease by 8,2 percent, 20 percent, and 17 percent, respectively. After the problems from the foreign markets penetrated the Nordics, domestic demand started to also suffer. (Finnish Prime Minister's Office 2011; Gylfason, Holmström, Korkman, Tsou & Vihriälä 2010; Norden 2013.)

Even though the Nordic GDP dropped during the crisis, it didn't cause such a drastic decline in consumer spending or employment rates thanks in most parts to the expansionary fiscal and monetary policies conducted by the governments. While public finances still had adequate credit ratings and low risk premiums, these policies resulted in the sharp increase of public debt and trade deficit in all Nordic countries, especially in Finland. On the other hand, the monetary policies conducted by the European Central Bank allowed consumer and industrial loan interest rates to decline, making loan terms cheaper to encourage private spending, increase consumer demand, as well as diminish the amount of loan defaults that happened during the crisis. The policies also had a positive impact on the Nordic housing markets during the crisis, which maintained its value throughout the crisis. (Finnish Prime Minister's Office 2011; Gylfason et. al. 2010; Norden 2013.)

The nature of the crisis resulted in the most severe consequences being reflected on the financial sector and the global financial intermediation processes. The crisis affected the interbank markets by raising the risk premium on interbank loans. This in turn decreased the availability of financing, especially in the Nordic countries as they are more dependent on the global financial markets. However, the financial stability of Nordic banks didn't change too drastically during the crisis, as none had to be bailed out or deleveraged. For the most part, Nordic banks had adequate levels of liquidity, which allowed them to absorb the negative shocks of the crisis. Bigger effects were seen on the securities market, where financing was tough to come by, and companies were forced to rely on domestic bank financing for the time of the crisis. (Finnish Prime Minister's Office 2011; Gylfason et. al. 2010; Norden 2013.)

The financial crisis changed the whole economic landscape of the Nordic economies. Many of the companies that previously worked in production intensive industries shifted towards more service-oriented business functions. Even though the crisis didn't have such severe effects on the Nordic banking sector, its consequences were serious and longlasting. Finland and Denmark have still yet to reach their pre-crisis GDP growth rates, and while Sweden and Norway reached their pre-crisis economic growth already in 2010, it has slowed down recently. Norway had an advantage over the other Nordic countries by virtue of their oil and petroleum export business, which has helped drive the country's economy and its demand impulses. Sweden's advantage over Finland and Denmark was that it could exploit the decrease in the value of their currency, the Swedish Krona, and the subsequent increase in their international export competitiveness. Both Finland and Denmark have already shown signs of recovery. As the Nordic markets are open and rely

on the global economy, the growing economies worldwide will eventually help boost the economies back to their old level. (Finnish Prime Minister's Office 2011; Gylfason et. al. 2010; Norden 2013.)



## 4. PREVIOUS LITERATURE AND RESEARCH HYPOTHESES

This chapter first presents previous studies conducted on the subject of stakeholder banking and their most relevant findings regarding the topic. Second, the research hypotheses are formed based on the findings of the pre-existing literature as well as the setup of this thesis.

### 4.1. Previous literature

In their seminal paper, Iannotta, Nocera, and Sironi (2007) study the effect of ownership structure on the risk and performance of large European banks between 1999 and 2004. They differentiate between government-owned, mutual, and privately owned banks, and control for banks that are listed in the stock market. They find that statistically significant performance differences exist between the different forms of ownership. Privately owned banks tend to be more profitable than their counterparts due to higher net returns on assets. Mutual banks are seen to be closer to private than public banks, but with lower profitability due to smaller size and a more traditional asset-mix compared to private banks. Their results further support the notion that government-owned banks, although not being the most profitable, are able to operate with less capitalization, lower costs and more risk than other banks. They are able to take more risk in their activities due to the additional governmental support they receive compared to other banks. (Iannotta, Nocera & Sironi 2007.)

Ferri, Kalmi and Kerola (2015) research a similar topic, but with a wider variety of ownership types and over a more recent time period. In this paper, the authors expand on their paper from 2014, that discusses the effect of bank ownership on bank lending behaviour. They divide banks into six ownership categories: Tightly and loosely integrated co-operative banks, private and public savings banks, and general and specialized shareholder banks. In order to measure performance, they use two additional variables along with profitability: cost efficiency and loan quality. They find this necessary since using just profitability to measure performance is not entirely feasible, since stakeholder banks do not focus solely on profit maximization. Their findings suggest that there are existing subgroups within the typical categorization of shareholder, cooperative, and savings banks that need to be taken into account when conducting such research because of their own specialities and peculiarities. (Ferri, Kalmi & Kerola 2015.)

Fiordelisi and Mare (2014) study the correlation of local competition and stability between European cooperative banks between the years 1998 and 2009. Their research is based on the assumption that since cooperative banks work closely with their respective local businesses, they also acquire more “soft information” on their clients than commercial banks. In a competitive environment, instead of increasing the risk they are willing to take, cooperative banks focus increasingly on relationship banking to provide them with a competitive advantage. Furthermore, they argue that the impact of competition on cooperative bank stability is higher in more homogenous banking systems, where banks demonstrate more herding behaviour in relation to one another. Their results prove that the amount of competition does correlate positively with the stability of the observed cooperative banks. The correlation is stronger in homogenous market areas, suggesting that there might be a “too-many-to-fail” problem embedded in cooperative bank closure policies. They also observe that the financial crisis did not have a significant impact on the correlation between the years 2007 and 2009. (Fiordelisi & Mare 2014.)

Much like the research conducted by Fiordelisi and Mare in 2014, Clark, Mare and Radic (2018) study the relationship between cooperative banking stability and the level of market power they have in countries where cooperative banks are most commonly found (more specifically, Germany, Austria, Italy, and Spain). Their study focuses on the specific cooperative business model, which concentrates heavily on the deposit and loan markets. Contrary to the findings of Fiordelisi and Mare, they find that market power non-linearly increases stability, and that most of the stability of individual banks is generated by market power in the loan markets. Higher levels of competition is thus found to be detrimental to the stability of cooperative banks. Furthermore, market power in the deposit market, as well as asset and liability diversification is found to increase bank solvency. (Clark, Mare & Radic 2014.)

In their study, Ferri, Kalmi, and Kerola (2014) focus on the effects of the ownership model of European banks to their lending behaviour. They derive their data from bank financial statements between 1999 and 2011. They use different forms of ownership to categorize their data into either shareholder or stakeholder banks, the latter comprising of savings banks and cooperative banks. The reasoning behind this division is that, unlike shareholder banks, stakeholder banks focus on maximizing consumer surplus rather than profit maximization. Their findings suggest that stakeholder banks, especially cooperative banks, differ from shareholder banks in their lending patterns. Stakeholder banks tend to smoothen their lending according to the business cycle, i.e. they do not

increase or decrease their lending as drastically as shareholder banks during boom or bust cycles, respectively. Because of this, the researchers argue that stakeholder banks have “the potential to reduce credit supply volatility” in the local economy. (Ferri, Kalmi & Kerola 2014.)

In their ECB working paper, De Santis and Surico (2013) examine how changes in the European monetary policy affects the availability of credit towards German, French, Italian, and Spanish banks, and whether this relationship is driven by certain bank characteristics. The study uses bank data between the years 1999 and 2011 to investigate whether non-systematic changes in the monetary policies conducted by the ECB had an effect on the lending activities and cost of funding of banks during the time period. They further differentiate between commercial, cooperative, and mutual banks in order to control for differences between bank typologies. Their findings show that while the transmission of monetary policy to bank lending activities is heterogenous across countries as well as different types of banks within a country, the results are homogenous within a certain bank typology in each country. They also find that changes in funding costs caused by changes in the monetary policy had the largest impact on Italian saving banks, and German cooperative and saving banks. They use this finding to prove that stakeholder banks play a key role in refinancing the real economy after a non-systematic negative shock, and that the increased number of savings and cooperative banks improves the transmission of monetary policy changes to the real economy in the Euro area. (De Santis & Surico 2013.)

Kontolaimou and Tsekouras (2010) investigate the differences in technological efficiency between cooperative, savings and commercial banks. They presume that due to the mutual ownership structure and the agency problem that it creates, cooperative banks tend to be less agile in adapting to the latest technological advancements, thus making them financially less productive. They use their data sample of European banks to create an efficiency frontier which the sample banks are examined. Their findings support the notion that banks which are more focused on profit maximization (i.e. commercial banks) are more efficient in adapting new technologies and comprise most of the efficient frontier. Cooperative banks are found to be very heterogenous in their technological efficiency, and that while as a whole they are not technologically efficient, a number of them do attempt to emulate the commercial leaders. The research also suggests that, contrary to the original assumption, the technological inefficiency of cooperative banks is not caused by the agency problem, but rather because of their more traditional operating environment. (Kontolaimou & Tsekouras 2010.)

In their 2013 paper, Fiordelisi and Mare examine Italian cooperative banks and their risk of default. According to them, cooperative banks are more likely to default (or be allowed to default by government officials) because of their small size and the too-big-to-fail policy prevalent in the banking industry. Thus, it is relevant to find bank-specific efficiencies that help counteract the possibility of defaulting. The study recognizes three key factors that enhance a cooperative bank's probability of survival: cost efficiency, revenue management and profit-efficiency. Along with these three measures, also asset quality, liquidity ratio and size are found to affect a bank's probability of default. Their findings suggest that traditional financial performance measures are adequate distress predictors also for cooperative banks. (Fiordelisi and Mare 2013.)

Girardone, Nankervis and Velentza (2009) look at the efficiency of banks in the EU-15 countries between 1998 and 2003 based on their ownership structure and the financial structure of the country they operate in. They aim to prove that the agency cost principle does not apply to banking, as a multitude of previous studies have stated the contrary, showing that European savings and cooperative banks have historically been more cost-efficient than commercial banks in general. After dividing their data sample into three different categories (commercial, savings and cooperative banks), they further subdivide the banks nationally based on how stock-market oriented a country is. They are able to reject the agency theory hypothesis by showing that mutual banks included in their sample are significantly more cost efficient than commercial banks. They also find savings banks operating in bank-based economies to have major cost efficiency advantages over banks operating in market-based, as well as commercial banks in general. (Girardone, Nankervis & Velentza 2009.)

#### 4.2. Research hypotheses

Based on the previous literature written about the subject of stakeholder bank, we can now postulate the research hypotheses for this thesis. In this thesis, we are interested in the performance of Nordic stakeholder banks, as well as the specific determinants that drive their performance. The best way to categorize the different hypotheses that will be examined in this thesis is to divide them into three separate categories. The categories are stakeholder bank performance compared to shareholder bank performance during the financial crisis, stakeholder bank performance compared to shareholder bank performance after the financial crisis, and determinants of stakeholder bank performance during and after the financial crisis. In the first two groups, there will be three research

hypotheses, one for each performance measure, while the third group will have two. The need for three separate hypotheses for the first two groups is due to the three performance measures used in thesis: profitability, cost efficiency, and loan quality.

For the first group, the research hypotheses will examine whether Nordic stakeholder banks were able to outperform shareholder banks during the financial crisis. Most of the previous studies state that stakeholder banks have been able to outperform shareholder banks during the financial crisis. Furthermore, the common perception regarding stakeholder banks is that their countercyclical nature and their lower risk levels allow them to avoid some of the negative impacts of the financial crisis. Thus, the null hypotheses will be stated as follows:

*H1<sub>1</sub>: Nordic stakeholder banks were more profitable than Nordic shareholder banks during the financial crisis.*

*H2<sub>1</sub>: Nordic stakeholder banks were more cost efficient than Nordic shareholder banks during the financial crisis.*

*H3<sub>1</sub>: Nordic stakeholder banks had better loan quality than Nordic shareholder banks during the financial crisis.*

For the second group, the hypotheses will analyze Nordic stakeholder bank performance after the financial crisis compared to shareholder banks. While there haven't been any studies on stakeholder banks that would have focused on the post-crisis period, we can assume that due to more normalized economic conditions it resembles the pre-crisis period. During normal economic conditions, stakeholder banks have usually been found to be less profitable. For cost efficiency, there have been mixed findings. Some studies have found savings banks to be more inefficient while cooperative banks have been more efficient than commercial banks. Others have also found cooperative banks to be more inefficient. For loan quality, many studies suggest that stakeholder banks have more soft information on their customers and thus better quality loans. For these reasons, the null hypotheses will be stated as follows:

*H1<sub>2</sub>: Nordic stakeholder banks were less profitable than Nordic shareholder banks after the financial crisis.*

*H2<sub>2</sub>: Nordic stakeholder banks were less cost efficient than Nordic shareholder banks after the financial crisis.*

*H3<sub>2</sub>: Nordic stakeholder banks had better loan quality than Nordic shareholder banks after the financial crisis.*

For the final two research hypotheses, the determinants of Nordic stakeholder bank performance are examined, both in relation to the economic situation as well as their shareholder counterparts. Previous research on determinants of bank performance has not been performed specifically on stakeholder banks, so no expectations can be made based on previous studies. Thus, assumptions will have to be based on more general information. For example, Dietrich and Wanzenried (2011) prove that bank profitability is driven by different determinants depending on the current economic situation. Also, it can be deduced based on the fundamental differences in the operations of stakeholder banks and shareholder banks that their performance determinants should differ from each other. Thus, the final two research hypotheses will be stated followingly:

*H1<sub>3</sub>: The determinants of Nordic stakeholder bank performance were different during and after the financial crisis.*

*H2<sub>3</sub>: The determinants of Nordic stakeholder bank performance differ from those of Nordic shareholder banks.*

## 5. DATA AND METHODOLOGY

This chapter goes through the theory of bank valuation and how to measure bank performance. The data used in the empirical part of this research is also examined more closely, as well as the different variables and other parameters that have been used to define the data sample more specifically. The regression model is introduced, along with the research hypotheses that will be set for the results of the empirical research.

