



BI Norwegian Business School - campus Oslo

# GRA 19502

Master Thesis

Component of continuous assessment: Thesis Master of Science

Master Thesis

Navn: Kai Tai Lau,  
Oda Martine  
Bjørnsen

Start: 02.03.2017 09.00

Finish: 01.09.2017 12.00

## Executive Summary

We examine the effect of the Norwegian bank industry consolidation, and consequent decrease in local savings banks, on the survival and growth of small businesses. The analysis uses year-by-year financial information for Norwegian companies and bank information from the Bank Location Register. Firstly, a survival analysis is conducted. The analysis finds that companies located in areas with a high degree of savings bank presence, show a higher survival rate. Secondly, the analysis is extended by building several multiple regression models. The models are applied to analyze the effect of savings bank exposure on company growth. The results show a significant negative effect, municipalities (kommune) with low savings bank concentration show more business growth. Results from the multiple regression models indicate that businesses regarded as small, have a growth advantage. Arguably, the multiple regressions indicate growth is not a result of bank presence, rather firm specific and exogenous variables play a vital role.

## Table of content

<b>Executive Summary</b>	<b>i</b>
<b>1. Introduction</b>	<b>1</b>
<b>2. A Brief Summary of The Norwegian Financial System and Bank Sector</b>	<b>5</b>
2.1 Characteristics	5
2.2 Bank's balance sheet and source of income	8
2.3 Norwegian Savings Banks	9
2.4 Characteristics of Norwegian Savings Banks	11
<b>3. Obstacles related to the financing of start-ups and smaller local businesses</b>	<b>11</b>
<b>4. Literature review</b>	<b>14</b>
<b>5. Data</b>	<b>19</b>
5.1 Data Process	19
5.2 Panel Data on Norwegian Companies	19
5.3 Small Norwegian Businesses	20
5.4 The Bank Location Registration and The Savings Bank Concentration Ratio	22
5.5 Macroeconomic variables	25
5.6 Merging the data sets	26
5.7 Defining Small Business	26
5.8 Firm Attributes as Performance Indicators	28
<b>6. Methodology</b>	<b>30</b>
6.1 Survival Analysis	30
6.2 The relationship between the geographic location of savings bank branches and local firm performance	32
6.3 Multiple regression models to relate firm performance and savings bank characteristics	34
6.4 The Multiple Regression Models and Results	35
6.4.1 Full model results	36
6.4.2 Partial Model Results - model including only small firms	38
6.4.3 Partial Model Results - model including only young, small firms	41
<b>7. Conclusion</b>	<b>44</b>
<b>8. Reference list</b>	<b>47</b>
<b>9. Appendix</b>	<b>52</b>
Appendix 1. Largest banking groups in Norway.	52
Appendix 2. CCGR annual data	53
Appendix 3 Savings bank concentration by Municipal (kommune)	53
Appendix 4 Preliminary thesis	66

## 1. Introduction

Consolidation is sweeping the Norwegian banking industry; the number of banks is decreasing significantly. Since the deregulation in 1985, mergers and acquisitions have characterized the industry. The smaller banks are disappearing and the larger banks are growing even larger. In Norway, especially the number of savings banks are being reduced and the number of branches are falling significantly. The result is larger, more complex banks. This raises the question of whether the larger banks will behave differently than the smaller local savings banks they are replacing, and if this will affect lending practices. This thesis will focus on small businesses and how they are affected.

Empirically, larger commercial banks tend to have different lending practices than the local savings banks, they are less likely to lend to smaller informationally opaque borrowers, a description that fits many of the country's small local businesses (Berger et al. 1998, Berger et al. 2005 and Peek and Rosengren 1998). The small local firms have less assets and less available collateral, therefore, they tend to be financially more constraint. Especially for young firms and start-ups, hard information such as extensive accounting records and established reputations tend to be sparse. Hard information refers to information, such as detailed financial statement and credit documentation, that can easily and credibly be verified and passed along the banks hierarchy. The lack of hard information results in a greater information asymmetry between insiders and outsider, compared to what larger more established firms experience. This is an obstacle when looking for external financing. A tool in bridging the information gap, is relationship lending. This is when soft information and the company-bank relationship play a role in the banks decision-making process. Local savings banks have a long tradition of relationship lending. While all corporation can benefit from having close ties to their main source of financing, it is often considered more important for smaller businesses (Mommel et al. 2008). Furthermore, due to a local presence, a less complex management structure and a community-based value set, local savings banks are often considered more efficient at processing and utilizing soft information (Coppola 2013). Also, due to these characteristics, loan officers at savings banks are more incentivized to produce soft information (Ostegaard et al. 2007).

It is difficult to obtain extensive data on specific firm-bank connections; therefore, a proxy is used. This proxy is the savings bank concentration ratio which explains the relative savings bank presence by municipal (kommune). The ratio's definition is the number of savings bank branches to total number of bank branches (i.e. savings banks and non-savings bank branches) in the municipal. To specify, a savings bank concentration ratio of 50% refers to a municipal with an equal number of branches for savings banks and non-savings banks. The thesis's principal area of exploration is whether smaller businesses and start-ups benefit from being located in a municipal with a high savings bank concentration. If the answer is yes, it may be argued that start-ups and small local businesses should look for funding and financial relationships with local savings banks rather than with nationwide franchises or Scandinavian cross-border players.

Norwegian savings banks clearly differentiate themselves from commercial banks through their organizational form and set-up. Savings banks are independent entities with no owners or shareholders with a conventional claim to the residual surplus. The savings banks are by regulation governed by its depositors, employees and representatives from the local government councils. The majority of these banks are not required to pay dividends, which arguably makes them more flexible. By flexibility, it is meant that there is no demand to pay dividend, nor do the traditional savings banks need to focus on quarterly reports or the share price. By not paying out dividends, cash is retained within the bank, giving the management more room to maneuver and more flexibility in decision-making. Also, the retained cash is helpful when it comes to the rather strict capital requirements the banks face. Another relevant factor regarding flexibility, it that smaller banks have a less hierarchical structure which facilitates information flow. Examples of the opposite are banks such as Nordea and Handelsbanken, who are very concerned with their share price as well as their dividend policy.

Traditionally, local savings banks have close ties to the local community and its businesses. An important part of the savings bank's mission is to contribute locally and

thus tend to have a non-profit organizational form. Arguably, this may make them more inclined to support local companies, perhaps also in more challenging times.

To study whether the degree of geographic presence of savings banks has a significant inference on the local firms' performance, three relevant information groups are obtained and combined. These information groups are; company and bank information, as well as relevant macroeconomic variables. The analysis will be conducted by comparing areas in which savings banks have a high presence to areas where savings banks are less available. The degree of savings bank presence is as previously mentioned defined by the savings bank concentration ratio.

To study if there is an impact of the savings banks geographical presence to small businesses, the firm profile is segmented by firm size and tested using a survival analysis. The intent is to examine whether there is a relationship between the savings bank concentration ratio and firm survival rate in the municipal. The survival rate is measured by counting the total numbers of firms still in business, divided by the total numbers firm in its respective originated year. Each municipal is defined as having a high, medium or low savings bank concentration. Companies are then defined by their presence in a municipal with high, medium or low savings bank concentration. The analysis indicate that firms located in areas with a high savings bank concentration, have a higher survival rate. These results are statistically significant at a 5% level. This results support the hypothesis that small firms and start-ups benefit from being located near a savings bank.

The analysis is extended by analyzing how small firms' assets and revenue grow in the different groups of savings bank concentration. An example of a municipal with a low savings bank concentration is Oslo, with 14%. Oslo has a total on 72 registered banks in 2005, 62 of these are non-savings banks. The analysis results indicate that higher savings bank concentration is related to less growth. In other words, the low savings bank concentration (or high commercial bank concentration) correlates with better performance in terms of growth in assets, revenue and return-on-asset, when compared to medium and higher levels of concentration. This result contradicts the hypothesis that savings banks can help small firms prosper in term of growth. There may be other,

more important explanatory variable to explain business growth. To examine how the savings bank concentration ratio among other factors, impact firm financial growth, several multiple regression models are built. The regressions dependent variables are the firm's yearly growth rates, i.e. growth in revenue, asset value and return-on-asset, in the period between 2000-2015. The independent variables are firm profile and financial variables. Macroeconomic measurements are added to the model as control variables. The primary purpose of the regression is to check how well the savings bank concentration variable can fit into the firm growth model. In this study a strong assumption is made. The data from bank location register stops in the year 2005. The decrease in number of banks branches has somewhat stabilized, it is thus assumed that the branch location data is representative enough for the analysis.

Three models are presented; a full model and two partial models. The results of the full model, which includes all firms, show that savings bank concentration by municipal (kommune) is negatively correlated with the local business growth, for all three business growth variables. This indicated that high savings bank exposure is associated with a low firm asset growth, which contradicts much of the theory presented. However, the full model indicates that being a small firm is beneficial for growth.

To justify the firm size effect, the first partial model focuses solely on small firms, larger firms are excluded. In this model we look at the bank connection variable, as well as the savings bank concentration variable. The bank connection variable indicates a specific bank-firm relationship. However, only two percent of the firms in the data set has provided this information. For this model the bank connection variable is only statistically significant when looking at the revenue growth model. Because it is not statistically significant for the other two versions of the partial model, it is concluded that the bank connection information does not add much value to the model when explaining business growth. Furthermore, the model shows a negative correlation between the savings bank concentration ratio and the small firm asset growth and return-on asset growth, there is no effect on revenue growth. The negative effect is smaller for this partial model, compared to the full model.