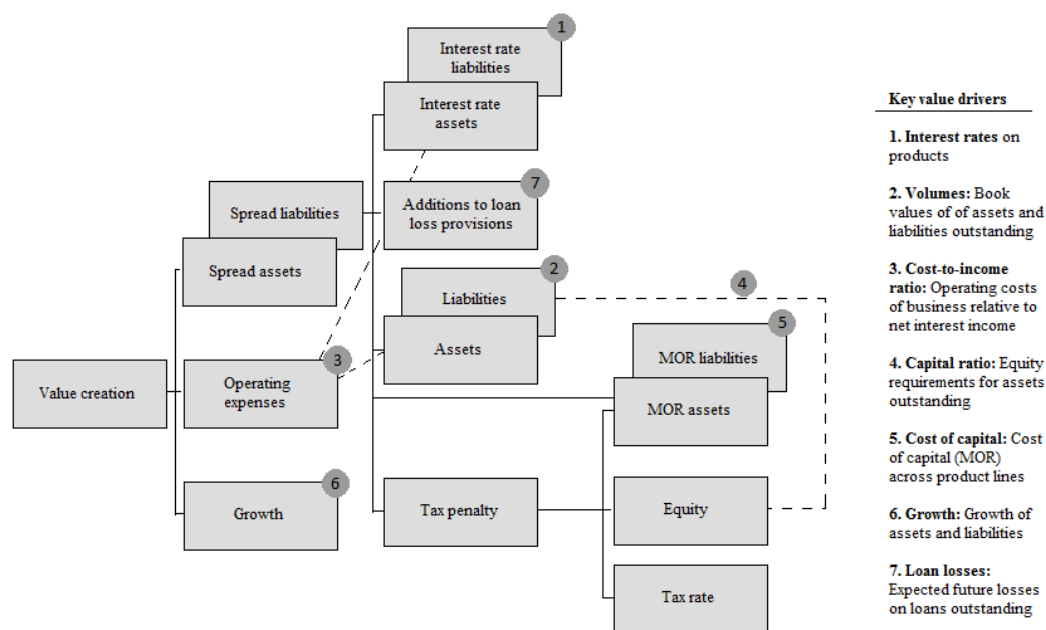
### 5.1. Valuation of banks

When valuing banks and other financial intermediaries one must take into account the differences they hold over corporations working in other industrial sectors. The biggest disparity comes from how their revenue accumulation differs from that of normal companies. The most common types of income banks generate can be divided into four groups: net interest income, fee and commission income, trading income and other income. For a long time, net interest income was the most dominant type of income for all banks. However, over the last few decades, its meaning has decreased as large investment banks and other major financial intermediaries make most of their profits through fees and commissions, and also through trading. This shift has been a major reason for banks becoming more procyclical, and thus more vulnerable to economic downturns, during recent years. (Koller, Goedhart & Wessels 2015: 713-716.)

Valuing banks from the outside can be extremely difficult, since the financial statements they release provide only a partial picture on their true economic situation. Vital details, such as the amount of credit losses and the mismatch of assets and liabilities, can be left out. Furthermore, high leverage and wide range of financial operations make valuations laborious and highly contingent on the prevailing economic situation. (Koller et. al. 2015: 713-716.)

The core operations of financial institutions consist of interest income and expenses. These cash flows are linked to the company's equity, which makes the cash-flow-to-equity valuation model the most accurate for valuing banks. The equity value can be calculated by dividing the future cash flows to equity by the discounted cost of equity. The future equity cash flows are estimated by subtracting the increase in the book value of equity from net income (earnings theoretically available to shareholders after expenses), and adding other noncash comprehensive income (for example net unrealized

gains and losses on equity and debt investments). Although this valuation is theoretically accurate, it fails to take certain notable factors into account; it doesn't show how the company is creating its value, it fails to consider the impact and risk on the cost of equity, and it ignores tax penalty that is enforced on holding equity risk capital. (Koller et. al. 2015: 716-726.) The question of how banks create their value can be answered through economic-spread analysis, which is explained next.



**Figure 3.** Generic Value Driver Tree for Retail Banking: Economic Spread (Koller et. al. 2015: 729)

Economic-spread analysis focuses on the different operations through which banks create value. It compares the interest rate a bank has on its loans and deposits to the respective matched-opportunity rates. Matched-opportunity rate is the rate of return that could have been acquired by investing in a financial instrument similar to the loan or deposit in both risk and maturity. This makes it easier to see if certain functions are actually creating or destroying value at their current rates. It also takes into account the natural maturity mismatch banks have between their assets and liabilities. Figure 3 presents the key variables which drive value creation in economic-spread analysis. (Koller et. al. 2015: 726-730.)



## 5.2. Measuring bank performance

The previous chapter discussed about the various ways banks create cash flows and value through their businesses. All the different types of value creation in one way or another add up to how well the bank is performing. The most common way to measure a bank's performance is through financial ratio analysis. Ratios that will be used in this thesis to measure bank performance are return on assets (ROA), cost-to-income -ratio (C/I), and ratio of loan loss provisions to total assets (LLP). (Casu et. al. 2015: 279-282.)

ROA is the most commonly used performance metric for measuring bank profitability. It is calculated by dividing the yearly net income a bank has been able to create by their total amount of assets:

$$(1) \quad ROA = \frac{\text{Net income in year } t}{\text{Total assets in year } t}$$

It is a useful measure for correcting the amount of income a bank has created relative to its size. Simply put, it reflects how well a bank's assets are being put to use, since it tells how effectively they are being used to generate profit.

The C/I -ratio is calculated by dividing non-interest expenses with the sum of net interest income and non-interest income:

$$(2) \quad C/I = \frac{\text{Non-interest expenses}}{\text{Net interest income} + \text{non-interest income}}$$

It can be used to measure how efficiently a bank is being run. Essentially, the C/I -ratio illustrates the ratio of a bank's production input (non-interest expenses) to the production output it is able to generate (sum of net interest and non-interest income). A lower C/I -ratio thus implies better bank cost efficiency.

Loan quality shows the percentage of loan loss provisions a bank has booked to its balance sheet during a fiscal year due to the possibility of unpaid loans, so it reflects the credit riskiness of a bank. It is calculated as the ratio of loan loss provisions to its total loans:

$$(3) \quad LLP = \frac{\text{Loan Loss Provisions}}{\text{Total loans}}$$

This variable has an inverse relationship with performance; a lower score means better loan quality, and thus better performance. Loan quality is a limited measure of bank riskiness, since it only measures the amount of risk a bank has relative to its lending activities. However, while it does not account for risk deriving from non-traditional banking activities produced by banks, it can still be assumed that lending is the core business for most banks, and that risk in lending operations can reflect overall bank risk behaviour. Furthermore, more aggressive banks may be inclined to book loan loss provisions more hesitantly, since the bookings affect their earnings. (Casu et. al. 2015: 282-287; Mishkin & Eakins 2012: 419-420.)

This thesis investigates how different bank-specific and macroeconomic variables affect the performance of Nordic shareholder banks and stakeholder banks, and how those effects vary between the two. The period is further divided into two time periods, crisis period (from 2008 to 2012) and the post-crisis period (from 2012 to 2017). These periodical results will then be analyzed to see how the variables have affected bank performance during different parts of the economic cycle, and whether their importance has changed. After finding out the determinants of stakeholder and shareholder bank performance during and after the financial crisis, the results are compared between each other to see how the bank-specific and macroeconomic factors might vary. In the second part, the impact of crisis-period performance of stakeholder and shareholder banks is used to predict performance advantages after the crisis in order to see, whether being able to perform well during the crisis period had a positive or negative effect on a bank's post-crisis performance.

### 5.3. Dependent variables

When normally measuring bank performance, the three variables used are the return on average assets (ROAA), the return on average equity (ROAE), and the net interest margin (NIM). These factors are all measures of bank profitability. However, since the main focus of the business model of stakeholder banks is consumer surplus maximization and not profit maximization, other factors also need to be taken into consideration. In their 2015 paper, Ferri et. al. use loan quality (measured by the ratio of loan loss provisions to total loans) and cost efficiency (measured by non-interest expenses divided by the sum of non-interest income and net interest income), along with ROAA as the measure for profitability (measured by the returns for year  $t$  divided by the average of assets between years  $t-1$  and  $t$ ), in order to measure bank performance more widely. These variables are

considered to be standard measures of bank performance also by banking literature (eg. Casu et. al. 2015: 279-282). These variables were already discussed in more detail in the previous chapter.

#### 5.4. Independent variables

For independent variables, both bank-specific, or microeconomic variables, as well as country-specific, or macroeconomic variables are used. Period and country-specific fixed effects are also used to control for yearly variation, as well as differences in taxation, accounting specifications, and the nature of competition between the different countries.

##### 5.4.1. Bank-specific variables

For bank-specific control measures, a list of variables that have been fairly standard in previous researches (e.g. Ferri et. al. 2015; Iannotta et. al. 2007; Fiordelisi and Mare 2014) is used. The specific variables used are size, capital ratio, share of loans, share of non-interest income, and liquidity.

Size is calculated and used as the natural logarithm of the total assets of a bank in order to normalize the distribution of the data. In previous studies, size has been found to be a significant positive factor for profitability. This is likely due to the fact that bigger size gives banks a competitive advantage over smaller banks by enabling banks to diversify their business models, as well as enabling them to take more risks without affecting their financial stability too greatly. Stakeholder banks tend to be smaller compared to their shareholder counterparts.

Capital ratio (the ratio of a bank's equity to its total assets) reflects the level of capitalization of a bank. It is typically linked to a bank's level of risk-taking, and is considered one of the most important independent variables for bank performance, although with mixed results. The effect of the capital ratio on bank performance can be difficult to anticipate beforehand, since previous studies and theories have conflicting evidence on its impact. The higher a bank's capital ratio is, the lower its risk and funding costs are considered to be. It is also a sign of better creditworthiness and lower need for additional external funding. However, as suggested by the risk-return hypothesis, lower capital ratio should create better profitability and thus, better performance. During crisis times, the increased risk created by a lower level of capitalization makes this assumption

even more questionable. Therefore, the impact of capital ratio on bank performance is difficult to determine beforehand. It would be logical to think that stakeholder banks would prefer to be better capitalized due to the lower risk factor. However, since their means of capitalization are limited, stakeholder banks might have to rely more heavily on external funding in order to run their operations.

Liquidity is the ratio of a bank's liquid assets compared to its total assets. This variable describes a bank's ability to meet its financial obligations when they are due. During normal financial conditions, a bank's obligations are fairly straightforward to predict. Holding surplus liquid assets instead of putting them into better use can be considered inefficient, especially if no big changes in market conditions is expected. Financial crises, however, tend to sharply increase the amount of unexpected costs and liquidity demands a bank faces, especially if the crisis gives birth to a bank run situation. It can thus be assumed, that a higher liquidity ratio can constitute to better bank performance especially during the crisis period, and vice versa during normal conditions.

The share of loans is calculated by the bank's total amount of loans outstanding divided by its total assets. It is used to measure the business model of a bank. Loans are typically considered to be more profitable compared to other types of assets, but they can also be more expensive to produce. Their performance is also related to the prevailing interest rate levels set by the current market conditions. A higher loans-to-assets ratio typically suggests that a bank directs a higher share of its available assets towards more traditional bank lending activities, which is also thought to be a staple of stakeholder banking. Its effect on bank performance can be difficult to anticipate, as its impact is dependent on the riskiness of a bank's loan portfolio. Because it is assumed that stakeholder banks are more involved in relationship banking than shareholder banks, it could also be argued that the share of loans correlates more positively with performance in stakeholder banks than it does in shareholder banks.