The second partial model, includes firms that are both young and small. The model is applied to analyze the impact of the savings bank concentration ratio to young, small firms. It is applied to further understand if the growth of young, small corporations may be greater affected by a high savings bank presence, compared to larger more established businesses. However, based on the regression results, the coefficient of savings bank concentration ratio is negative for asset growth. The savings bank concentration has no significant effect on the growth in revenue and return-on-assets. Implying that high savings bank concentration is not an additional stimulant for the growth of the small local businesses and start-ups. However, compared to the results of the other two models, the negative savings banks concentration effect is considered less for young, small firms.

In total, the study shows a high degree of savings bank presence tends to have a negative impact on the growth of local firms, which contradicts the hypothesis made and much of the theory presented. However, a high savings bank concentration ratio is related to higher survival rates for newly established enterprises. The two results oppose another, one contradicts the hypothesis, while the other is in line with it.

## **2. A Brief Summary of The Norwegian Financial System and Bank Sector**

### **2.1 Characteristics**

The Norwegian financial system has three main undertakings: 1) provide the market participants with the ability to borrow and deposit, and to contribute and allocate savings and available funds towards profitable investment projects, 2) make payment services available and 3) handle risk. In a well-functioning financial system, these tasks are implemented in a safe and efficient way (Norges Bank 2016a).

Different countries financial sectors vary regarding size and structure. However, it is common that the banking sector play a vital and important role, which is also the case in Norway. The Norwegian financial sector, measured in GDP, is rather small compared to other countries such as Switzerland, The UK or The US, where the financial sectors are large compared to the country's economy. The explanation for this



is that a relatively small part of the Norwegian financial institutions activities are directed towards international markets, and that international institutions have a significant market share in Norway (Finansdepartementet 2011, 81). Compared to other countries, the Norwegian financial system is largely dominated by banks, over 80% of domestic credit to Norwegian households and companies is provided by banks and their mortgage companies (Norges Bank 2016b, 61).

According to The Norwegian Bank (2016a) the definition of a *financial institution* includes, banks, pension- and insurance companies and mutual funds. A bank performs all the three main tasks mentioned above. The International Monetary Fund (IMF) defines a bank as an “*Institution that matches up savers and borrowers and helps to ensure that economies function smoothly*”. Banks differ from other financial institutions as they have the exclusive right to create and accept deposits from the public (Norges Bank 2016b). Banks have another fundamental role in the economy, beyond being an intermediary between lenders and borrowers, as an efficient provider of information and monitoring of borrowers. Thus, by providing credit analysis and displaying lenders, a part of their function is compensating for the information asymmetry in the capital markets (Diamond 1984).

The environment in which the Norwegian banks operate has changed significantly in the past decades. Before the 1980s, the sector was heavily regulated. In 1985, free competition was introduced, resulting in foreign subsidiaries and branches entering the market. Especially large Scandinavian banking groups acquired significant market shares, resulting in reduced shares for the Norwegian commercial banks. The liberalization intensified the competition and the 1990s were characterized by mergers and acquisitions (Norges Bank 2016b, 56). Following the financial crises in 2008, Finanstilsynet, the financial supervisory authority of Norway, as well as the EU/EEA, introduced several regulatory changes. Among these are enhanced requirements for capital and equity-levels, risk monitoring, reporting and compliance. There are also prerequisite for solidity and portfolio structure and quality.

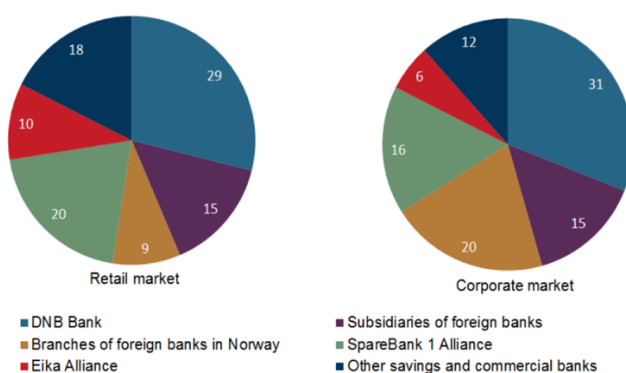
In Norway, banks are primarily classified as either savings banks or commercial banks. The difference in classification is mainly due to ownership structure, other distinctions

have faded over time. A commercial bank can only be established as a private or public limited liability company, opposed to a saving bank, who cannot be established as a limited liability company. Traditionally, savings banks are independent entities, with no shareholders with a claim to the residual surplus. (Norges Bank 2016b, 55, 61).

Today, the Norwegian banking sector is dominated by a presence of multiple savings banks and a few larger commercial players with significant market shares. For comparison, other Scandinavian countries such as Sweden and Denmark, have a greater presence of large commercial banks with high market shares, and fewer small players.

As of 2016, 126 banks are operating in Norway, excluding the 10 foreign branches and franchises. The biggest player in the Norwegian banking sector is Den Norske Bank (DnB), with a market share of around 30%, in both the corporate and the retail market. The foreign subsidiaries and branches have a significant presence in the commercial market, corresponding to a total market share of about 35% (Norges Bank 2016a, 56). Dominating this segment is Nordea, which is the largest foreign-owned subsidiary, and Danske Bank and (Svenska) Handelsbanken, which are the largest foreign-owned branches. Aside from this, the country’s largest companies such as Statoil and Norsk Hydro, are being served by foreign banks without any physical presence in Norway. They will for certain products typically be served out of London or New York by banks such as JP Morgan, Deutsche Bank, HSBC etc.

*Figure 2.1 The lending market share in the Norwegian bank sector*



Source Norges Bank 2016b, 62

The Eika Alliance and the Sparebank-1 alliance are two major savings bank groups, in which the participating banks cooperate within certain product categories, including IT. The savings banks which are part of an alliance remain independent. The alliances mentioned above have a market share in the commercial segment of 6% and 16%, respectively (Norges Bank 2016a, 56-57). Appendix 1 provides an overview of the largest banking groups in Norway. Figure 2.1 above, shows the lending market shares in the Norwegian bank sector. Many firms are served by the savings banks, as witnessed by their market shares, which, albeit smaller, are still economically large.

## 2.2 Bank's balance sheet and source of income

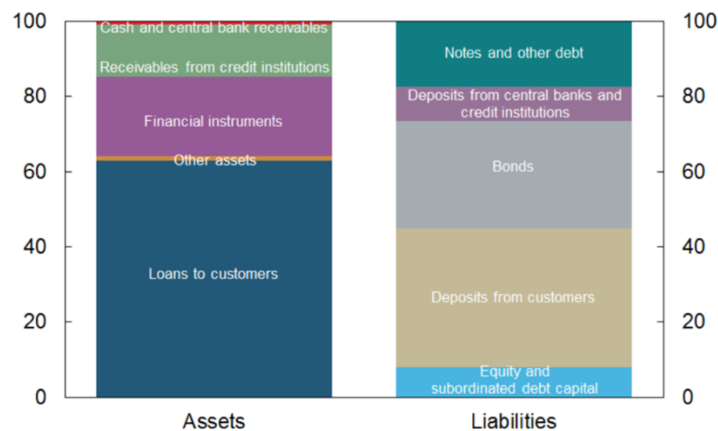
Loans to customers make up the majority of a bank's assets, of which residential mortgages and commercial real estate loans are the largest single loan items. The majority of the lending and risk provided by Norwegian banks are funded by deposits and bonds, beside regular or hybrid equity. The bank's short-term funding may also be provided by overnight funding in the interbank-market or by certain short term facilities with Norges Bank. Customer deposit comprise approximately 30% of a bank's liabilities. Figure 2.2 demonstrates the Norwegian-owned banks assets and funding. Customer deposits are considered the most stable and safe source of financing (in times of crisis this may not be the case). The smaller saving banks are to a larger degree funded by customer deposit than commercial banks, and the asset part of their balance sheet is to a larger extent dominated by loans to customers. Foreign subsidiaries and branches receive a substantial part of their funding from the parent of the foreign banking group (Norges Bank 2016b, 63-64).

The balance sheet of a bank will impact its lending practices and risk taking. There are certain limitations to how much banks can lend to certain customers. There are capital requirements which affect the bank's ability to give loans. For each loan provided, the bank must set aside a certain amount of equity, depending on the size of the loan, the customer and the risk involved. A smaller bank may not be able to provide the same type, structure or size of loan as a bigger bank. Hence, larger banks typically service larger firms and smaller banks service smaller firms. As the small local banks main business tends to be smaller business loans and personal loans locally, the amount is

smaller, and this specific limitation might not be too crucial.

Furthermore, there are certain requirements to the bank’s portfolio structure. The bank is required to maintain a certain level of diversification; which may be easier for a larger bank than a smaller one. Another factor is cost of funds. It is normally more expensive for smaller banks to borrow money in the bond and interbank market, than it is for larger banks, making the smaller banks less competitive. Many of the requirements, introduced after 2008, are making it more cumbersome to be a small bank.

*Figure 2.2 Norwegian-owned banks assets and funding*



1) Total of all banks and covered bond mortgage companies excluding subsidiaries and branches of foreign banks in Norway.