The share of non-interest income shows the share of non-traditional banking activities of a bank in relation to its total income. Fee-based income tends to have a higher margin, and trading activity is also usually higher compared to more traditional banking. This would mean traditional banking activities would yield lower profits than non-traditional activities. However, some studies (e.g. Beltratti & Stulz 2012; Fahlenbrach et. al. 2011) have found that a lower non-interest income share was typically associated with higher bank performance during the financial crisis, due to the fact that traditional banking activities were less exposed to the risks created by the crisis. This would in turn suggest

that the coefficient for the variable may vary during the different time periods, and that it is not possible to forecast beforehand.

#### 5.4.2. Macroeconomic variables

Just like any other business, also banks face macroeconomic factors that affect their performance. The GDP growth rate is a common measure for the national and international state of the business cycle. As a macroeconomic variable, it can be used to detect if a bank's performance evolves along with GDP growth. Typically, banks increase their lending activity and raise their interest rates during an economic upswing. The opposite can be also expected during economic recessions. Economic downturns may also bring about an increase in bad loans, which in turn affect the loan loss provisions of banks. However, as stated before, stakeholder banks are thought to act countercyclically during recessions, as they usually have more soft information on their clients, and thus more knowledge on their financial status. Based on previous research, GDP growth can be expected to have a positive correlation with shareholder banks, and vice versa with stakeholder banks.

**Table 1.** Expected coefficients of the independent variables

Variables	Expected coefficients						Measure	Data Source
	Crisis period			Post-crisis period				
	ROAA	C/I	LLP	ROAA	C/I	LLP		
Size	+	-	+	+/-	-	-	Natural logarithm of total assets	Fitch
Capital ratio	+	-	-	-	-	-	Equity to total assets	Fitch
Liquidity	+	-	+	-	-	+	Liquidity to total assets	Fitch
Loans to assets	+	-	+/-	-	+	+/-	Loans to total assets	Fitch
Share of non-interest income	-	-	+	+	-	+/-	Non-interest income to total income	Fitch
GDP growth	+	-	-	+	-	-	Nominal GDP growth rate	World Bank
Inflation rate	+/-	+/-	+/-	+/-	+/-	+/-	CPI inflation rate	World Bank

The effect of national inflation on bank performance is dependent on the bank's ability to forecast future inflation and adjusting its expenses accordingly. Some previous studies (e.g. Albertazzi & Gambacorta 2009; Athanasoglou, Brissimis & Delis 2008) have shown

there to be a positive correlation between inflation and bank performance. Albertazzi and Gambacorta (2009) state that the reasoning behind this is that bank fees correlate positively with inflation because they are tied to the nominal value of the assets a bank is managing. However, inflation can also be seen to increase volatility in an economy, as well as reduce the demand for credit. Furthermore, a bank's inability to properly forecast inflation and make changes to their protocols accordingly can affect negatively on its performance. Due to this, the coefficient for inflation is difficult to predict beforehand.

### 5.5. Data

The data used for the empirical analysis is gathered from the financial statement information between the years 2008 and 2017, provided by the Fitch database. All the dependent variables, as well as the bank-specific variables are obtained from this data. The GDP growth and CPI inflation rate data has been collected from the World Bank open database for all the Nordic countries. In total, Fitch covers 180 Finnish banks, 223 Norwegian banks, 172 Danish banks, and 188 Swedish banks over the whole time period, for a total of 763 banks. After controlling for banks that are not considered commercial banks (such as central banks, investment banks, private banks, credit institutions and bank holding companies), as well as banks with no relative information available, 544 banks are left as the final data. There are 371 stakeholder banks in total. Of the 544 eligible banks, 145 are Finnish, 104 are Swedish, 174 are Norwegian, and 121 are Danish. Stakeholder banks in Sweden, Norway, and Denmark consist only of savings banks, while Finland has both savings and cooperative banks. Of the 544 observed banks, 405 have relevant observations during the period of the financial crisis, while 484 banks are observed after the crisis period.

### 5.6. Methodology

Because of the two-dimensional nature of the data that is being used in this empirical analysis, the most suitable method to conduct the analysis is the panel data regression model. This is because it best describes the dynamics of change within banks and their specific characteristics over the determined time period, while also taking into account the heterogeneity of each bank and its variables. In order to control more rigorously for differences between individual banks, they must be accounted for in the regression through the use of either fixed or random effects. In order to determine which of the two

is more appropriate, the Hausman test for endogeneity is applied onto the regressions. After running the Hausman test, the results suggest that fixed effects should be used when controlling between different banks. This is an expected result because of the large number of banks in the sample data compared to the length of the time period, as well as the fact that bank-specific characteristics can be considered to be non-stochastic and persistent over the specified time period.

For this particular analysis, two different types of regression models are used, in order to differentiate between the two research questions: does the performance of stakeholder banks differ significantly from that of shareholder banks, and do the determinants that contribute to the performance measures differ between the two. The model follows the method used by Ferri et. al. (2015) in order to determine, how stakeholder banks have performed during and after the financial crisis compared to shareholder banks. The regression model is determined as follows:

$$(4) \quad Y_{i,t} = c + \beta_1 X_i^1 + \beta_2 X_{i,t-1}^2 + \beta_3 X_{i,t}^3 + \varepsilon_{i,t}$$

where

$Y_{i,t}$  = The performance of bank  $i$  at year  $t$  (estimated by either ROAA, cost-to-income ratio, or share of loan-loss provisions)

$c$  = The constant term

$X_i^1$  = A bank-specific dummy variable, which equals 1 if a bank is considered a stakeholder and 0 otherwise

$X_{i,t-1}^2$  = Bank-specific independent variables at year  $t-1$

$X_{i,t}^3$  = Macroeconomic independent variables at year  $t$

$\varepsilon_{it}$  = The error term.

This regression model is used when all the bank data is included. Bank-specific variables are lagged by one year in order to account for endogeneity between the variables and the error term. The model also uses a dummy variable in order to differentiate between the performance of stakeholder banks and shareholder banks. Due to the use of the dummy variable, bank-specific fixed effects cannot be applied. This is because the two dummies would create a multicollinearity issue with the model. Instead, a country fixed effect is applied in order to control for the observable and unobservable time-invariant differences in operating environments between banks from the different Nordic countries. A time fixed effect is also added in order to account for time-variant deviations between different years.

The second regression model is used for analysing the differences in the determinants of performance between stakeholder and shareholder banks. For this purpose, the two groups of banks will be separated and analysed individually. It is thus logical that this regression model does not include the stakeholder bank dummy variable like the previous model. Otherwise the model follows the same principals as the previous one. The second regression model is thus determined as follows:

$$(5) \quad Y_{i,t} = c + \beta_1 X_{i,t-1}^1 + \beta_2 X_{i,t}^2 + \varepsilon_{i,t}$$

where

$Y_{i,t}$  = The performance of bank  $i$  at year  $t$  (depicted by either ROAA, cost-to-income ratio, or share of loan-loss provisions)

$c$  = The constant term

$X_{i,t-1}^1$  = Bank-specific independent variables at year  $t-1$

$X_{i,t}^2$  = Macroeconomic independent variables at year  $t$

$\varepsilon_{it}$  = The error term.

As the stakeholder bank dummy is omitted from this regression model, it is then appropriate to apply the bank fixed effects to control for the differences between individual banks. Due to the application of bank fixed effects, country fixed effects are not included in this regression model due to the multicollinearity issue. Aside from these two deviations from the first regression model, the second model is otherwise similar in structure.



## 6. RESULTS

This chapter analyses the descriptive statistics of the data being used in the empirical analysis, as well as the results of the thesis that have been derived from the regression models. Table 2 shows the descriptive statistics of the dependent and independent variables used in the panel data analysis. They are further subdivided into categories based on time period and ownership type in order to differentiate between the parameters set for this study.

**Table 2.** Descriptive statistics of the Nordic banking sector.

ALL BANKS	2009 - 2017			2009 - 2012			2013 - 2017		
	Average	Median	St. Dev.	Average	Median	St. Dev.	Average	Median	St. Dev.
ROAA	0,66	0,66	1,48	0,42	0,49	1,28	0,85	0,78	1,60
CostToIncomeRatio	59,94	58,57	81,09	63,12	60,95	95,74	57,29	57,05	66,34
LoanLossProvisions	0,61	0,17	1,46	0,87	0,29	1,60	0,41	0,11	1,30
TotalAssets	74 095	3 043	324 885	74 605	3 075	317 907	73 669	2 992	330 584
Capital Ratio	12,51	10,51	10,80	11,70	9,46	11,10	13,19	11,42	10,50
Liquidity	19,82	13,24	19,72	22,01	15,53	20,61	18,11	11,83	18,81
LoansToAssets	71,94	77,23	18,05	72,09	77,54	18,29	71,82	77,02	17,85
Share of non-int. Op. Inc.	26,01	25,52	95,41	21,15	23,32	72,49	30,04	27,88	110,73
GDPGrowth	1,00	1,24	2,11	0,23	0,69	2,66	1,64	1,92	1,17
InflationRate	1,59	1,48	1,16	2,07	2,31	1,13	1,20	1,04	1,04
<b>STAKEHOLDER BANKS</b>	<b>Average</b>	<b>Median</b>	<b>St. Dev.</b>	<b>Average</b>	<b>Median</b>	<b>St. Dev.</b>	<b>Average</b>	<b>Median</b>	<b>St. Dev.</b>
ROAA	0,66	0,72	0,82	0,47	0,58	0,76	0,81	0,82	0,83
CostToIncomeRatio	61,45	59,37	33,30	63,74	61,28	44,75	59,69	58,00	20,42
LoanLossProvisions	0,46	0,16	1,02	0,66	0,27	1,11	0,30	0,11	0,91
TotalAssets	8 327	2 142	25 082	7 401	2 229	17 828	9 036	1 990	29 433
Capital Ratio	12,35	11,43	5,23	11,44	10,45	5,30	13,05	12,06	5,07
Liquidity	17,01	12,21	17,06	19,02	14,21	18,16	15,55	11,02	16,06
LoansToAssets	74,73	78,86	13,86	75,35	79,43	13,40	74,26	78,33	14,19
Share of non-int. Op. Inc.	26,11	25,08	84,88	18,96	22,00	61,09	31,52	27,78	98,81
GDPGrowth	1,01	1,09	2,01	0,30	0,69	2,56	1,55	1,92	1,21
InflationRate	1,58	1,48	1,16	2,04	2,20	1,14	1,22	1,04	1,04
<b>SHAREHOLDER BANKS</b>	<b>Average</b>	<b>Median</b>	<b>St. Dev.</b>	<b>Average</b>	<b>Median</b>	<b>St. Dev.</b>	<b>Average</b>	<b>Median</b>	<b>St. Dev.</b>
ROAA	0,64	0,47	2,30	0,32	0,34	1,89	0,94	0,66	2,60
CostToIncomeRatio	56,77	55,72	134,24	62,00	59,79	149,17	51,60	52,30	117,36
LoanLossProvisions	0,96	0,24	2,11	1,30	0,44	2,26	0,67	0,12	1,93
TotalAssets	211 535	14 183	544 872	196 989	10 147	511 207	225 949	16 546	575 931
Capital Ratio	12,85	8,01	17,41	12,16	7,06	17,20	13,53	8,72	17,58
Liquidity	26,14	19,19	23,46	27,87	23,21	23,65	24,54	16,20	23,16
LoansToAssets	66,02	69,33	23,62	66,04	69,20	23,80	66,01	69,42	23,45
Share of non-int. Op. Inc.	25,80	26,71	114,09	25,04	25,63	89,07	26,56	28,00	134,56
GDPGrowth	0,98	1,34	2,30	0,09	0,48	2,83	1,86	1,96	1,03
InflationRate	1,62	1,48	1,17	2,11	2,31	1,10	1,14	0,98	1,02

When looking at the figures of all banks, there are clear timeline trends that can be seen. Nordic banks have been more profitable (ROAA), cost efficient (C/I-ratio), and less risky

(Loan Loss Provisions) after the crisis than during it. These are all expected results since the economy has been growing during the latter part. Banks have also increased their capital ratio, as new regulations that were enacted after the crisis have been enforced upon them. They have decreased their liquidity and loans shares from total assets, and increased their non-interest yielding operations, showing increased confidence in the financial markets, which has in turn allowed them to expand on their respective service portfolios.