Source Norges Bank 2016b, 64

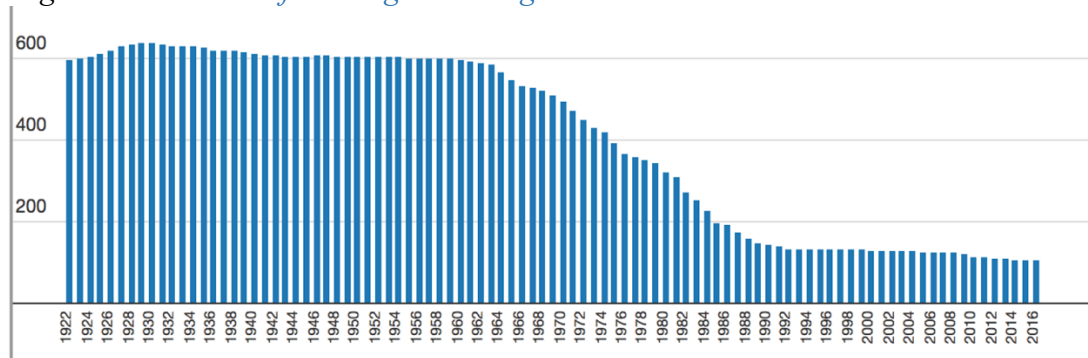
### 2.3 Norwegian Savings Banks

Norwegian savings banks clearly differentiate themselves from commercial bank through their organizational form and set-up. Savings banks are independent entities with no shareholders. They are governed by their depositors, employees and representatives from the local government. Thus, the bank is governed by stakeholders, not shareholder. Ostergaard et al. (2007) claims that the bank's non-profit organizational form is designed so that the banks internalize the preference of its stakeholder and the local community. It is referred to as community-based banking.

Since the late 1980s savings banks have been able to convert their organizational form, they can issue Primary Capital Certificates (PCC) to their equity capital. A PCC-bank is hybrid between a commercial bank and a non-profit savings bank. Owners have a right to the residual cash flow, however stakeholder continue to be represented in the governmental body. Besides, the bank typically continues with its community commitment and its objective to promote local interests and provide liquidity in the community. These PCCs are usually traded on the Oslo Stock Exchange, and give the owners claim to the residual surplus (Ostegaard et al. 2007, 9 and Sparebankforeningen). The largest financial group in Norway today, DnB, was created through several mergers of primarily commercial banks such as Bergen Bank and DnC. DnB is technically, following the merger with Sparebanken Nor, a savings bank. However, the bank has no typical characteristic of a regional saving bank and is for the purpose of this thesis excluded from the definition of a local savings bank.

In the 1960s about 600 saving banks were in operation, since then the number has dropped significantly. Today, we find 103 saving banks in Norway (Sparebankforeningen, 2017). Figure 2.3 shows the development. The reduction is mainly due to consolidation. This consolidation is expected to continue.

*Figure 2.3 Number of Norwegian Savings Banks 1922-2016*



Source Sparebankforeningen 2016

As of June 2017, 29 savings bank alliances were in operation, the largest being the Eika alliance and the Sparebank-1 alliance (Sparebankenforeningen, 2017). The alliances are a consequence of the increased competition in the industry, allowing savings banks

to cooperate and attain a larger portfolio, while still maintaining their independence and root in the local community.

## 2.4 Characteristics of Norwegian Savings Banks

Traditionally, savings banks have held a strong position in the Norwegian society, and been a large part of the financial community, as well as the national and regional banking community (Sparebankforeningen, undated (a)). Norwegian savings banks, with the exception of DnB, are located in certain regions or municipalities. Thus, their main business activities are largely contained by geography. An important feature of saving banks is their mission to stay close to the customers and create roots in the local society. Undertaking social responsibility in the community is an important part of their profile and mission (Sparebankforeningen undated (b)). Saving banks have traditionally provided liquidity in their local community by distributing parts of their surplus to public utility and charity, they may distribute up to 25% of their surplus as gifts or donations to various organizations and causes considered to create value to the community over time. By doing so the saving banks may or be perceived to, contribute to growth and development in local communities.

## 3. Obstacles related to the financing of start-ups and smaller local businesses

In Norway, the number of small firms (by number of employees) clearly dominate the number of large firms (Figure 3.1). Small and medium sized enterprises are important for employment and the country's economic and social development. Thus, small business lending is important.

Only half of newly established companies survive after one year and less than 30% are still in business after five years. Figure 3.2 presents the survival rate of newly established enterprises in Norway during the period 2009-2014. It is assumed that key factors in sustaining small business growth is credit availability and a stable source of funding. This will most likely be the case for access to equity as well.

Numerous studies have discussed if smaller businesses are financially more constrained and less likely to have access to formal financing, compared to larger enterprises. An important factor is; smaller firms typically have less assets and therefore less available collateral; they also tend to have less formal accounting records to submit as evidence of sustainability. Age or time in operation, is also a factor. Start-ups and younger businesses have significantly less historical records and performance to present when seeking external financing. Larger firms may have the advantage of a more established track record and reputation, which may reduce the perceived risk on the lending side. Thus, smaller firms are faced with higher risk premiums caused by being informationally opaque and having less collateral to offer.

Berger and Udell (2002) point to moral hazard and adverse selection problems, they suggest that because smaller firms are more informationally opaque, they may be particularly exposed. The information asymmetry between outsiders and insiders tend to be greater for smaller firms, which is an obstacle when seeking external financing. When a provider of external financing denies funding due to being unable to verify a firm's access to a quality project, thus hindering the company's ability to invest in a positive net present value project, is referred to as the adverse selection problem. The moral hazard problem refers to the lender not being able to ensure whether the funds are redirected to other projects. If these obstacles to formal financing are smaller or easier to overcome for firms by using a local saving bank, it is advantageous for smaller businesses and start-ups to seek financial relationships with local saving banks, rather than the larger commercial banks.

A powerful tool in reducing information problems, is relationship lending. Relationship lending is when the corporation seeking a loan, has close ties to the financial institution. Local saving banks have a long track record of relationship lending, "name lending" and "family lending" has not been uncommon. When it comes to these types of loans, family background, how long the customer and its family have lived in the area, and other personal factors are considered important to understand how the bank's view and determine the risk associated with the potential loan. While this might be an advantage to the local businesses, it is not necessarily positive for the bank. Providing loans based primarily on character and personal contacts, rather than credit scores and financial

information could involve more risk than the bank should take on. It is often assumed that relationship lending is particularly important to small and medium-sized businesses (Memmel et al. 2008).

Relationship information is often “soft”. Soft information is information which is hard to creditably pass along through the hierarchy. It is typically data the bank acquires over time through contact with the firm and the local community, this information is applied in the bank’s decision making process. The importance of relationship lending in terms of credit availability and credit terms, such as collateral requirements, is supported by empirical evidence (Berger and Udell, 2002 and Memmel et al. 2008).

Furthermore, Berger and Udell (2002) suggest that smaller banks with closer proximity to the borrower are better at processing soft information in a way that benefits the borrowing firm. If the local saving banks are better adept at handling soft information and it is utilized to the advantage of local businesses in a way so that the smaller firms and startups attain higher credit availability and more advantageous credit terms, then the decrease in community banks will negatively affect small business lending.

*Figure 3.1 Number of enterprises by size in Norway*

Number of enterprises by size			
	2016		Change in per cent
	Number of establishments	Per cent	2015 - 2016
All size groups	558 959	100.0	2.1
No one employeeed	366 444	65.6	8.6
1-4 employees	91 273	16.3	-20.3
5-9 employees	41 159	7.4	1.3
10-19 employees	29 614	5.3	5.4
20-49 employees	20 712	3.7	14.1
50-99 employees	6 181	1.1	15.1
100 - 249 employees	2 790	0.5	16.3
250 employees and more	786	0.1	14.9

Source Statistics Norway (SSB) 2016



*Figure 3.2 Survival rate of newly established enterprises in Norway*

Survival rate of newly established enterprises					
	Per cent survived enterprises				
	1 year	2 year	3 year	4 year	5 year
Year of establishing					
2009	48.4	44.1	37.2	31.7	27.4
2010	48.5	44.0	36.7	31.3	
2011	48.0	43.4	36.3		
2012	50.5	46.3			
2013	48.2				

Source Statistics Norway (SSB) 2016

#### 4. Literature review

The consolidation which has swept the industry has resulted in fewer, larger banks than before. This has been particularly visible through the reduction in number of savings bank branches. The changes brought on by the consolidation raises the question of whether the larger banks behave differently than the smaller savings banks which they are replacing, and if it will affect lending practices.

Theory suggests that larger banks which are more complex and created through mergers and acquisitions are less likely to lend to smaller, informationally opaque borrowers. These types of borrowers tend to be the most dependent on the bank-borrower relationship. Lending to large and complex institutions, which are informationally transparent may be an entirely different task, than lending to smaller, informationally opaque borrowers. The screening and monitoring process of the different types of borrower may be different (Berger et al. 1998, 190-191). A significant part of smaller local businesses can be defined as informationally opaque and dependent on the bank-borrower relationship. Thus, if consolidation continues and the presence of local savings banks diminishes, credit availability for a significant share of smaller local business and start-ups may be reduced.

In a paper by Berger et al. (2005) called “Does function follow form”, the authors focus on how the organizations form affects how it conducts business and which kind of

activities it can undertake efficiently. More specifically, the paper approaches the subject of whether smaller organizations are better at certain tasks than larger organizations, which is similar to the question raised in this thesis. The paper predicts that large and small firms have different incentives to produce and use different kinds of information. Theory suggests that small organizations have a comparative advantage regarding activities which require an extensive use of soft information. Information that is considered soft is difficult to communicate credibly from one agent to another. Larger organizations do better with easily hardened information, such as actual financial statements and credit documentation, which can smoothly be passed through the hierarchy. Information is critical to lending, thus the model applies to the banking industry. Berger et al. (2005) suggest that the larger banks will sidestep small-business lending as it typically depends on soft information, which is not seen as their strong suit.

Further establishing this argument, Coppola (2013) claims small local banks are with some justification, believed to be more effective providers of financing to local businesses, compared to larger national and international banks. This is due to local knowledge which makes them better at assessing risk, and proximity to the local business community that provides them with a better foundation for managing relationships. DeYoung et al. conclude similarly, arguing that smaller banks are more incentivized and better at utilizing qualitative information due to their commitment and involvement in the local community.

If local businesses benefit from being located near a savings bank, it can be argued that the industry consolidation, which is creating larger banks and reducing the number of small local players, is threatening the financing and credit availability of smaller businesses and start-ups. The most frequently used argument supporting this claim is that larger banks make proportionately fewer loans to small businesses than smaller savings banks. Peek and Rosengren (1998) argue that a bank's portfolio share of small business loans tends to be inversely related to the institution's size, measured by total assets. With consolidation sweeping the industry, thinning the ranks of local savings banks and resulting in larger and more complicated banking companies, it is relevant to look at the effect on small business lending. However, consolidation will only have

a negative effect on small business credit if saving banks hold an advantage when lending to smaller businesses (Jayaratne and Wolken 1999). In other word, there could be an advantage for smaller businesses to seek financial relationships with the smaller and local savings banks (Straham and Weston 1998, 822).

A close relationship with the local community is one of the savings banks main competitive advantages. Relationships between banks and businesses are key in reducing information asymmetries. Local banks may be better situated to mitigate the information asymmetry that exists between lender and borrower. Borrowing an example from Berger et al (2005), a loan officer is considering whether a small business, without audited accounting statements should be granted a loan. The loan officer's best option may be to contact the company' leadership, retrieve information on whether the company is well run, such as whether the CEO is honest and hardworking. This information could deem the manager a candidate for a "character loan". The problem arises when this information is to be transmitted, because the information is soft in nature, it is information that is hard to verify and difficult to credibly pass on through the hierarchy. The model presented by Berger et al. (2005) predict that a loan officers in a large bank will have less incentive to produce such high quality soft information. The reason for this is that expertise and the authority to allocate capital are separated. If somebody higher up in the hierarchy decides to allocate capital elsewhere, the loan officer does not get to act on the soft information he has produced, his research goes to waste because he cannot credibly pass it on. Down the line, this entails that loan officers in larger, more hierarchical organization do less research (Berger et al. 2005, 239-242).

Due to technological advancements, one can question todays relevance of relationship lending. Personal and specific knowledge about the community, typically soft information, is being replaced by the internet and lending technology. During the last decades the trend towards less relationship lending is often brought up. This is due to better information processing and more refined rating tools. Also a factor, are the enhanced and more complex regulations from the financial supervisory authority, that limit banks' ability to apply soft information. There is a limit to how many times a bank can "overrun" a bad credit score citing soft information as the reason. Credit decisions

are increasingly based on credit scoring information, thus close bank-firm relationships get seemingly less vital (Mommel et al. 2008)

Lending technology, such as automated lending processes, is facilitating entry into local markets and increasing the distance between borrowers and lenders (Jagtiani and Lemieux 2016 and DeYoung et al 2008). Due to the technological advancements, money is today moved electronically. This has not always been the case. Previously, bank clients did not have many choices when it came to choosing a loan provider, they simply had to choose the local bank. Today, they have several options. Choice of bank is often dominated by the cost of the loan. As mentioned previously, it is often more expensive for local savings banks to achieve funding in the capital-market. This is something that clearly affects the banks competitiveness. The technological growth has created a shift, while geographical location used to be an important source of competitiveness, it no longer is dominant. Today, the ability to provide loans as cheaply as possible is an important source of competition. Thus, technology is to a greater degree replacing the importance of proximity and loan officers with soft information. If this trend continues, the savings banks may lose part of their comparative advantage.

Höwer (2016) analyses firms in distress, and whether the probability of a firm's survival is dependent on the banks' ability to process soft information. Using data from the German banking industry, Höwer finds that the locally rooted Sparkassen banks are more likely to support distressed but viable firms, while private banks tend to make tougher liquidation decisions. He also finds that banks can make more efficient liquidations if they are regionally active and have close relationships with the firm.

Local savings banks are typically smaller in size compared to commercial banks, possibly resulting in the management being more active in the day-to-day business. This increases information flow and reduces the cost of monitoring. A more involved management and the flexibility to personally oversee loans could be advantageous for smaller businesses and start-ups. Also, in larger commercial banks with a more complex hierarchical structure, loan officers may have fewer incentives to produce soft information (Ostergaard et al. 2007, 3).

The industry consolidation may also affect other factors such as market competitiveness, which in turn can affect small business lending. The consolidation arguably increases the competitive pressure and forces the now larger banks, towards a greater degree of value maximization rather than the previous social welfare maximization. The result is higher economic efficiency. For the local businesses this could mean reduced small business lending in regards to formerly made negative net present value loans are not renewed. However, it may increase small business lending to the extent that some positive net present value loans which formerly were neglected, are now made (Berger 1998, 191).

Larger commercial banks tend to have lower capital, less stable funding and more market-based activities. They also tend to be organizationally more complex (Laeven et al 2014). Norwegian savings banks may have a less stringent credit policy because of social welfare maximization rather than profit maximization goal, and a less complicated management structure. These are all factors suggesting savings banks may be more flexible than the larger commercial banks. On the other hand, the larger commercial banks tend to have a larger, more diversified portfolio. Thus, their portfolio risk is less affected by the added specific risk of a smaller local business or start-up. The smaller, locally concentrated savings banks may not have the same ability to reduce the unsystematic risk through diversification. Furthermore, enhanced level of capital requirements and more complicated funding sources, may in some cases make the smaller banks more expensive.

If savings banks are more flexible and can better at utilizing soft information, this may be a reason for local start-ups and smaller businesses, especially those more dependent on the bank-business-relationship, to seek financial relationships with the local saving bank, instead of an international or nationwide franchise. This sentiment may apply to all businesses, not just the smaller ones. However, smaller businesses often lack hard information and tend to be more informationally opaque, they are therefore considered to be more dependent on a bank-business relationship. It can thus be argued that while all businesses stand to gain from a close relationship to a financial institution, it may be more vital for a smaller firm.

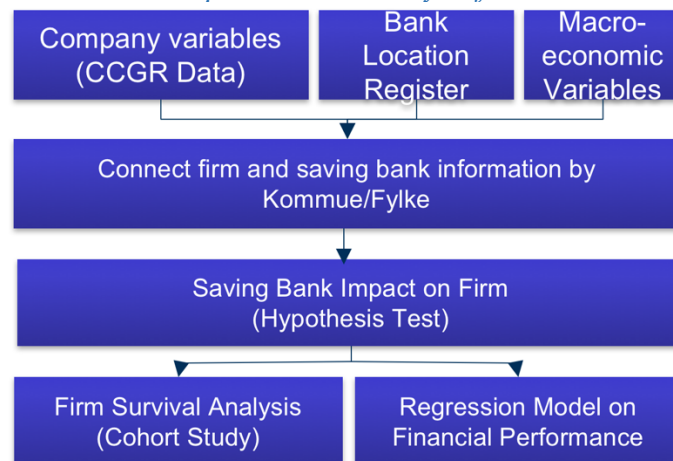
Based on these considerations we expect to find that municipalities with a greater savings bank exposure to show higher survival rates for smaller and relatively new firms. It is also expected that the same firms will show more growth in these municipalities compared to areas with low savings bank concentration. If this is the case, then smaller and relatively new businesses should look for financial relationships with local savings banks rather than with nationwide franchises and Scandinavian cross-border players.

## 5. Data

### 5.1 Data Process

To study whether the degree of geographic presence of savings banks has a significant inference on the local firms' performance, three relevant information groups are obtained and combined. These data groups are; company information obtained from the Centre for Corporate Governance (CCGR), bank information obtained from The Bank Location Register and macroeconomic factors obtained from various outlets. Table 5.1 demonstrates the process and analytical flow of the data work.

*Table 5.1 Data process and analytic flow*



*The top line presents the three sets of data obtained. The data was merged using kommune ID-number before the hypothesis was specified and tested.*

### 5.2 Panel Data on Norwegian Companies

The first dataset was obtained from the CCGR and was provided by BI Norwegian Business School. The dataset consists of panel data containing year-by-year financial

and company information for Norwegian corporations from the year 2000 up to 2015. In this dataset, there are two main data categories: the first is background and company information, such as type of industry, year of incorporation and main operating district. The second category is financial information obtained from the company's balance sheet and income statement. Such information includes information on debt structure, i.e. assets and liability, sales, turnover and financial spreads, for example revenue, profit margin return-on-asset (ROA) and return-on-equity (ROE). There is also a field to indicate the company's main bank connection. However, only two percent of the firms in the sample have recorded such information. The following section describes key variables and observation that are useful for this thesis study.

### 5.3 Small Norwegian Businesses

In the tables 5.2 and 5.3 below, businesses are classified based on their industry type. This is done using the statistical classification of economic activities in the European Community abbreviated as NACE. It is further distinguished between small and “non-small” firms. Table 5.2 shows there is a different industry mix when only looking at small firms versus the overall mix, i.e. all firms. Small firms are defined as firms with revenue below 10 million Norwegian krone (MNOK). For small firms, the largest industries are “Product Trade, repair of motor vehicle” and “Transport and storage”. These industries account for more than 40% of the small firm population. Meanwhile, the industries; “Operation of real estate” and “Professional and Scientific and Technical Services” account for about 40% of overall population. As table 5.3 shows, certain industries appear to have more ties to savings banks than others. Note that the table shows one third of the firm-savings bank connection comes from the following industries: “Transport and storage”, “Industrial production” and “Professional, Scientific and Technical Services”. Comparing the two tables, it is observed that the industries with the highest percentage of small businesses are also those with most savings bank connections. This illustrates industry profile may play a role when studying the link of small business presence and growth versus savings bank exposure in the community.