There are both expected and unexpected results when looking at the differences in the statistics between stakeholder and shareholder banks. On average, stakeholder banks are smaller, less cost efficient, and less risky than shareholder banks across all time periods, all the while being also more focused on traditional banking activities. They were also more profitable during the crisis, but lost their advantage in the post-crisis period, which is an expected result. More surprisingly, they had on average a smaller capital ratio and less liquidity both during and after the crisis. Furthermore, stakeholder banks increased their non-interest yielding operations more aggressively after the crisis than shareholder banks. Based on the deviation of the figures, shareholder banks seem to be a more heterogenous group than stakeholder banks, since their figures tend to vary more drastically across different variables. For example, while shareholder banks have a higher capital ratio on average compared to stakeholder banks, the opposite is true when looking at the median figures. This implies that a few extreme outliers skew the average results in favor of shareholder banks, while the figures of stakeholder banks seem to be more closely grouped together. Table 3 shows the correlation matrix for all the variables used in the panel data analysis, as well as their respective t-statistics.

Tables with the regression results show how the independent variables correlate with each performance measure. The figures for each variable include the correlation coefficient, as well as their t-statistic in parentheses. The results are shown with the macroeconomic variables both included and excluded. Each respective table is divided into three columns: one for all the bank data with the stakeholder dummy included, and one for the individual determinants for both stakeholder banks and stakeholder banks. The bottom of the table shows the R-squared, as well as the individual fixed effects used for each column. Table 4 and 5 show the fixed panel data regression results for profitability measured by ROAA during and after the crisis, respectively. A positive correlation between an independent variable and ROAA indicates that the variable in question is a determinant for increased profitability for banks included in the data.

Table 3. Correlation matrix for the variables used

	ROAA	CTIR	LLP	SIZE	CAPITAL	LOANS	NONINTINC	LIQUIDITY	GDP	INFLATION
<b>ROAA</b>	1,000 (-)									
<b>CTIR</b>	-0,179*** (-10,178)	1,000 (-)								
<b>LLP</b>	-0,528*** (-34,652)	0,125*** (7,034)	1,000 (-)							
<b>SIZE</b>	-0,000 (-0,025)	-0,112*** (-6,272)	-0,053*** (-2,937)	1,000 (-)						
<b>CAPITAL</b>	0,265*** (15,297)	0,085*** (4,753)	0,051*** (2,817)	-0,462*** (-28,984)	1,000 (-)					
<b>LOANS</b>	0,111** (6,245)	-0,112*** (-6,298)	-0,250*** (-14,376)	-0,027 (-1,477)	-0,103*** (-5,765)	1,000 (-)				
<b>NONINTINC</b>	0,027 (1,501)	-0,572*** (-38,888)	-0,011 (-0,586)	-0,003 (-0,160)	0,032* (1,806)	-0,094*** (-5,285)	1,000 (-)			
<b>LIQUIDITY</b>	-0,112*** (-6,253)	0,068*** (3,897)	0,203*** (11,560)	0,084*** (4,684)	0,001 (0,093)	-0,331*** (-19,546)	0,041** (2,283)	1,000 (-)		
<b>GDP</b>	0,107*** (5,996)	-0,005 (-0,287)	-0,191*** (-10,860)	0,042*** (2,342)	0,056*** (3,143)	0,033* (1,857)	0,005 (0,286)	-0,032* (-1,810)	1,000 (-)	
<b>INFLATION</b>	-0,128*** (-7,209)	0,018 (0,975)	0,033* (1,813)	0,118*** (6,619)	-0,171*** (-9,640)	0,138*** (7,773)	-0,034* (-1,908)	-0,005 (-0,272)	-0,059 (-3,303)	1,000 (-)

Significance levels: \* = p &lt; 10%; \*\* = p &lt; 5%; \*\*\* = p &lt; 1%.

**Table 4.** Fixed effects panel data regression results for profitability during the financial crisis.

2009-2012						
ROAA	All banks	Stakeholder banks	Shareholder banks	All banks	Stakeholder banks	Shareholder banks
# of banks	353	232	121	353	232	121
# of observations	1092	717	375	1092	717	375
Constant	<b>-0,620*</b> (-1,946)	1,169 (0,499)	8,565 (1,570)	-0,315 (-1,103)	1,527 (0,657)	8,662 (1,628)
Stakeholder Dummy	<b>0,154*</b> (1,766)	-	-	<b>0,159*</b> (1,817)	-	-
Size	<b>0,039**</b> (1,985)	-0,188 (-0,653)	-0,771 (-1,479)	<b>0,039**</b> (1,981)	-0,164 (-0,578)	-0,779 (-1,523)
Capital ratio	<b>0,045***</b> (7,963)	-0,019 (-0,703)	-0,030 (-0,911)	<b>0,044***</b> (7,918)	-0,025 (-0,904)	-0,030 (-0,908)
Share of loans	0,002 (0,714)	<b>0,012*</b> (1,923)	-0,012 (-1,071)	0,001 (0,667)	0,009 (1,441)	-0,011 (-1,044)
Share of non-interest income	0,000 (0,293)	0,000 (0,836)	<b>0,001*</b> (1,890)	0,000 (0,286)	0,000 (0,940)	<b>0,001*</b> (1,881)
Liquidity	<b>-0,004**</b> (-2,395)	0,002 (0,733)	0,000 (0,0535)	<b>-0,004**</b> (-2,379)	0,002 (0,675)	0,001 (0,116)
GDP Growth	<b>-0,039*</b> (-1,792)	<b>-0,040**</b> (-2,579)	-0,006 (-0,144)	-	-	-
Inflation rate	0,067 (1,490)	<b>0,066*</b> (1,927)	0,036 (0,383)	-	-	-
R-squared	0,185	0,625	0,768	0,185	0,618	0,768
Bank fixed-effects	No	Yes	Yes	No	Yes	Yes
Country fixed-effects	Yes	No	No	Yes	No	No
Year fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes

Significance levels: \* = p &lt; 10% ; \*\* = p &lt; 5% ; \*\*\* = p &lt; 1%.

From the first and fourth column in table 4, we can observe the determinants of profitability for all Nordic banks during the financial crisis. The column shows that, at 10% confidence level, stakeholder banks had a statistically significant positive correlation with profitability. This means that on average, stakeholder banks were more profitable than shareholder banks during the financial crisis. In this data series, also firm size and capital ratio correlated positively with profitability, so bigger and well capitalized banks performed better during the crisis. These findings make sense, since banks with such qualities can be considered more stable during financial uncertainty, and thus have a competitive advantage over smaller banks with lower levels of capitalization. Bigger banks also benefit from the “too-big-to-fail” assumption during crisis periods, which they can exploit to their benefit. Liquidity had a negative correlation with profitability, meaning that banks with less liquid assets had better profitability. Lower levels of

liquidity means more productivity as well as more operational risk for banks, as more of their assets are put to productive use and less is used as a buffer to shield from potential liquidity issues. Nordic banks also seemed to act countercyclically during the crisis, as GDP growth correlated negatively with profitability.

When looking at the individual statistics for both stakeholder and shareholder banks, the significant correlation coefficients observed in the first column do not apply. For stakeholder banks, the only significant internal determinant for profitability seems to be their share of loans to total assets. This would suggest that stakeholder banks that focused more on lending were able to outperform other banks during the crisis. Loans can be considered to provide stable returns during financial turmoil, as long as the bank's customers are able to manage their payments. Stakeholder bank profitability was also negatively correlated with GDP growth, suggesting that the assumption made by Ferri et al. (2014) of stakeholder bank countercyclicality during financial downturns is true. Inflation rate also correlated positively with stakeholder bank profitability, which can be a sign of stakeholder banks being able to forecast inflation fluctuations, and adjust their operations accordingly. For shareholder banks, the only statistically significant profitability determinant was their share of non-interest income. This finding is relatively surprising, given the dysfunctionality in the financial markets during the crisis, and that non-interest income can be considered a supplementary form of income for banks. On the other hand, as interest rates dropped drastically during the crisis, banks were forced to find other sources of income from non-interest yielding sources, which could explain the positive correlation. The lack of statistically significant variables in both samples can be a sign of heterogeneity within both groups, implying that the Nordic stakeholder and shareholder banking sectors are very diverse regarding their financial operations.

Table 5 shows the same data as table 4, but for the time period after the crisis. The first noteworthy observation in the column including all banks is that while stakeholder banks still seem to outperform shareholder banks, the results are not statistically significant for the post-crisis period. The development is expected, since shareholder banks are commonly expected to outperform stakeholder banks during normal economic conditions. Post-crisis profitability is instead driven by the size, capitalization, and share of loans. GDP growth has a negative coefficient, suggesting that the countercyclicality has continued even after the crisis, either deliberately or incidentally. Inflation rate also correlates negatively with profitability, which indicates that banks have not been able to forecast the changes in their economic environment too well. All in all, recent years have

seemed to have favored large Nordic banks that are well capitalized and focus more on traditional banking activities, at least from the perspective of profitability.

**Table 5.** Fixed effects panel data regression results for profitability after the financial crisis.

2013-2017						
ROAA	All banks	Stakeholder banks	Shareholder banks	All banks	Stakeholder banks	Shareholder banks
# of banks	453	326	127	453	326	127
# of observations	1777	1252	525	1777	1252	525
Constant	-0,243 (-1,048)	<b>7,587***</b> ( <b>3,707</b> )	<b>9,695***</b> ( <b>3,421</b> )	-0,285 (-1,230)	<b>7,728***</b> ( <b>3,789</b> )	<b>9,719***</b> ( <b>3,433</b> )
Stakeholder Dummy	0,030 (0,478)	-	-	0,028 (0,438)	-	-
Size	<b>0,047***</b> ( <b>3,157</b> )	<b>-0,998***</b> ( <b>-3,853</b> )	<b>-0,896***</b> ( <b>-3,390</b> )	<b>0,048***</b> ( <b>3,204</b> )	<b>-1,025***</b> ( <b>-3,976</b> )	<b>-0,898***</b> ( <b>-3,409</b> )
Capital ratio	<b>0,026***</b> ( <b>5,895</b> )	<b>-0,163***</b> ( <b>7,583</b> )	<b>-0,031**</b> ( <b>-2,117</b> )	<b>0,026***</b> ( <b>5,783</b> )	<b>-0,171***</b> ( <b>-8,359</b> )	<b>-0,032**</b> ( <b>-2,188</b> )
Share of loans	<b>0,003*</b> ( <b>1,805</b> )	<b>0,032***</b> ( <b>4,321</b> )	0,006 (0,803)	<b>0,003*</b> ( <b>1,839</b> )	<b>0,033***</b> ( <b>4,467</b> )	0,005 (0,702)
Share of non-interest income	0,000 (1,102)	-0,000 (-0,208)	0,000 (0,773)	0,000 (1,214)	-0,000 (-0,151)	0,000 (0,673)
Liquidity	0,0000 (0,118)	<b>0,006**</b> ( <b>2,286</b> )	<b>-0,010**</b> ( <b>-1,975</b> )	0,000 (0,147)	<b>0,006**</b> ( <b>2,332</b> )	<b>-0,010**</b> ( <b>-2,093</b> )
GDP Growth	<b>-0,133***</b> ( <b>-3,689</b> )	-0,047 (-1,372)	0,042 (0,593)	-	-	-
Inflation rate	<b>-0,102**</b> ( <b>-2,034</b> )	-0,047 (-1,010)	-0,101 (-1,264)	-	-	-
R-squared	0,083	0,492	0,719	0,076	0,462	0,717
Bank fixed-effects	No	Yes	Yes	No	Yes	Yes
Country fixed-effects	Yes	No	No	Yes	No	No
Year fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes

Significance levels: \* =  $p < 10\%$  ; \*\* =  $p < 5\%$  ; \*\*\* =  $p < 1\%$ .

Interestingly, both size and capital ratio actually correlate negatively with profitability for both groups, unlike in the results for the entire dataset. Thus, smaller and more leveraged stakeholder and shareholder banks seem to have benefitted the most profit-wise after the crisis in their own ownership groups. While they might lack the benefits of large banks, smaller banks may be able to adjust to new market conditions more flexibly compared their bigger counterparts. It is also somewhat easier for them to produce higher returns relative to their size compared to larger banks. Being more leveraged allows banks to use borrowed money to invest and turn into profits, while increasing their risk level in the process, so the negative correlation between capital ratio and profitability is

understandable during economic growth. While shareholder banks have a negative correlation between liquidity and profitability, the opposite is true for stakeholder banks. This is a surprising finding, since excess liquidity means that assets are not being handled effectively. One explanation for this finding could be that high liquidity provides stability, which in turn allows banks to operate more efficiently. Loan share was also a positive profitability indicator for stakeholder banks, indicating that stakeholder banks that have focused more on lending operations have been able to outperform their contemporaries. Moreover, the loan share variable is significant and positively correlated with profitability in both time periods for stakeholder banks, suggesting that stakeholder banks are more profitable when focusing on core banking operations, regardless of the economic conditions.