*Table 5.2 Presentation of industry mix in percent.*

Industry	Small Firm (Revenue <= 10Million nok)		
	No	Yes	Total
Accommodation And Service	2.6 %	2.8 %	2.6 %
Agriculture, Forestry, Fishing	1.0 %	1.5 %	1.1 %
Building And Civil Engineering	5.3 %	8.2 %	5.7 %
Business Service	2.6 %	2.5 %	2.6 %
Cultural Activities, Entertainment And Period Activities	2.6 %	1.5 %	2.5 %
Electricity, Gas, Steam And Hot Water Supply			
Electricity, Gas, Steam And	0.4 %	1.0 %	0.5 %
Financial And Insurance Activities	7.3 %	0.6 %	6.5 %
Health And Social Services	1.9 %	1.3 %	1.8 %
Industrial / Production	4.0 %	12.2 %	5.1 %
Information And Communication	3.7 %	5.2 %	3.9 %
International Organizations And Bodies	0.0 %	0.0 %	0.0 %
Mining And Extraction	0.6 %	1.3 %	0.7 %
Operation Of Real Estate	14.3 %	1.9 %	12.7 %
Other Service	1.8 %	0.5 %	1.6 %
Others	6.9 %	2.9 %	6.4 %
Paid Work In Private Households	0.2 %	0.0 %	0.2 %
Product Trade, Repair Of Motor Vehicles	8.7 %	22.8 %	10.6 %
Professional, Scientific And Technical Services	24.8 %	9.7 %	22.8 %
Public Administration And Defence, And Safety			
Degrements Submitted Public Management	0.0 %	0.0 %	0.0 %
Teaching	2.4 %	1.1 %	2.2 %
Trasport And Storage	8.5 %	21.9 %	10.3 %
Water Supply, Removal And Renewal Activities	0.3 %	0.9 %	0.4 %
Overall	100.0 %	100.0 %	100.0 %

Source: CCGR data

The table displays the industry mix for businesses, separating small firms and non-small firms. Small firms are defined as companies with revenue below 10 MNOK. It shows that the small firms appear to have a different industry mix compared to the overall industry mix. The industries “product trade, repair of motor vehicles” and “transport and storage account for about 45% of small firms. “Operation of real estate” and “professional, scientific and technical services” are the largest industries for all Norwegian firms. The column named total shows the results for all firms.



*Table 5.3 Companies with a savings bank connection in percentage, broken down by industry*

Industry	Connect with Saving Bank (From CCGR data field)		
	No	Yes	Total
Accommodation And Service	2.6 %	2.6 %	2.6 %
Agriculture, Forestry, Fishing	1.1 %	0.8 %	1.1 %
Building And Civil Engineering	5.8 %	1.5 %	5.7 %
Business Service	2.6 %	0.5 %	2.6 %
Cultural Activities, Entertainment And Period Activities	2.5 %	1.4 %	2.5 %
Electricity, Gas, Steam And Hot Water Supply			
Electricity, Gas, Steam And	0.4 %	1.3 %	0.5 %
Financial And Insurance Activities	6.6 %	0.8 %	6.5 %
Health And Social Services	1.9 %	0.3 %	1.8 %
Industrial / Production	4.9 %	16.7 %	5.1 %
Information And Communication	3.9 %	3.6 %	3.9 %
International Organizations And Bodies	0.0 %	0.0 %	0.0 %
Mining And Extraction	0.7 %	0.7 %	0.7 %
Operation Of Real Estate	12.9 %	1.1 %	12.7 %
Other Service	1.7 %	0.1 %	1.6 %
Others	6.5 %	1.1 %	6.4 %
Paid Work In Private Households	0.2 %	0.0 %	0.2 %
Product Trade, Repair Of Motor Vehicles	10.5 %	13.8 %	10.6 %
Professional, Scientific And Technical Services	22.9 %	17.8 %	22.8 %
Public Administration And Defence, And Safety			
Degrements Submitted Public Management	0.0 %	0.0 %	0.0 %
Teaching	2.2 %	0.8 %	2.2 %
Trasport And Storage	9.8 %	33.3 %	10.3 %
Water Supply, Removal And Renewal Activities	0.4 %	1.8 %	0.4 %
Overall	100.0 %	100.0 %	100.0 %

Source: CCGR data

The table is based on the 2% of firms that actually indicate bank connection. The table shows firms which have provided an indication on bank connection (“yes” or “no”). The tables separated between a savings bank connection and a non-savings bank connection. The table show that some industries seem to use savings banks more than others. The industries which demonstrate the most savings bank connections are “industry/production”, “professional, scientific and technical services” and “transport and storage”. The column named total shows the results for all firms, those indicating a savings bank connection and those indicating a non-savings bank connection.

#### 5.4 The Bank Location Registration and The Savings Bank Concentration Ratio

The second data source is the bank location registration, which lists banks by geographical location i.e kommune and fylke. The Bank Location Register is published by Finance Norway. The data was provided by Charlotte Østergaard and was used in her article “Social capital and the viability of stakeholder-oriented firms: Evidence from Norwegian savings banks” (2009). The data contains the name, number and location of all active Norwegian banks for the years 1995-2005. Furthermore, a data field is derived to distinguish between savings banks and non-savings banks enabling the ability to define the savings bank concentration ratio (b\_percent\_sav). The savings bank concentration ratio is defined as the percentage of savings bank branches

relative to total bank branches in the municipal (kommune). This is mapped for all Norway's 426 municipalities (kommune). This percentage is used to characterize the banks resource allocation and involvement in the local community. Ideally, one would want to collect each bank's business volume and client list to directly compare firm assets, survival and growth in the different municipalities, then analyze how a savings bank relation can impact the firm. However, due to data limitation, this cannot be done. Thus, we choose to rely on the savings bank branch numbers and use the savings bank concentration ratio for further analysis.

Table 5.4 presents the total number of branches for the years 1995-2005. The table distinguishes between savings banks and non-savings banks. As seen from the table, there has been a steady decrease in number of branches, this decrease is mainly due to a reduction in savings bank branches.

*Table 5.4 Annual number of bank branches in Norway*

<b>Year</b>	<b># of Total Bank branch</b>	<b># of Saving Bank branch</b>	<b># of Non-Saving Bank branch</b>
1995	1546	1103	443
1996	1532	1078	454
1997	1495	1050	445
1998	1468	1018	450
1999	1456	1032	424
2000	1444	1022	422
2001	1421	1002	419
2002	1403	987	416
2003	1365	953	412
2004	1335	803	532
2005	1225	770	455

*Source: The Bank Location Registration*

*The table presents the total number of bank branches annually for the years 1995-2005. Further, the table separates savings bank and non-savings bank branches. The reduction in bank branches is due to the decrease in number of savings banks branches. The number of non-savings bank branches (commercial banks) has increased the last ten years.*

Table 5.5 presents the savings bank concentration ratio for an excerpt of municipals. The full list is presented in appendix 3. Overall the average savings bank concentration by kommune as of 2005 is 75%. Table 5.6 presents the savings bank concentration for the 20 Norwegian counties (fylker) in order high to low.

*Table 5.5 Numbers of branches and savings bank concentration by municipal (kommune) in 2005. Listed by total numbers of branches.*

<u>komname</u>	<u>komno</u>	<u># of Total Bank branch</u>	<u># of Saving Bank branch</u>	<u># of Non-Saving Bank branch</u>	<u>Saving Bank Concentration</u>
oslo	301	72	10	62	14 %
bergen	1201	47	20	27	43 %
trondheim	1601	28	12	16	43 %
stavanger	1103	22	12	10	55 %
baerum	219	15	4	11	27 %
drammen	602	14	9	5	64 %
kristiansand	1001	14	10	4	71 %
tromso	1902	14	8	6	57 %
sandnes	1102	13	8	5	62 %
hamar	403	11	8	3	73 %
aalesund	1504	11	5	6	45 %
bodo	1804	10	5	5	50 %

*Source: The Bank Registration Data.*

*The savings bank concentration ratio is defined as the ratio of savings bank branches to total number of bank branches in the municipal (kommune). The table only displays an excerpt. The table is dominated by more central areas in the country. The average savings bank concentration ratio is 75%. The full table is presented in appendix 3.*

*Table 5.6 Savings Bank Concentration by County (fylke).*

<u>Fylke (county)</u>	<u>Saving Bank Concentration</u>
<b>Buskerud</b>	81 %
<b>Troms</b>	73 %
<b>Oppland</b>	72 %
<b>Sogn og Fjordane</b>	71 %
<b>Aust-Agder</b>	70 %
<b>Hedmark</b>	69 %
<b>Møre og Romsdal</b>	68 %
<b>Vest-Agder</b>	68 %
<b>Nordland</b>	67 %
<b>Nord-Trøndelag</b>	67 %
<b>Vestfold</b>	67 %
<b>Rogaland</b>	65 %
<b>Telemark</b>	64 %
<b>Finnmark</b>	63 %
<b>Hordaland</b>	58 %
<b>Østfold</b>	58 %
<b>Sør-Trøndelag</b>	56 %
<b>Akershus</b>	41 %
<b>Oslo</b>	29 %

*Source: The Bank Registration Data*

*The savings bank concentration ratio is defined as the ratio of savings bank branches to total bank branches in the municipal (kommune). The table presents the savings bank concentration for the Norwegian counties, from high to low. The two counties surrounding the Norwegian capital have the lowest savings bank concentration ratio.*

Table 5.6 shows that the two counties with the lowest savings bank concentration are Oslo and Akershus, which are the counties surrounding the country's capital. Oslo is the city with the highest number of registered branches, which implies a highly competitive business environment. Oslo has only 10 registered savings banks, compared to 62 non-savings banks. It may be a sign of a typical commercial bank strategy, to focus on more populated areas with a higher frequency of business activities, as well areas where business activities tend to have a larger NOK amount.

### 5.5 Macroeconomic variables

In order to improve the explanation of the firm's financial performance, some endogenous factors are considered and included. The third data group captures some key macroeconomic factors including Gross Domestic Product (GDP), Consumer Price Index (CPI), unemployment rate, stock price index and the interbank rate (i.e. 3-month NIBOR). This data has been collected from Statistics Norway (SSB) and Oslo Børs (The Norwegian Stock Exchange). These variables are important to consider because they reflect the business cycle, which may impact the business and firm financial performance. These control variables are used in the modelling session in order to make the model less bias and to minimize spurious regressions. The following tables show the macroeconomic factors used:

1. Norwegian GDP
2. Norwegian CPI
3. Norwegian Stock Market i.e. OSEBX Index.
4. Norwegian three month NIBOR
5. Crude Oil Price
6. Norwegian Unemployment rate

*Table 5.7 A presentation of the macroeconomic variables applied during the study period, 2000-2015*

YEAR	GDP CHANGE (%)	CPI	OBSEX INDEX	3MTH NIBOR(%)	OIL PRICE (US\$)	UNEMPLOYM
2015	-1.1	100	610	1.05	49	4.6
2014	1.5	97.9	576	1.52	96	3.8
2013	2.6	95.9	549	1.55	106	3.7
2012	2.6	93.9	444	1.8	109	3.5
2011	5.9	93.3	385	2.97	107	3.3
2010	4.5	92.1	440	2.41	77	3.4
2009	-3.9	89.9	372	1.91	61	3.4
2008	9.1	88	225	5.82	94	2.9
2007	4.1	84.8	491	5.65	69	2.4
2006	7.1	84.2	440	3.51	61	2.8
2005	6.7	82.3	333	2.4	51	4.3
2004	5	81	237	1.88	36	4.4
2003	2.7	80.7	171	2.68	28	4.4
2002	-1	78.7	115	6.85	24	3.7
2001	1.7	77.7	167	6.71	23	3.7
2000	12	75.5	196	7.36	28	3.4

*Source: Statistics Norway and The Norwegian Stock Exchange*

### 5.6 Merging the data sets

To merge the data from the CCGR and the bank location registration datasets, kommune ID number is used. Then the data is further joined with the dataset containing the Norwegian macroeconomic and business cycle information for different point in time by year.

With the exception of the bank location registration, which only has data for the period 1995-2005, both the CCGR and the macroeconomic factors cover the period from 2000 to 2015. This captures at least one economic cycle, which should be a good assumption to capture the business cycle performance of the firm and unbiased interpretations of the savings bank impact to the firms. Since the number of saving banks have to a degree stabilized from 1995 to 2005, it is expected that the bank's branch location information is representative enough for our data analysis.

### 5.7 Defining Small Business

The underlying question in this thesis is whether or not small local businesses can benefit more than larger firms, from be located near and establishing relationships with the local savings banks, rather than larger, nationwide commercial banks. As shown in Table 5.8, Norwegian firms are scattered across the whole country (less than are 20% concentrated in Oslo), thus it is natural to study how savings banks by different regions

impact the small firm financial performance locally and check if this conjecture has any support from the data.

Referencing Statistics Norway, small firms are classified as firms with less than 20 or 50 employees. The business landscape in Norway is heavily dominated by “one person firms” and other very small businesses. Thus, over 95% of Norway’s businesses will be defined as small firms (e.g. using firm size less than 20 employees). There is a potential issue with this definition, there will be too many firms defined as small businesses. The number of small firms will be close to the total number of firms in the country, making it difficult to further identify small firm characteristic and which behavior in its financial performance could possibly be contributed by the savings banks. Aside from number of employees, other parameters such as firm turnover (revenue) or total asset value can be used to define firm size, namely “small business”.

There is substantial information missing regarding the number of employees in the CCGR data. Thus, the firm’s annual turnover, referencing the EU Commission’s firm size definition is used for this study. Firms with less than 10 million Norwegian kroner (MNOK) in sale turnover are defined as “small firms”, which is the relevant parameter for this study. Table 5.8 defines the firm by sale turnover. Firms with sale turnover below 2MNOK kroner are considered “micro firms”. Companies with sale turnover between 10MNOK and 50MNOK are defined as “medium firms”, and firms with sale turnover above 50MNOK are considered “large firms”. Table 5.8 shows that 86,7% (67,7% + 19%) of all firms are considered small, where one person firms are clearly the most common form of business.

*Table 5.8 Firm profile in terms of business turnover, employee size and county (fylke) distribution*

<b>Firm Annual Turnover (NOK)</b>	<b>Distribution %</b>	<b>Small Firm</b>			
1) Turnover <= 2MM kr	67.7 %	<b>Fylke</b>	<b>No</b>	<b>Yes</b>	<b>Total</b>
2) Turnover <= 10MM kr	19.0 %	Akershus	9.9 %	10.0 %	9.9 %
3) Turnover <= 50MM kr	9.8 %	Aust-Agder	1.9 %	1.7 %	1.9 %
4) Turnover > 50M kr	3.5 %	Buskerud	5.2 %	5.5 %	5.2 %
		Finnmark	1.3 %	1.3 %	1.3 %
		Hedmark	2.6 %	2.9 %	2.7 %
		Hordaland	9.4 %	9.2 %	9.4 %
		Møre og Romsdal	4.8 %	5.6 %	4.9 %
		Nord-Trøndelag	2.1 %	2.0 %	2.1 %
		Nordland	4.0 %	4.0 %	4.0 %
		Oppland	2.9 %	3.3 %	2.9 %
		Oslo	19.3 %	18.4 %	19.2 %
		Others	3.8 %	2.1 %	3.6 %
		Rogaland	7.9 %	9.2 %	8.1 %
		Sogn og Fjordane	1.9 %	2.2 %	1.9 %
		Svalbard	0.0 %	0.1 %	0.1 %
		Sør-Trøndelag	5.1 %	5.1 %	5.1 %
		Telemark	2.9 %	2.8 %	2.9 %
		Troms	2.5 %	2.6 %	2.5 %
		Vest-Agder	3.5 %	3.2 %	3.5 %
		Vestfold	4.6 %	4.4 %	4.6 %
		Østfold	4.4 %	4.5 %	4.4 %
		Total	100.0 %	100.0 %	100.0 %
<b>Firm Employee Size</b>	<b>Distribution %</b>				
1) 1 person	82.6 %				
2) 2-5 person	9.0 %				
3) 6-10 person	3.7 %				
4) 11-19 person	2.2 %				
5) 20-50 person	1.7 %				
6) 51-100 person	0.4 %				
7) 101-200 person	0.2 %				
8) 201-500 person	0.1 %				
9) 501+ person	0.1 %				

*In this study a firm with a sale turnover below 10MNOK is defined as a small firm. Firms with sales turnover below 2MNOK are defined as micro firms. Companies with sale turnover between 10MNOK-50MNOK are defined as medium firms, and firms with sale turnover above 50MNOK are considered large firms. The business landscape is clearly dominated by one-person firms and other small companies. The counties Rogaland and Møre og Romsdal have larger percentage of small firms compared to other counties.*

## 5.8 Firm Attributes as Performance Indicators

To study how savings banks can contribute to firm performance, the firm's financial performance is studied directly. There are various ways to define firm performance. Growth is often considered an important indicator. Other financial indicators are studied to yield a better understanding of firm performance and how it can be associated with the savings bank branch concentration ratio by municipal. In this study, using the CCGR panel data, a year-on-year (yoy) change ratio is used. This is a ratio derived by calculating the current years' value divided by the previous year's value on each individual firm. If the number is greater than 1.0, it means the firm has a positive growth, but if it is negative, it indicates negative growth. There are several growth indicators derived, these are presented below. The focus will be on growth in assets, revenue and return-on-assets (ROA).

1. **Asset growth (yoy) [Selected]**
2. Net income growth (yoy)
3. Bank overdraft growth (yoy)

4. Debt level growth (yoy)
5. Liability growth (yoy)
- 6. ROA growth (yoy) [Selected]**
7. ROE growth (yoy)
- 8. Revenue growth (yoy) [Selected]**

Table 5.9 summarizes the average firm growth performance in various dimensions for the years 2000-2015. Because the focus is on small firm growth, small firms (Small firm = '1') and large firms (Small Firm = '0') are separated.

Some basic statistics are useful to present for further analysis. It is interesting to note that only the bank overdraft (OD) growth shows a significantly higher value in the large firm group. Whereas the rest of the large firm growth indicators are lower compared to the small firm group. A bank overdraft is a form of commitment by the bank to the company, to provide a line of credit. Large firm usually have a longer and more appealing financial history (e.g. more available collateral to provide in exchange for lending facilities) compared with small firms. Which are often used by the bank when valuing a firms' creditworthiness, thus bank loan products such as the bank overdraft facility tends to be more accessible to a large firm and the growth should usually be higher.

On the other side, it is noted that small firms have both higher asset and liability growth, compared to large firms. A possible explanation is business life stage. For example, small firm business typically starts with smaller budgets and balance sheets, the demand for growth is more desperate and easier to achieve. Overall, the "small firm" growth indicators are fit for testing savings bank value contribution in the following sections.