Tables 6 and 7 provide the same statistics as the previous two tables, but with a different dependent variable. Instead of profitability, the next two tables will focus on the cost efficiency of banks. As already stated in the previous chapter, bank cost efficiency is measured by the cost-to-income ratio. A smaller ratio indicates that a bank is being run more efficiently, so in this context all variables that correlate negatively with cost efficiency can be considered to increase cost efficiency.

Table 6 shows the correlation between the independent variables and cost efficiency of Nordic banks during the financial crisis period. The first noticeable aspect of the results is that the stakeholder dummy variable has a statistically significant negative correlation with cost efficiency. This result indicates that stakeholder banks were more cost efficient during the financial crisis than shareholder banks. One explanation for this finding could be that stakeholder banks were able to adjust to the changes in the market conditions more swiftly compared to shareholder banks. Since the ratio is also tied to the income level of banks, better cost efficiency can also indicate that stakeholder banks had less risky investment positions than shareholder banks during the crisis. Besides the ownership type, cost efficiency also seems to be driven by bank size and loan shares of total assets. Larger banks were able to operate more efficiently during the crisis than smaller banks, which can be attributed to having more stability when facing adverse situations. The fairly low number of non-performing loans in the Nordic countries during the crisis can be one explanation as to why loan shares correlated positively with cost efficiency.

**Table 6.** Fixed effects panel data regression results for cost efficiency during the financial crisis.

2009-2012						
COST-TO-INCOME RATIO	All banks	Stakeholder banks	Shareholder banks	All banks	Stakeholder banks	Shareholder banks
# of banks	353	232	121	353	232	121
# of observations	1093	717	376	1093	717	376
Constant	<b>130,328***</b> (7,741)	<b>145,715***</b> (4,868)	6,713 (0,050)	<b>120,568***</b> (8,022)	<b>136,535***</b> (4,229)	25,552 (0,197)
Stakeholder Dummy	<b>-10,008**</b> (-2,171)	-	-	<b>-10,144**</b> (-2,201)	-	-
Size	<b>-3,838***</b> (-3,701)	<b>-6,304*</b> (-1,714)	5,648 (0,444)	<b>-3,834***</b> (-3,698)	<b>-8,154**</b> (-2,066)	4,064 (0,325)
Capital ratio	0,332 (1,118)	<b>-0,703**</b> (-2,022)	0,890 (1,103)	0,338 (1,140)	-0,473 (-1,246)	0,870 (1,081)
Share of loans	<b>-0,454***</b> (-4,082)	<b>-0,274***</b> (-3,316)	-0,120 (-0,451)	<b>-0,451***</b> (-4,053)	-0,131 (-1,477)	-0,131 (-0,498)
Share of non-interest income	-0,021 (-1,035)	0,007 (1,363)	0,0153 (1,124)	-0,021 (-1,030)	0,006 (1,059)	0,016 (1,153)
Liquidity	0,096 (1,093)	0,006 (0,195)	0,028 (0,203)	0,096 (1,089)	0,015 (0,472)	0,013 (0,098)
GDP Growth	1,203 (1,053)	<b>1,542***</b> (7,855)	-0,607 (-0,600)	-	-	-
Inflation rate	-2,218 (-0,935)	<b>-3,134***</b> (-7,211)	-1,379 (-0,611)	-	-	-
R-squared	0,074	0,847	0,960	0,072	0,815	0,960
Bank fixed-effects	No	Yes	Yes	No	Yes	Yes
Country fixed-effects	Yes	No	No	Yes	No	No
Year fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes

Significance levels: \* = p &lt; 10% ; \*\* = p &lt; 5% ; \*\*\* = p &lt; 1%.

For shareholder banks, the determinants of cost efficiency continue a similar story to what was observed in table 4. None of the independent variables had any statistically significant correlation with cost efficiency during the financial crisis, further validating the theory of heterogeneity between Nordic shareholder banks during the crisis period. The determinants for stakeholder banks correlate for the most part with what was found in the regression with all banks. Bank size and share of loans coefficients were found to be negatively correlated with the cost-to-income ratio, suggesting that specifically stakeholder banks were driving the results for the entire dataset. Capital ratio also had a negative correlation with the cost-to-income ratio, which makes sense since better capitalization reduces the costs originating from excessive amounts of loans. Highly leveraged companies were also extremely exposed to the adverse market conditions during the crisis, making them more susceptible to unexpected losses. GDP growth is found to have a negative correlation with cost efficiency, while inflation rate and cost



efficiency correlate positively. This may indicate that the cost structures of stakeholder banks are heavily influenced by macroeconomic conditions. When the macroeconomic variables are excluded from the regression, the significant coefficients (excluding size) lose their statistical significance. This can be a sign that the observed findings are not robust.

Table 7 illustrates the regression results for determinants of cost efficiency after the financial crisis. The first column displays similar results as table 6, but with a similar caveat to the determinants of profitability: while other coefficients remain relatively the same, the stakeholder dummy coefficient loses its statistical significance. This finding also supports the theory of stakeholder banks being able to outperform shareholder banks during financial downturns, but not during normal economic conditions. It also amplifies the argument that stakeholder banks, unlike shareholder banks, act countercyclically and thus help soften the financial impact of recessions. For the rest of the independent variables, the size and loan share coefficients correlated positively with cost efficiency, just like during the crisis period. The only difference is that the coefficient for size has grown, while for share of loans the coefficient has gotten smaller. This result indicates that during normal economic conditions, the cost efficiency of Nordic banks is driven more by bank size than their loans shares to total assets compared to financial downturns.

For the individual ownership groups, the findings in table 6 are two-fold. For shareholder banks, the post-crisis regression results for cost efficiency provide clear robust results. Capital ratio is found to have a negative correlation with cost efficiency. More leveraged banks may have been able to find cheap debt financing from the financial markets during the aftermath of the crisis, which could explain why well capitalized banks haven't been as cost efficient during the post-crisis period. Non-interest income share also correlates negatively with cost efficiency, suggesting that providing more exotic banking services has been cost intensive for shareholder banks after the crisis. For stakeholder banks, the results are similar to the crisis period. Size and capital ratio are found to have a positive correlation with cost efficiency when macroeconomic variables are included. GDP growth and inflation rate are also statistically significant, both with a negative correlation respective to cost efficiency. When macroeconomic variables are excluded, both size and capital ratio lose their statistical significance. This would again lead to assume that the findings for stakeholder banks are not statistically robust, and/or that macroeconomic conditions are key determinants in stakeholder cost efficiency. In the regression without macroeconomic variables, share of loans is found to have a positive cost efficiency correlation for stakeholder banks.

**Table 7.** Fixed effects panel data regression results for cost efficiency after the financial crisis.

2013-2017						
COST-TO-INCOME RATIO	All banks	Stakeholder banks	Shareholder banks	All banks	Stakeholder banks	Shareholder banks
# of banks	453	326	127	453	326	127
# of observations	1777	1252	525	1777	1252	525
Constant	<b>116,544***</b> (7,843)	<b>138,966***</b> (4,769)	105,485 (0,274)	<b>117,476***</b> (7,944)	<b>123,833***</b> (4,132)	103,489 (0,270)
Stakeholder Dummy	-0,065 (-0,016)	-	-	-0,057 (-0,014)	-	-
Size	<b>-5,942***</b> (-6,239)	<b>-8,692**</b> (-2,356)	-7,401 (-0,206)	<b>-5,950***</b> (-6,250)	-6,121 (-1,616)	-7,082 (-0,199)
Capital ratio	-0,000 (-0,000)	<b>-0,916***</b> (-2,988)	<b>3,613*</b> (1,812)	0,003 (0,012)	-0,215 (-0,715)	<b>3,602*</b> (1,817)
Share of loans	<b>-0,266**</b> (-2,414)	-0,162 (-1,539)	-0,020 (-0,019)	<b>-0,267**</b> (-2,422)	<b>-0,248**</b> (-2,304)	-0,031 (-0,030)
Share of non-interest income	-0,001 (-0,051)	-0,006 (-0,982)	<b>0,166***</b> (4,453)	-0,001 (-0,078)	-0,007 (-1,153)	<b>0,165***</b> (4,456)
Liquidity	0,055 (0,600)	-0,008 (-0,209)	-0,295 (-0,450)	0,055 (0,593)	-0,015 (-0,389)	-0,311 (-0,477)
GDP Growth	1,685 (0,728)	<b>3,785***</b> (7,839)	1,904 (0,197)	-	-	-
Inflation rate	2,201 (0,683)	<b>2,160***</b> (3,258)	-1,643 (-0,151)	-	-	-
R-squared	0,050	0,787	0,307	0,050	0,772	0,306
Bank fixed-effects	No	Yes	Yes	No	Yes	Yes
Country fixed-effects	Yes	No	No	Yes	No	No
Year fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes

Significance levels: \* = p &lt; 10% ; \*\* = p &lt; 5% ; \*\*\* = p &lt; 1%.

Finally, bank riskiness during and after the financial crisis is examined in tables 8 and 9. In these regressions, the ratio of loan loss provisions to total loans is used to measure bank riskiness, as loan loss provisions most accurately portray how much at-risk banks expect to be currently holding in their loan portfolio. As with cost efficiency, negative coefficient correlation indicates that an increase in the value of the variable in question contributes to a bank being less risky.

Table 8 shows the regression results for Nordic bank riskiness during the financial crisis. While the coefficient for the stakeholder dummy variable would indicate that stakeholder banks have booked less loan loss provisions during the crisis compared to shareholder banks, the result is not statistically significant. Thus, it cannot be deduced that stakeholder banks would have been able to use relationship banking to their advantage during the financial crisis. One explanation for this finding is that a bank can book loan loss

provisions however they please. Since the provision bookings have a negative effect on a bank's profitability, shareholder banks may be more reluctant to make excessive bookings onto their accounts. Stakeholder banks do not have a similar issue, since they do not have to focus solely on profit maximization. Nordic bank riskiness during the financial crisis seems to be driven by the size and liquidity of banks. On average, larger banks booked less loan loss provisions relative to their total loan portfolio compared to smaller ones. Small banks might have geographical restrictions concerning their operations, which in turns limits their ability to regionally diversify their loan portfolios. Similarly, banks with more liquidity seemed to be more risky, a result for which there is no clear or precedented explanation.

**Table 8.** Fixed effects panel data regression results for loan quality during the financial crisis.

2009-2012						
LOAN LOSS PROVISIONS	All banks	Stakeholder banks	Shareholder banks	All banks	Stakeholder banks	Shareholder banks
# of banks	340	230	110	340	230	110
# of observations	1051	709	342	1051	709	342
Constant	<b>1,036**</b> ( <b>2,172</b> )	-3,910 (-1,163)	-2,495 (-0,321)	<b>1,233***</b> ( <b>2,903</b> )	-3,296 (-0,990)	-2,686 (-0,351)
Stakeholder Dummy	-0,153 (-1,176)	-	-	-0,150 (-1,157)	-	-
Size	<b>-0,047*</b> ( <b>-1,651</b> )	0,473 (1,142)	0,358 (0,483)	<b>-0,047*</b> ( <b>-1,649</b> )	0,453 (1,111)	0,372 (0,508)
Capital ratio	0,007 (0,734)	0,037 (1,067)	-0,034 (-0,785)	0,007 (0,709)	0,032 (0,915)	-0,034 (-0,784)
Share of loans	-0,001 (-0,550)	0,008 (0,947)	0,018 (1,297)	-0,002 (-0,547)	0,005 (0,661)	0,018 (1,288)
Share of non-interest income	-0,001 (-1,532)	<b>-0,001**</b> ( <b>-2,137</b> )	<b>-0,002***</b> ( <b>-2,878</b> )	-0,001 (-1,439)	<b>-0,001**</b> ( <b>-1,972</b> )	<b>-0,002***</b> ( <b>-2,891</b> )
Liquidity	<b>0,005**</b> ( <b>2,028</b> )	-0,003 (-1,120)	0,002 (0,305)	<b>0,005**</b> ( <b>2,105</b> )	-0,003 (-1,068)	0,002 (0,275)
GDP Growth	-0,041 (-1,288)	<b>-0,047**</b> ( <b>-2,376</b> )	0,010 (0,170)	-	-	-
Inflation rate	-0,015 (-0,221)	0,035 (0,787)	-0,025 (-0,202)	-	-	-
R-squared	0,31	0,787	0,840	0,309	0,785	0,840
Bank fixed-effects	No	Yes	Yes	No	Yes	Yes
Country fixed-effects	Yes	No	No	Yes	No	No
Year fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes

Significance levels: \* = p < 10% ; \*\* = p < 5% ; \*\*\* = p < 1%.

When divided into the two ownership groups, both stakeholder and shareholder banks indicate similar results for the crisis period. For both ownership groups, the share of non-

interest income correlates negatively with the loan loss provision ratio. Banks that focus more of their operations towards non-traditional banking activities limit their lending operations as a trade-off. This enables them to choose their customers more rigorously. One could also argue that in limiting lending operations banks also restrict their expertise on the matter, but this does not seem to have an effect on the number of bad loans they might have. Additionally, GDP growth correlates negatively with stakeholder bank riskiness. Since the customer's ability to pay its loan commitments to the bank can be related to the current macroeconomic conditions, the correlation can be somewhat expected.

Table 9 presents the regression results for the determinants of Nordic bank riskiness after the financial crisis. For the post-crisis period, the stakeholder bank dummy is statistically significant and negatively correlated, meaning that stakeholder banks have been taking less risks in their lending operations than shareholder banks during the time period. While the overall assumption originally was that stakeholder banks are less risky than shareholder banks, the fact that this result is not found during the crisis period is peculiar. One possible explanation could be that in the aftermath of the financial crisis, stakeholder banks may have been more tentative with their lending, which could explain the statistical significance in the second time period. Besides the stakeholder dummy, size is negatively correlated with bank lending risk also after the crisis. Regardless of the economic conditions, it would seem that larger banks are able to avoid risks arising from their lending activities more effectively than their smaller counterparts.

Regarding the individual determinants for stakeholder and shareholder banks, there are some interesting findings, that are difficult to explain. For stakeholder banks, capital ratio is statistically significant and correlates negatively with the ratio of loan loss provisions. A higher capital ratio may be an indication of a bank's tendencies regarding risk-taking (or the lack thereof), which would provide an internal explanation for the correlation. An external explanation could be that highly regarded customers who might receive multiple loan offers from different banks may favor banks that are better capitalized to ensure more stable conditions. More interestingly, GDP growth is found to be positively correlated with the ratio of loan loss provisions for stakeholder banks. This is an unexpected result, since by all accounts GDP growth should not increase the amount of bad loans in the market. For shareholder banks, the only statistically significant coefficient is liquidity, which correlates positively with the ratio of loan loss provisions. As it was with GDP growth, this correlation is also unexpected and difficult to explain. There is no apparent

reason as to why increased bank liquidity should increase the amount of bad loans a bank holds in their loan portfolio.

**Table 9.** Fixed effects panel data regression results for loan quality after the financial crisis.

2013-2017						
LOAN LOSS PROVISIONS	All banks	Stakeholder banks	Shareholder banks	All banks	Stakeholder banks	Shareholder banks
# of banks	444	323	121	444	323	121
# of observations	1722	1229	493	1722	1229	493
Constant	<b>1,516***</b> (5,848)	-1,465 (-0,705)	-4,708 (-1,196)	<b>1,556***</b> (6,033)	-1,782 (-0,860)	-4,756 (-1,210)
Stakeholder Dummy	<b>-0,392***</b> (-5,488)	-	-	<b>-0,392***</b> (-5,498)	-	-
Size	<b>-0,110***</b> (-6,626)	0,320 (1,217)	0,414 (0,232)	<b>-0,110***</b> (-6,628)	0,373 (1,426)	0,415 (1,138)
Capital ratio	-0,006 (-0,978)	<b>-0,102***</b> (-4,763)	0,022 (0,639)	-0,006 (-1,014)	<b>-0,088***</b> (-4,367)	0,024 (0,689)
Share of loans	-0,001 (-0,537)	0,010 (1,377)	0,014 (1,468)	-0,001 (-0,547)	0,009 (1,162)	0,015 (1,533)
Share of non-interest income	-0,000 (-0,338)	0,000 (0,244)	-0,000 (-0,650)	-0,000 (-0,382)	0,000 (0,180)	-0,000 (-0,563)
Liquidity	0,001 (0,583)	-0,001 (-0,470)	<b>0,014**</b> (2,200)	0,001 (0,569)	-0,001 (-0,524)	<b>0,014**</b> (2,278)
GDP Growth	0,029 (0,724)	<b>0,071**</b> (2,103)	-0,057 (-0,618)	-	-	-
Inflation rate	0,087 (1,562)	0,043 (0,948)	0,075 (0,715)	-	-	-
R-squared	0,209	0,628	0,687	0,208	0,626	0,686
Bank fixed-effects	No	Yes	Yes	No	Yes	Yes
Country fixed-effects	Yes	No	No	Yes	No	No
Year fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes

Significance levels: \* =  $p < 10\%$  ; \*\* =  $p < 5\%$  ; \*\*\* =  $p < 1\%$ .

To summarize, stakeholder banks managed to be more profitable and cost efficient than shareholder banks during the financial crisis period. After the crisis period, the results were no longer significant. These findings are in line with what has been stated in previous studies and what was predicted by the research hypotheses beforehand. These results further demonstrate the role of stakeholder banks as countercyclical institutions that act to soften the blow of economic downturns. Regarding loan quality, stakeholder banks had better quality of loans after the crisis, but not during the crisis period. As the initial hypothesis was that stakeholder banks would have better loan quality than shareholder banks due to relationship banking, this hypothesis cannot be fully accepted. For the individual determinants of stakeholder profitability during and after the crisis, the

statistically significant variables changed for all the performance measures from the crisis period to the post-crisis period. Either stakeholder banks change their operational approach depending on the prevailing economic conditions, or stakeholder banks with differing builds and operational focuses outperform others depending on the current economic situation.

## 7. CONCLUSIONS

This thesis discusses the importance of stakeholder banks to the Nordic banking sector, especially during times of financial uncertainty. The banking sector is heavily linked to all the different areas of the real economy through the operations they provide to both individuals and business entities. It is thus the benefit of the entire surrounding economic system that financial intermediation is operating effectively even during financial crises. In ideal conditions, an optimally functioning banking sector can hold the ability to curb some of the negative effects caused by a global financial crisis, such as the one we experienced in the last decade. Research has found stakeholder banks to be in a pivotal position within the banking sector when it comes to preventing the spreading of financial crises.

While previous research has for the most part found stakeholder banks to be less profitable, more cost inefficient, and more restrained in their business compared to shareholder banks during normal economic conditions, their stability and efficiency during economic distress is widely accepted. While shareholder banks have been found to use riskier business tactics during normal economic conditions in order to maximize their profitability, stakeholder banks typically refrain from taking part in such endeavors to ensure the reliability and stability of their services to their customers, who act as their owners simultaneously. This plan becomes exceptionally beneficial for stakeholder banks during financial crisis periods. When the business cycle turns from boom to bust, the more riskier operations are most likely the ones to turn sour the quickest. While shareholder banks are left to suffer from the consequences, stakeholder banks don't have to adjust to the new conditions since their businesses hadn't been that risky to begin with. Research have shown stakeholder banks to increase their lending operations, as well as become integral operators in implementing new monetary policies set in place to help solve the crisis, all the while outperforming shareholder banks in the most relevant categories.

This thesis focuses specifically on the performance metrics of Nordic stakeholder banks, and how they stacked up against their shareholder counterparts during and after the most recent financial crisis. The first group of research hypotheses analyzes the performance of Nordic stakeholder banks against Nordic shareholder banks during the financial crisis. The regression results found stakeholder banks to be more profitable and more cost efficient than shareholder banks during the crisis. These results were expected based on previous research on the topic, and thus the first two research hypotheses are accepted. The third performance metric, loan quality, was found not to be statistically significant

between stakeholder and shareholder banks. While the result was unexpected, it may have a simple explanation. Since shareholder banks aim to maximize their profits, they are inherently more hesitant towards making excessive loan loss provision bookings on their accounts since it would have a negative effect on their profitability. Simultaneously, stakeholder banks do not have a similar obligations toward their owners, so they can focus more on providing the most accurate depiction of their financial situation, even if it would mean booking more loan loss provisions than they would actually need to. Thus, even though the research hypothesis is rejected, the result does not directly imply that stakeholder banks didn't have better loan quality during the financial crisis.

The second set of research hypotheses focused on the same differences in performance metrics between Nordic stakeholder and shareholder banks after the financial crisis. The results imply that while stakeholder banks were found to have better loan quality during the post-crisis period as expected, shareholder banks were unable to outperform stakeholder banks in terms of profitability or cost efficiency. Instead, bank size, capitalization, and a high loan share were more important performance factors after the crisis. The financial crisis and the euro crisis that followed it had long-lasting effects on the European economy and in the Nordic countries. It would seem that shareholder banks have not been able to exploit the post-crisis markets due to the high factor of uncertainty long after the peak of the crisis had been over. Another explanation could be that stakeholder banks have simply been able to match the performance of shareholder banks during the post-crisis period, and that any advantage shareholder banks may have had over stakeholder banks before the crisis started have now disappeared due to the new regulations and policies that have been set in place.

The third set of research hypotheses address the determinants of Nordic stakeholder banks, and how they differ between time periods as well as those of Nordic shareholder banks. For the comparison of stakeholder bank performance determinants during and after the financial crisis, the statistically significant determinants for profitability and loan quality changed between the two periods. For cost efficiency the determinants stayed more or less the same, as bank size and capital ratio were the two main drivers for efficient performance regardless of the economic situation. Regarding the differences in determinants between the two groups of banks, they seemed to have similar performance drivers only when measuring loan quality during the financial crisis, and profitability after the financial crisis. The second result is particularly interesting, as it implies that banks have become more homogenous after the financial crisis regardless of their ownership form. This may be the result of increased banking sector regulation after the crisis. On



the other four regressions, their performance determinants were different from each other. The second research hypothesis is thus accepted, as these results further depict the differences between stakeholder and shareholder banks in terms of how they conduct their businesses.

For future areas of research in the field of Nordic stakeholder bank performance, it would definitely be interesting to see how the Nordic stakeholder banks compare to the other stakeholder bank clusters around Europe. The stakeholder banks in Germany, Austria, Italy or Spain most likely operate in a completely different fashion due to their geographical location compared to the Nordic countries, and it would be fascinating to see if there are any significant differences to be found. One aspect that could be added to this research topic could be the effects of the new banking regulations on Nordic stakeholder banks compared to other European stakeholder banking clusters.

For future research within the Nordic banking sector, another intriguing topic would be to see what kind of effects the new banking regulations set in place in the EU after the crisis have affected the performance of Nordic stakeholder banks, and whether the effects are different between stakeholder and shareholder banks in the Nordics. Another area of research could be to find out if there are differences in the determinants of performance for stakeholder banks before and after the financial crisis, as the financial and economic landscapes have changed significantly between these two time periods. This research could be extended to examine whether stakeholder banks that performed better during the pre-crisis period were able to continue to do so during the post-crisis period.

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## APPENDIX

### Appendix 1. List of banks

Bank Name	Country	St. Bank			
Aarhus Lokalbank	Denmark	No	Berg Sparebank	Norway	Yes
Aasen Sparebank	Norway	Yes	Bergslagens Sparbanken	Sweden	Yes
AB Svensk Exportkredit	Sweden	No	AB		
Afjord Sparebank	Norway	Yes	Birkenes Sparebank	Norway	Yes
Aito Saastopankki Oy	Finland	Yes	Bjugn Sparebank	Norway	Yes
Akaan Seudun Osuuspankki	Finland	Yes	Bjursas Sparbank	Sweden	Yes
Aktia Bank Plc	Finland	No	Blaker Sparebank	Norway	Yes
Aktia Plc	Finland	No	Bluestep Bank AB (publ)	Sweden	No
Aktia Real Estate Mortgage Bank plc	Finland	No	BN Bank	Norway	No
Alajarven Osuuspankki	Finland	Yes	BN Boligkreditt AS	Norway	No
Alastaron Osuuspankin	Finland	Yes	Boddum-Ydby Sparekasse	Denmark	Yes
Alavieskan Osuuspankki	Finland	Yes	Bolig- og Naeringskreditt AS	Norway	No
Alavuden Seudun Osuuspankin	Finland	Yes	Bonum Bank Limited	Finland	No
Alems Sparbank	Sweden	Yes	Borbjerg Sparekasse	Denmark	Yes
Alm Brand Bank A/S	Denmark	No	BRFKredit Bank	Denmark	No
Andebu Sparebank	Norway	Yes	Bustadkreditt Sogn og Fjordane AS	Norway	No
Andelskassen Faelleskassen	Denmark	Yes	Carnegie Bank A/S	Denmark	No
Andelskassen JAK Ebeltoft	Denmark	Yes	Central Bank of Savings Banks Finland Plc	Finland	Yes
Andelskassen JAK Slagelse	Denmark	Yes	Cerdo Bankpartner AB	Sweden	No
Andelskassen Oikos	Denmark	Yes	Collector Bank	Sweden	No
Arbejdernes Landsbank	Denmark	No	Coop Bank	Denmark	No
Arendal og Omegns Sparekasse	Norway	Yes	Cultura Sparebank	Norway	Yes
Artjarven Osuuspankki	Finland	Yes	Dalslands Sparbank	Sweden	Yes
Ase och Viste harads Sparbank	Sweden	Yes	Danske Andelskassers Bank	Denmark	Yes
Askim & Spydeberg Sparebank	Norway	Yes	Danske Bank AS	Denmark	No
Askolan Osuuspankki	Finland	Yes	Danske Bank PLC	Finland	No
Attmars Sparbank	Sweden	Yes	Danske Hypotek AB (publ)	Sweden	No
Atvidabergs Sparbank	Sweden	Yes	Den Jyske Sparekasse	Denmark	Yes
Auran Osuuspankki	Finland	Yes	Deutsche Leasing Sverige AB	Sweden	No
Aurland Sparebank	Norway	Yes	DiBa Bank A/S	Denmark	No
Aurskog Sparebank	Norway	Yes	Djurslands Bank	Denmark	No
Avain Saastopankki	Finland	Yes	DLR Kredit AS	Denmark	No
Avanza Bank AB (publ)	Sweden	No	DNB ASA	Norway	No
Bank DnB Nord AS	Denmark	No	DNB Bank ASA	Norway	No
Bank Norwegian AS	Norway	No	DNB Boligkreditt AS	Norway	No
Bank of Aland Plc	Finland	No	Dragsholm Sparekasse	Denmark	Yes
Bank2 ASA	Norway	No	Drangedal Sparebank	Norway	Yes
Bankenes Sikringsfond	Norway	No	Dronninglund Sparekasse	Denmark	Yes
Banque Internationale a Luxembourg Bank	Denmark	No	E.Ohman J:or Fondkommission AB	Sweden	No
Danmark A/S			Easybank ASA	Norway	No
Basisbank AS	Denmark	No	Eidsberg Sparebank	Norway	Yes
			Eiendomskreditt	Norway	No