*Table 5.9 A summary of financial performance figures by firm size*

Small Firm = 'Y'	Label	Mean	Std Dev
0	Asset Growth	1.18	0.61
	Netincome Growth	1.55	1.34
	Bankod Growth	1.42	1.25
	Debtvl Growth	1.20	0.97
	Liab Growth	1.20	0.72
	Roa Growth	1.13	0.86
	Roe Growth	1.43	1.44
	Rev Growth	1.22	0.68
1	Asset Growth	1.19	0.80
	Netincome Growth	1.54	1.45
	Bankod Growth	1.35	1.17
	Debtvl Growth	1.35	1.27
	Liab Growth	1.29	1.07
	Roa Growth	1.26	1.16
	Roe Growth	1.47	1.49
	Rev Growth	1.24	0.95

The table summarizes the average firm growth performance in various dimension for the years 2000-2015. Small firm (Small firm = '1') and non-small firms (Small Firm = '0') are separated. Small firms have higher asset and liability growth, compared to larger firms. The growth in bank overdraft is higher for non-small firms compared to small firms.

## 6. Methodology

### 6.1 Survival Analysis

To study if there is any impact of geographical presence of the savings banks to small businesses, the firm profile extracted from the CCGR data, is segmented by firm size and tested using a survival analysis. In the period 2000-2015, the number of corporations in operation has risen from 145 000 to 299 000. As mentioned previously, banks usually play an important role in supporting the local business growth through a stable source of funding. Access to a stable source funding is especially vital for start-ups and small firms with a thin financial history and little collateral. Therefore, it will be tested whether savings banks play a more important role in supporting these types of businesses through funding. The method applied in the study is to look at the savings bank concentration and whether it has any relation to the firm survival rate by municipal. In order to facilitate the analysis, some data cleansing is applied to the CCGR data. Part of this was adding back the first year records, as not all firms have a complete business year information. To construct the test, a data set is prepared by collecting all the records of the company accounts for the Norwegian firms. Some of the useful account are the businesses establishment year and financial records. The period covered is 2000-2015. Based on the records, it is possible to summarize how many firms are still in operation by its numbers of business year for each opening business year.

In the survival study, firms that have started operations in the years 2006-2015 are applied. The survival rate is measured by counting total numbers of firms still in business, divided by the total numbers firm in its respective originated year. Referencing Statistic Norways approach to the survival rate of newly established enterprises in the first five years, a similar approach is applied.

*Table 6.1A Firm Survival by Savings Concentration Ratio*

<b>By Firm Type</b>	<b>Year of Business (Per cent survived enterprises)</b>									
	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>
<b>All Firms</b>	100 %	93 %	88 %	81 %	75 %	70 %	67 %	64 %	62 %	60 %
w/ High Saving Bank Concentration	100 %	95 %	90 %	83 %	77 %	72 %	69 %	67 %	64 %	64 %
w/ Low Saving Bank Concentration	100 %	94 %	88 %	80 %	73 %	69 %	66 %	63 %	61 %	61 %
<b>Small Firms</b>	100 %	91 %	84 %	76 %	70 %	65 %	62 %	59 %	57 %	56 %
w/ High Saving Bank Concentration	100 %	92 %	86 %	79 %	72 %	68 %	64 %	62 %	59 %	58 %
w/ Low Saving Bank Concentration	100 %	92 %	84 %	76 %	68 %	64 %	61 %	58 %	57 %	56 %

*Firms that have started operations in the years 2006-2015 are applied in the survival analysis. The survival rate is measured by counting total numbers of firms still in business, divided by the total numbers firm in its respective originated year. The savings bank concentration ratio is the number of savings bank to total bank branches by municipal. The table shows that all firms have a higher survival rate in municipalities with a high savings bank concentration, compared to areas with a low saving bank concentration. The survival rate for small businesses is lower compared to the entire sample.*

*Table 6.1B T-test of survival year between high and low saving bank concentration*

Year of Business	1	2	3	4	5	6	7	8
Sample size	10	9	8	7	6	5	4	3
Mean of High SBC	0.95	0.90	0.83	0.77	0.72	0.69	0.67	0.64
Mean of Low SBC	0.94	0.88	0.80	0.73	0.69	0.66	0.63	0.61
Difference	0.00	0.02	0.03	0.03	0.03	0.03	0.04	0.03
Standard Deviation	0.01	0.02	0.03	0.03	0.03	0.03	0.02	0.02
Standard Error	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.01
T-statistics	1.05	2.44	3.10	2.84	2.33	2.24	3.78	2.25
Degree of Freedom	9	8	7	6	5	4	3	2
alpha (set at 5%)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
T-critical value	1.38	1.40	1.41	1.44	1.48	1.53	1.64	1.89
Statistics significant ?	N	Y	Y	Y	Y	Y	Y	Y

*T-tests are applied on the different business years to test if there is any difference in the means of the high savings bank concentration and the low savings bank concentration survival rates. The null hypothesis is that mean survival rates for municipalities with high and low savings banks concentration are the same. The sample is based on the numbers of originate year is being used for the comparison. The*

*null hypothesis is tested using a 5% significant level (i.e. both means are the same). The null hypothesis is not rejected in year one, it is however reject from year two to eight. Meaning, the survival rates for firms in areas with a high and low savings bank concentration are different.*

Each municipal (kommune) is defined as having a high, medium or low savings bank concentration. Then companies are classified into groups based on the areas savings bank concentration. “High” savings bank concentration groups have a concentration above 80%, and “low” concentration groups have a savings bank concentration below 50%. The table (6.1A) shows that smaller firms have lower survival rates compared to the entire sample. The table also shows that firms located in areas with a higher savings bank concentration, have a higher survival rate (i.e. the difference is about three to four percent at the fifth business year). The two-tailed t-test shows that most of the means (from the second to the eighth year) for high and low savings bank-concentration ratio firms of each their business year are different. The results are statistically significant at a 5% confidence level and the hypothesis, that the means are the same, is rejected (Table 6.1B). This results support the hypothesis that small firms and start-ups benefit from being located near a savings bank. The results imply that the savings bank concentration variable can be used to analyze whether there is a correlation between the local firms’ financial performance and the areas savings bank concentration. It may be the case that both savings bank concentration and firm survival rates are driven by exogenous factors. However, the savings bank concentration can be useful as an independent for the hypothesis testing.

## 6.2 The relationship between the geographic location of savings bank branches and local firm performance

Firstly, an Analysis of Variance test (ANOVA-test) is performed, this test is applied to check for any statistically significant differences between three or more independent groups (Lærd Statistics). More precisely, this tests the differences between two or more level mean values. If the null hypothesis is rejected, this shows that at least one of the level means is different from at least one other level mean.

In this thesis, we want to examine whether there is any material difference between financial performance of large and small firms by geographic location, and the areas savings bank concentration ratio. Thus, three levels from the savings bank

concentration ratio are defined, namely low, medium and high level. A savings banks concentration above 80% is considered high, a ratio between 50% and 80% is medium. Lastly, a savings bank concentration ratio below 50% is defined as low. For each level, the firm financial performance means are calculated. If there can be found a heterogeneous pattern of the financial performance among the levels of savings bank concentration ratio, there is a good possibility that a correlation between firm performance and savings bank presence exists.

By running the ANOVA test, the primary focus is to analyze how small firms' assets, revenue and return-on-assets grow in the different groups of savings bank concentration. All the parameters show statistical significance with p-values less than 0.1%, this implies at least one of the savings banks concentration levels are different from the rest of the levels.

*Table 6.2 ANOVA Test on small firm financial performance*

	<b>Average Annual Growth (small firm)</b>			<b>Anova Test</b>
<b>Saving bank concentration</b>	<b>Low</b>	<b>Medium</b>	<b>High</b>	<b>P-value</b>
Asset	1.20	1.18	1.17	<0.0001
Reveune	1.25	1.23	1.23	<0.0001
ROA	1.27	1.25	1.25	<0.0001

*Analysis of variance test is applied to analyze how small firms' assets, revenue and ROA grow for different levels of savings bank concentration (ratio of savings bank branches to total bank branches by municipal). All three parameters show p-values below 0,1%, implying that at least one of the savings bank concentration levels are different from the rest. The tables show that higher savings bank concentration is associated with lower growth rates.*

The trend in table 6.2 shows lower growth rates for higher savings bank concentration ratio. The firm's assets, revenue and return-on-assets for small firms grow less, when the small firm is located in an area with a high savings bank concentration ratio. In other words, a low savings bank concentration correlates better with higher performance in terms of asset, revenue and return-on-asset growth rates when compared to medium and high levels of concentration. This result contradicts the hypothesis that savings banks can help small firm prosper in term of growth. It is feasible that growth is a result of exogenous factors, and that these factors also play a role in bank branch location. A likely explanation is a commercial bank strategy which

targets high growth areas, where competition and business activities are more frequent and intense. Arguable, other exogenous variables are likely to play a part in explaining business growth. This can be further explored by using the multiple regression model presented in the next section.

### 6.3 Multiple regression models to relate firm performance and savings bank characteristics

To examine how the savings bank concentration ratio, among other factors, impacts business growth, several multiple regression models are built. The dependent variables are the firm's yearly growth rates for revenue, asset value and return-on-asset, for the period between 2000-2015. The independent variables are firm profile and financial information. Also, a lagged growth variable is included, as it is believed that revenue and asset growth additive. It is expected that these lagged variables (previous period) growth rates can capture the momentum of the current period growth. Table 6.3 shows the full list of variables applied. A natural logarithm transformation is performed for the growth variables as to avoid outliers, also included as an explanatory variable are one period lagged growth variables. Finally, macroeconomic measurements are added to the model(s). Thus, the multiple regression model is constructed (*Equation 6.1*). The following regression attempts to explain the extend of the savings bank concentrations impact on firm financial performance.