Eik Bank Danmark A/S	Denmark	No	Halden Sparebank	Norway	Yes
Eika Gruppen AS	Norway	No	Hals Sparekasse	Denmark	Yes
Eika Kredittbank AS	Norway	No	Halsinglands Sparbank	Sweden	Yes
Ekeby Sparbank	Sweden	Yes	Haltdalen Sparebank	Norway	Yes
Ekobanken Medlemsbank	Sweden	Yes	Handelsbanken Finans AB (publ)	Sweden	No
Eksportfinans	Norway	No	Haradssparbanken Monstera	Sweden	No
Ekspres Bank A/S	Denmark	No	Harstad Sparebank	Norway	Yes
Enon Osuuspankki	Finland	Yes	Haugesund Sparebank	Norway	Yes
Erik Penser Bank AB	Sweden	No	Hegra Sparebank	Norway	Yes
Etela-Hameen Osuuspankki	Finland	Yes	Helgeland Boligkreditt AS	Norway	No
Etela-Pohjanmaan Osuuspankki	Finland	Yes	Helgeland Sparebank	Norway	Yes
Etne Sparebank	Norway	Yes	Helgenaes Sparekasse	Denmark	Yes
Etnedal Sparebank	Norway	Yes	Helmi Saastopankki Oy	Finland	Yes
Euran Osuuspankki	Finland	Yes	Helsinki Area Cooperative Bank	Finland	Yes
Evje og Hornnes Sparebank	Norway	Yes	Hjartdal og Gransherad Spb	Norway	Yes
Evli Bank Plc.	Finland	No	Hjelmeland Sparebank	Norway	Yes
Falkenbergs Sparbank	Sweden	Yes	Hogsby Sparbank	Sweden	Yes
Fana Sparebank	Norway	Yes	Hoist Finance AB	Sweden	No
Fana Sparebank Boligkreditt AS	Norway	Yes	Hoist Kredit AB	Sweden	No
Fanefjord Sparkasse	Denmark	Yes	Hol Sparebank	Norway	Yes
Fano Sparekasse	Denmark	Yes	Holand & Setskog Sparebank	Norway	Yes
Faster Andelskasse	Denmark	Yes	Holla og Lunde Sparebank	Norway	Yes
FIH Erhvervsbank A/S	Denmark	No	Honefoss Sparebank	Norway	Yes
FIM Corporation	Finland	No	Honkajoen Osuuspankki	Finland	Yes
Finansbanken AS	Denmark	No	Honkilahten Osuuspankki	Finland	Yes
Finnish Fund for Industrial Cooperation Ltd	Finland	No	Huittisten Saastopankki	Finland	Yes
Finnvera	Finland	No	Humppilan Osuuspankki	Finland	Yes
Fjaler Sparebank	Norway	Yes	Hunstrup-Osterild Sparekasse	Denmark	Yes
Fjordbank Mors A/S	Denmark	No	Hvidbjerg Bank AS	Denmark	No
Flekkefjord Sparebank	Norway	Yes	ICA Banken AB	Sweden	No
Flemlose Sparekasse	Denmark	Yes	IFU	Denmark	No
Foerstaedernes Bank	Denmark	No	Ikano Bank AB (publ)	Sweden	No
Folke Sparekassen	Denmark	Yes	Indre Sogn Sparebank	Norway	Yes
Folkefinans AS	Norway	No	Ita-Uudenmaan Osuuspankki	Finland	Yes
Forex Bank AB	Sweden	No	Ivetofta Sparbank i Bromolla	Sweden	Yes
Fornebu Sparebank	Norway	Yes	J.A.K. Andelskassen Ostervra	Denmark	Yes
Fortis Commercial Finance A/S	Denmark	No	Jæren Sparebank	Norway	Yes
Frorup Andelskasse	Denmark	Yes	JAK Medlemsbank	Sweden	Yes
Fros Sparkasse	Denmark	Yes	Jamsan Seudun Osuuspankkic	Finland	Yes
Froslev-Mollerup Sparekasse	Denmark	Yes	Janakkalan Osuuspankki	Finland	Yes
Fryksdalens Sparban	Sweden	Yes	Jarvi-Hameen Osuuspankki	Finland	Yes
FS Finans III A/S	Denmark	No	Jernbanepersonalets Sparebank	Norway	Yes
FS Finans IV A/S	Denmark	No	Jokioisten Osuuspankki	Finland	Yes
Fynske Bank A/S	Denmark	No	Jutlander Bank A/S	Denmark	No
GE Money Bank AB	Sweden	No	Jyske Bank A/S	Denmark	No
Gildeskal Sparebank	Norway	Yes	Jyske Realkredit A/S	Denmark	No
Gjensidige Bank ASA	Norway	No			
Grong Sparebank	Norway	Yes			
Grue Sparebank	Norway	Yes			



Kainuun Osuuspankki	Finland	Yes	Laihian Osuuspankki	Finland	Yes
Kalajoen Osuuspankki	Finland	Yes	Lan & Spar Bank	Denmark	Yes
Kalkkisten Osuuspankki	Finland	Yes	Landbrugets Finansieringsbank A/S	Denmark	No
Kangasalan Seudun Osuuspankki	Finland	Yes	LandKreditt Bank AS	Norway	No
Kangasniemen Osuuspankki	Finland	Yes	Landkreditt Boligkreditt AS	Norway	No
Kannuksen Osuuspankki	Finland	Yes	Landkreditt SA	Norway	No
Karkolan Osuuspankki	Finland	Yes	Landsbanki Foroya	Denmark	No
Kaylan Osuuspankki	Finland	Yes	Landshypotek Bank AB	Sweden	No
Kemin Seudun Osuuspankki	Finland	Yes	Landshypotek ekonomisk forening	Sweden	No
Kerimaan Osuuspankki	Finland	Yes	Langa Sparekasse	Denmark	Yes
Kesalahden Osuuspankki	Finland	Yes	Lanneveden Osuuspankki	Finland	Yes
Keski-Pohjanmaan Osuuspankki	Finland	Yes	Lansforsakringar Bank AB	Sweden	No
Keski-Suomen Osuuspankki	Finland	Yes	Lansforsakringar Hypotek AB	Sweden	No
Keski-Uudenmaan Osuuspankki	Finland	Yes	Lansi-Kymen Osuuspankki	Finland	Yes
Kihnion Osuuspankki	Finland	Yes	Lansi-Suomen Osuuspankki	Finland	Yes
Kiihtelysvaaran Osuuspankki	Finland	Yes	Lansi-Uudenmaan Osuuspankki	Finland	Yes
Kinda-Ydre Sparbank	Sweden	Yes	Lansi-Uudenmaan Saastopankki	Finland	Yes
Kiteen Seudun Osuuspankki	Finland	Yes	Lapin Osuuspankki	Finland	Yes
Klaebu Sparebank	Norway	Yes	Lapuan Osuuspankki	Finland	Yes
Klarna Bank AB (publ)	Sweden	No	Larvikbanken Brunlanes Sparebank	Norway	Yes
Klepp Sparebank	Norway	Yes	Lavian Osuuspankki	Finland	Yes
Klim Sparekasse	Denmark	Yes	LeasePlan Norge AS	Norway	No
KLP Banken AS Group	Norway	No	Leasing Fyn & Factoring (Denmark)	Denmark	No
KLP Boligkreditt AS	Norway	No	Lehtimaen Osuuspankki	Finland	Yes
KLP Kommunekreditt AS	Norway	No	Lekebergs Sparbank	Sweden	Yes
KLP Kreditt AS	Norway	No	Leksands Sparbank	Sweden	Yes
Kobenhavns Andelskasse	Denmark	Yes	Lemin Osuuspankki	Finland	Yes
Kommunalbanken AS	Norway	No	Leppavirran Osuuspankki	Finland	Yes
Kommunekredit	Denmark	No	Liedon Osuuspankki	Finland	Yes
Kommuninvest i Sverige AB	Sweden	No	Liedon Saastopankki	Finland	Yes
Kongsted Sparekasse	Denmark	Yes	Lillesands Sparebank	Norway	Yes
Konneveden Osuuspankki	Finland	Yes	Lillestrom Sparebank	Norway	Yes
Korpilahden Osuuspankki	Finland	Yes	Limingan Osuuspankin	Finland	Yes
Korsnas Andelsbank	Finland	Yes	Liperin Osuuspankki	Finland	Yes
Koylion Osuuspankki	Finland	Yes	LocalTapiola Bank Plc	Finland	No
Kragero Sparebank	Norway	Yes	Lofoten Sparebank	Norway	Yes
Kreditbanken A/S	Denmark	No	Loimaan Seudun Osuuspankki	Finland	Yes
Kredittforeningen for Sparebanker	Norway	Yes	Lollands Bank	Denmark	No
Kuhmon Osuuspankki	Finland	Yes	Lonneberga-Tuna-Vena Sparbank	Sweden	Yes
Kuortaneen Osuuspankki	Finland	Yes	Lounaismaan Osuuspankki	Finland	Yes
Kurun Osuuspankki	Finland	Yes	Lounaisrannikon Osuuspankki	Finland	Yes
Kvevlax Sparbank	Finland	Yes	Lounais-Suomen Osuuspankki	Finland	Yes
Kvinesdal Sparebank	Norway	Yes	LR Realkredit A/S	Denmark	No
Kyron Seudun Osuuspankki	Finland	Yes	Luhangan Osuuspankki	Finland	Yes
Lægernes Bank A/S	Denmark	No	Lunde-Kvong Andelskasse	Denmark	Yes
Laholms Sparbank	Sweden	Yes			

Luopioisten Osuuspankki	Finland	Yes	Nordlandsbanken AS	Norway	No
Luster Sparebank	Norway	Yes	Nordnet AB	Sweden	No
Luumaen Osuuspankki	Finland	Yes	Norfund	Norway	No
Maaningan Osuuspankki	Finland	Yes	Norrbarke Sparbank	Sweden	Yes
Mantsalan Osuuspankin	Finland	Yes	Norresundby Bank	Denmark	No
Marginalen Bank	Sweden	No	Nykredit Bank A/S	Denmark	No
Bankaktiebolag	Sweden	No	Nykredit Realkredit A/S	Denmark	No
Markaryds Sparbank	Sweden	Yes	Obos BBL	Norway	No
Marker Sparebank	Norway	Yes	Obosbanken AS	Norway	No
Marttilan Osuuspankki	Finland	Yes	Odal Sparebank	Norway	Yes
Max Bank A/S	Denmark	No	Ofoten Sparebank	Norway	Yes
MedMera Bank AB	Sweden	No	Olands Bank	Sweden	No
Meldal Sparebank	Norway	Yes	Oma Saastopankki Oyj	Finland	Yes
Melhus Banken	Norway	No	OP Cooperative	Finland	Yes
Mellilan Seudun Osuuspankki	Finland	Yes	OP Corporate Bank Plc	Finland	Yes
Merimaskun Osuuspankki	Finland	Yes	OP Financial Group	Finland	Yes
MERKUR-Den	Denmark	Yes	OP Mortgage Bank	Finland	Yes
Almennyttige Andelskasse	Denmark	Yes	OP Mynamaki-Nousiainen	Finland	Yes
Metsamaan Osuuspankki	Finland	Yes	Opdals Sparebank	Norway	Yes
Middelfart Sparekasse	Denmark	Yes	OP-Korttiyhntio Oyj	Finland	Yes
Miehikkalan Osuuspankki	Finland	Yes	Orimattilan Osuuspankki	Finland	Yes
Mjobacks Sparbank	Sweden	Yes	Oripaan Osuuspankki	Finland	Yes
Modum SpareBank 1	Norway	Yes	Orkla Sparebank	Norway	Yes
Monobank ASA	Norway	No	Orland Sparebank	Norway	Yes
Mons Bank	Denmark	No	Orskog Sparebank	Norway	Yes
More Boligkreditt AS	Norway	No	Orusts Sparbank	Sweden	Yes
Morso Bank	Denmark	No	Ostjyds Bank	Denmark	No
Mouhjarven Osuuspankki	Finland	Yes	Ostre Agder Sparebank	Norway	Yes
Multian Osuuspankki	Finland	Yes	Oulaisten Osuuspankki	Finland	Yes
Municipality Finance PLC	Finland	No	Oulun Osuuspankki	Finland	Yes
Myrskylan Saastopankki	Finland	Yes	Outokummun Osuuspankki	Finland	Yes
Nakkila-Luvian Osuuspankki	Finland	Yes	Oystre Slidre Sparebank	Norway	Yes
Nars Sparbank	Sweden	Yes	Paattisten Osuuspankki	Finland	Yes
Neset Sparebank	Norway	Yes	Parikkalan Osuuspankki	Finland	Yes
Netfonds Bank AS	Norway	No	Pen-Sam Bank A/S	Denmark	No
Niinijoen Osuuspankki	Finland	Yes	Peraseinajoen Osuuspankki	Finland	Yes
Nilakan Seudun Osuuspankki	Finland	Yes	Perhon Osuuspankki	Finland	Yes
Nivalan Osuuspankki	Finland	Yes	Pielisen Osuuspankki	Finland	Yes
Nooa Savings Bank Ltd	Finland	Yes	Pihtiputaan Osuuspankin	Finland	Yes
Nordax Group AB	Sweden	No	Pohjanmaan Osuuspankki	Finland	Yes
Nordea Bank Abp	Finland	No	Pohjois-Savon Osuuspankki	Finland	Yes
Nordea Bank Danmark A/S	Denmark	No	Pohjolan Osuuspankki	Finland	Yes
Nordea Bank Finland Plc	Finland	No	Pop Pankki	Finland	Yes
Nordea Bank Norge	Norway	No	Puolangan Osuuspankki	Finland	Yes
Nordea Eiendomskreditt AS	Norway	No	Pyhaselan	Finland	Yes
Nordea Finans Sverige AB (publ)	Sweden	No	Paikallisosuuspankki	Finland	Yes
Nordea Hypotek AB	Sweden	No	Realkredit Danmark A/S	Denmark	No
Nordea Kredit	Denmark	No	REISJARVEN	Finland	Yes
Nordea Mortgage Bank Plc	Finland	No	OSUUSPANKKI	Finland	Yes
Nordfyns Bank	Denmark	No	Resurs Bank AB	Sweden	No
Nordjyske Bank A/S	Denmark	No	Rindal Sparebank	Norway	Yes
			Ringkjøbing Landbobank A/S	Denmark	No
			Rise Flemlose Sparekasse	Denmark	Yes

Roende Savings Bank	Denmark	Yes	Spar Nord Bank	Denmark	No
Romsdal Sparebank	Norway	Yes	Spar Salling Sparekasse	Denmark	Yes
Rorosbanken Roros Sparebank	Norway	Yes	Sparbanken 1826	Sweden	Yes
Roslagens Sparbank	Sweden	Yes	Sparbanken Alingsas	Sweden	Yes
Ruoveden Osuuspankki	Finland	Yes	Sparbanken Boken	Sweden	Yes
Ruukin Osuuspankki	Finland	Yes	Sparbanken Eken AB	Sweden	Yes
Ryslinge Andelskasse	Denmark	Yes	Sparbanken Finn	Sweden	Yes
Saastopankki Optia (Optia Savings Bank)	Finland	Yes	Sparbanken Goinge AB	Sweden	Yes
Sala Sparbank	Sweden	Yes	Sparbanken Gotland	Sweden	Yes
Salling Bank A/S	Denmark	No	Sparbanken i Enkoping	Sweden	Yes
Sampo Housing Loan Bank Plc	Finland	No	Sparbanken i Karlshamn	Sweden	Yes
Sandnes Sparebank	Norway	Yes	Sparbanken Lidkoping	Sweden	Yes
Santander Consumer Bank AS	Norway	No	Sparbanken Nord	Sweden	Yes
Savings Banks Group	Finland	Yes	Sparbanken Oresund AB	Sweden	Yes
Saxo Bank A/S	Denmark	No	Sparbanken Rekarne AB	Sweden	Yes
SBAB Bank AB (publ)	Sweden	No	Sparbanken Sjuharad AB	Sweden	Yes
Sbanken ASA	Norway	No	Sparbanken Skaraborg	Sweden	Yes
Sbanken Boligkreditt AS	Norway	No	Sparbanken Syd	Sweden	Yes
Selbu Sparebank	Norway	Yes	Sparbanken Tanum	Sweden	Yes
Seljord Sparebank	Norway	Yes	Sparbanken Tranemo	Sweden	Yes
Setskog Sparebank	Norway	Yes	Sparbanken Vastra Malardalen	Sweden	Yes
SG Finans AS	Norway	No	SpareBank 1 Boligkreditt AS	Norway	Yes
Sidensjo Sparbank	Sweden	Yes	Sparebank 1 BV	Norway	Yes
Siilinjärven Osuuspankki	Finland	Yes	SpareBank 1 Gran	Norway	Yes
Skagerrak Sparebank	Norway	Yes	SpareBank 1 Gruppen AS	Norway	Yes
Skandia Banken	Sweden	No	SpareBank 1 Hallingdal Valdres	Norway	Yes
Skandinaviska Enskilda Banken A/S	Denmark	No	Sparebank 1 Lom & Skjak	Norway	Yes
Skandinaviska Enskilda Banken AB	Sweden	No	SpareBank 1 Naeringskreditt AS	Norway	Yes
Skjern Bank	Denmark	No	SpareBank 1 Nord-Norge	Norway	Yes
Skudenes & Aakra Sparebank	Norway	Yes	SpareBank 1 Notteroy-Tonsberg	Norway	Yes
Skue Sparebank	Norway	Yes	SpareBank 1 Oslandet	Norway	Yes
Skurups Sparbank	Sweden	Yes	Sparebank 1 Ostfold Akershus	Norway	Yes
Snapphanebygdens Sparbank	Sweden	Yes	SpareBank 1 Ostlandet	Norway	Yes
Soby Skader Halling Spare Og Laanekasse	Denmark	No	SpareBank 1 Ringerike Hadeland	Norway	Yes
Sodra Dalarnas Sparbank	Sweden	Yes	SpareBank 1 SMN	Norway	Yes
Sodra Hestra Sparbank	Sweden	Yes	SpareBank 1 Sore Sunnmore	Norway	Yes
Sogne og Greipstad Sparebank	Norway	Yes	SpareBank 1 SR-Bank	Norway	Yes
Soknedal Sparebank	Norway	Yes	Sparebank1 Nordvest	Norway	Yes
Solvesborg-Mjallby Savings Bank	Sweden	Yes	Sparebanken 1 Gudbrandsdal	Norway	Yes
Someron Saastopankki	Finland	Yes	Sparebanken Bien	Norway	Yes
Sonderha Horsted Sparekasse	Denmark	Yes	Sparebanken DIN	Norway	Yes
Sormlands Sparbank	Sweden	Yes	Sparebanken Hardanger	Norway	Yes
Sp Mortgage Bank Plc	Finland	No	Sparebanken Hemne	Norway	Yes
S-Pankki Oy	Finland	No	Sparebanken Jevnaker Lunner	Norway	Yes
			Sparebanken More	Norway	Yes
			Sparebanken Narvik	Norway	Yes

SpareBanken Ost	Norway	Yes	Svenska Handelsbanken AB	Sweden	No
Sparebanken Ost Boligkreditt AS	Norway	Yes	Sydbank A/S	Denmark	No
Sparebanken Sogn og Fjordane	Norway	Yes	Sydbottens Andelsbank	Finland	Yes
Sparebanken Sor	Norway	Yes	Terra Kort AS	Norway	No
Sparebanken Sor	Norway	Yes	TF Bank AB	Sweden	No
Sparebanken Sor Boligkreditt AS	Norway	Yes	Tidaholms Sparbank	Sweden	Yes
Sparebanken Vest	Norway	Yes	Tinn Sparebank	Norway	Yes
SpareBanken Vest Boligkreditt AS	Norway	Yes	Tjorns Sparbank	Sweden	Yes
Sparekassen Balling	Denmark	Yes	Tjustbygdens Sparbank	Sweden	Yes
Sparekassen Bredebro	Denmark	Yes	Tolga-Os Sparebank	Norway	Yes
Sparekassen Den Lille Bikube	Denmark	Yes	Tonder Bank	Denmark	No
Sparekassen Djursland	Denmark	Yes	Totalbanken	Denmark	No
Sparekassen Farso	Denmark	Yes	Totalkredit A/S	Denmark	No
Sparekassen for Norre Nebel og Omegn	Denmark	Yes	Totens Sparebank	Norway	Yes
Sparekassen Fyn A/S	Denmark	Yes	Totens Sparebank Boligkreditt AS	Norway	Yes
Sparekassen Hobro	Denmark	Yes	Trogstad Sparebank	Norway	Yes
Sparekassen Hvetbo A/S	Denmark	Yes	Tysnes Sparebank	Norway	Yes
Sparekassen I Skals	Denmark	Yes	Ulricehamns Sparbank	Sweden	Yes
Sparekassen Kronjylland	Denmark	Yes	Vaara-Karjalan Osuuspankki	Finland	Yes
Sparekassen Limfjorden	Denmark	Yes	Vadstena Sparbank	Sweden	Yes
Sparekassen Lolland	Denmark	Yes	Valdemarsviks Sparbank	Sweden	Yes
Sparekassen Midtdjurs	Denmark	Yes	Valdres Sparebank	Norway	Yes
Sparekassen Midtjford	Denmark	Yes	Valle Sparebank	Norway	Yes
Sparekassen Ostjylland	Denmark	Yes	Vang Sparebank	Norway	Yes
Sparekassen Thy	Denmark	Yes	Varbergs Sparbank	Sweden	Yes
Sparekassen Vendsyssel	Denmark	Yes	Vegarshei Sparebank	Norway	Yes
Sparekassen Zealand-Fyn A/S	Denmark	Yes	Verd Boligkreditt AS	Norway	No
Sparekillingsbanken	Norway	Yes	Vestfyns Bank	Denmark	No
Spydeberg Sparebank	Norway	Yes	Vestjysk Bank A/S	Denmark	No
SR-Boligkreditt AS	Norway	No	Westra Wermlands Sparbank	Sweden	Yes
Stadsbygd Sparebank	Norway	Yes	Vik Sparebank	Norway	Yes
Stadshypotek	Sweden	No	Vimmerby Sparbank AB	Sweden	Yes
Storebrand Bank (Formerly Finansbanken)	Norway	No	Vinderup Bank	Denmark	No
Storebrand Boligkreditt AS	Norway	No	Virserums Sparbank	Sweden	Yes
Storebrand Group	Norway	No	Vistoft Sparekasse	Denmark	Yes
Strommen Sparebank	Norway	Yes	Vorbasse Hejnsvig Sparekasse	Denmark	Yes
SUDUROYAR	Denmark	Yes	Vordingborg Bank	Denmark	No
SPARIKASSI	Norway	Yes	Voss Sparebank	Norway	Yes
Sundal Sparebank	Norway	Yes	Voss Veksel og Landmandsbank	Norway	No
Suomen Hypoteekkiyhdistyksen	Finland	No	yA Bank AS	Norway	No
Surnadal Sparebank	Norway	Yes	Yla-Kainuun Osuuspankki	Finland	Yes
Suur-Savon Osuuspankki	Finland	Yes	Yla-Savon Osuuspankki	Finland	Yes
Svea Ekonomi AB	Sweden	No			
Swedbank AB	Sweden	No			
Swedbank Mortgage AB	Sweden	No			
Swedish Ships Mortgage Bank	Sweden	No			