*Equation 6.1 Multiple regression model used to explain firm growth rate,  $Y(t)$ , for the years 2000-2015.*

$$Y(t) = \alpha + \beta * \text{Firm financial variables} + \gamma * \text{Savings bank concentration ratio} + \delta * Y(t-1) + \theta * \text{Macroeconomic variables} + \varepsilon$$

*Where,  $Y(t)$  represents the growth variables. Three growth variables are used, they are: growth in assets, revenue and return on assets.  $Y(t-1)$  is the growth variable lagged one period.  $\alpha$  is the intercept and  $\varepsilon$  is an error term. The savings bank concentration ratio is the number of savings banks branches to total number of bank branches.  $\gamma$  is the savings bank concentration ratio coefficient. The company financial variables and the macroeconomic variables are presented in full in table 6.3,  $\beta$  and  $\theta$  are their respective coefficients.*

*Table 6.3 Multiple Regression Model. An overview of the dependent and independent variables applied in the multiple regression model.*

<b>Independent Variables</b>	<b>Label</b>	<b>Independent Variables</b>	<b>Label</b>
a_age	Firm Age	m_CPI	Norge CPI
a_asset_current	Current Asset	m_GDP	Norge GDP
a_asset_fix	Fix Asset	m_NIBOR	Norge Nibor 3-mth
a_asset_intang	Intang Asset	m_OBX	Norge OBX Index
a_asset_total	Total Asset	m_OIL	Crude Oil Price
a_bankoverdraft	Firm Bankoverdraft	m_UNEMP	Norge CPI
a_cash	Firm Cash	f_usebank	w/ any bank connected
a_cashflow	Firm Cashflow	f_usespare	w/ saving bank connected
a_debtlvl	Firm Debtlvl		
a_liab_total	Total Liab	<b>Dependent Lagged Variables</b>	<b>Label</b>
a_LiabCurrent	Current Liability	d_growth_roa_lag	1 year lag of ROA growth
a_LiabLongGrp	Group Long term Liabillity	d_growth_asset_lag	1 year lag of Asset growth
a_LiabOthLong	Other Long term Liabillity	d_growth_rev_lag	1 year lag of Revenue growth
a_LiabtoFI	Liabillity to FI		
a_LiabtoFicur	Firm Liability to Cur	<b>Dependent Variables, Y(t)</b>	<b>Label</b>
a_margin	Firm Margin	b_percent_sav	Saving Bank Concentration
a_netincome	Firm Netincome		
a_noemp	Firm Noemp		
a_op	Firm Op		
a_rev	Firm Rev		
a_roa	Firm Roa		
a_totequity	Firm Totequity		
a_totinvestment	Firm Totinvestment		

A “Full Model” is built, including all firms, i.e. small firms and large firms, representing all industries and geographical locations. The coefficient of the savings banking concentration ratio is examined for statistical significance with a confidence level of at least 90%, i.e. p-value < 0.10. Furthermore, it is checked whether or not there exists any partial models that can explain a connection between small firms and/or young firms and the municipals savings bank presence.

#### 6.4 The Multiple Regression Models and Results

The main purpose of the regression is to analyze how well the savings bank concentration variable fits into the firm growth model. By solving the model, one can tell from the variables coefficient whether or not they are useful in explaining firm growth, the same applies when examining the coefficient of the savings bank concentration ratio impact on business growth. Aside from the savings bank concentration, there are other variables with respect to firm profile and financials that

give a clearer picture of the components impacting firm growth. Also important in this growth model, are macroeconomic variables.

Furthermore, the regression study presents three different models. These are as follows:

1. A full model including all firms.
2. A partial model which only includes small firms.
3. A partial model which only includes firms that are both small and young.

#### 6.4.1 Full model results

Three variations of the full model, using different dependent variables, are built. The dependent variables are growth in revenue, assets and return-on-assets. The adjusted R-square for all three variations of the full model is at the 50%-60% level. Using a stepwise approach to variables selection the final variables are chosen and used as input in the model. The results of the full model show savings bank concentration by municipal as negatively correlated with the local business growth. The areas respective savings bank concentration ratio and the three defined business growth variables are all significantly negatively correlated (i.e. with p-value < 0.01%). This indicated that high savings bank exposure is associated with a low firm asset growth, which contradicts much of the theory presented earlier. The full model is presented in detail in table 6.4.

Furthermore, it is examined whether the company's size plays a role in growth. The savings bank concentration ratio derived varies among the municipals. From the full model results (table 6.4), it is shown that the savings bank concentration ratio and whether or not the firms is considered small (i.e. a variable/ flag name 'f\_sma') are both significantly correlated to the business performance/growth. Both the asset and ROA growth models show a positive and significant "small firm" variables. Meaning that being a small firm is positive for firm growth. In the statistical formula, this means that if all else constant, changing the small firm flag, i.e. if the firm is small, the log of business asset growth yearly increased by 1.37 percent per year (table 6.4).

Lastly, the table shows there is obvious momentum in the growth rates. The one period lagged growth variables, holds significant explanatory power for current period growth.

*Table 6.4 Full Model Regression Results*

<u>Period</u>	<u>2000 - 2015</u>		
---			
<b>Dependent Variable</b>	<b>Asset Growth</b>	<b>ROA Growth</b>	<b>Revenue Growth</b>
---			
Adj. Rsquare	0.566	0.614	0.529
Number of Records	65177	65180	65175
---			
<b>Independent Variables</b>	<b>Coefficients (P-value)</b>		
---			
Lag ROA	-0.0003 (0.00)	-0.0033 (0.00)	-0.0006 (0.00)
Liability to Financial Institute	0.0000 (0.00)	-	0.0000 (0.00)
Other Long Term Liability	-	-	0.0000 (0.13)
Return of asset	0.0003 (0.00)	0.0018 (0.00)	0.0002 (0.00)
w/ any bank connected	-0.0141 (0.00)	-0.0201 (0.00)	-0.0236 (0.00)
Firm Debtlvl	0.0000 (0.00)	-	0.0000 (0.08)
Small Firm	0.0137 (0.00)	0.0335 (0.00)	-
Firm Age	-0.0004 (0.00)	-	0.0004 (0.03)
Saving Bank Concentration Ratio	-0.0389 (0.00)	-0.0349 (0.00)	-0.0194 (0.02)
Norge GDP	-	0.0025 (0.00)	-
Norge CPI	0.0055 (0.00)	-	0.0098 (0.00)
Norge OBX Index	-	-	-0.0001 (0.034)
Norge Nibor 3-mth	-	-	-0.0100 (0.00)
Unemployment rate	-0.0161	-0.0173	-0.0794



	(0.00)	(0.00)	(0.00)
Lag revenue growth rate	0.0339	0.0132	0.3407
	(0.00)	(0.00)	(0.00)
Lag ROA growth rate	0.0107	0.4742	0.0110
	(0.00)	-	(0.00)
Lag asset growth rate	0.2071	0.0089	0.0131

The table presents the regression results for the full model. It shows the firm's financial growth measures (i.e. asset growth, ROA growth and revenue growth) regressed on various financial ratios, macroeconomic factors and lagged growth rates, these variables are listed in table 6.3. The first column shows the models independent variable. The variable 'small firm' equals 1 when the firm type is small and 0 otherwise. The savings bank concentration ratio is measured by total number of savings bank branches divided by total number of savings bank and non-saving bank branches by municipal (kommune). A one period lagged growth rate is included as an explanatory variable. The second to fourth column represent each of the three models coefficients. The bracketed numbers below the coefficients, show the p-values for each variables. The table shows that the savings bank concentration ratio is negatively correlated with all three models, whilst the "small firm" variables indicates that being a small firm positively influences growth. Furthermore, it is obvious that previous period growth impacts current growth significantly.

#### 6.4.2 Partial Model Results - model including only small firms

To justify the firm size effect, a partial model using only small is presented. A relevant variable is the bank-connection variables. This variable indicates whether the firm has signaled a specific bank-firm relationship. However, only two percent of the firms in the data set have provided this information. The results, which are presented in table 6.5, show the bank connection variable is not significant for two of the three partial model. Therefore, it is concluded that the bank connection information does not add much value to the model when explaining business growth. Furthermore, in this partial model compared to the full model, the savings bank concentration ratio has a smaller negative effect on the small firm asset and return-on-asset growth, and no effect on revenue growth. The results are statistically significant at 5% level. The small firms partial model is presented in detail in table 6.5.

Similar to the trend in the full model, the firm age factor is negatively correlated with asset growth, but positively correlated to revenue growth. In other words, the results indicate that a small firm may experience a stronger asset growth when it is young in age, whereas older firm age may experience asset growth at a slower pace. Contrary to this, the positive coefficient of firm age in the revenue growth model, may imply that young firms usually experience less growth in revenue when compared to a mature firm.

In addition, it is interesting to mention that the small firm partial models have more explanatory power in the financial variables, compared to the full model (e.g. liability to current asset ratios, different types of asset values, cash flow, operation profit etc.). This may imply that small firm growth is to a larger degree explained by its own financial ratios and momentum. Having said that, this does not mean that small firms are less impacted by external factors such as the macroeconomic variables which appears in the model. It may be that small firm growth is impacted more or less by different variables than large firms. This could support the argument that smaller firms may benefit from a savings bank relationship.

*Table 6.5 Regression Results - Partial Model including only small firms*

<b>Small Firm</b>			
<b>Period</b>	<b>2000 - 2015</b>		
---			
<b>Dependent Variable</b>	<b>Asset Growth</b>	<b>ROA Growth</b>	<b>Revenue Growth</b>
---			
Adj. Rsquare	0.575	0.621	0.571
Number of Records	47499	47504	47501
---			
<b>Independent Variables</b>	<b>Coefficients (P-value)</b>		
---			
Lag Roa	-0.0003 (0.00)	-0.0025 (0.00)	-0.0003 (0.00)
Lag Asset	0.0000 (0.00)	-	0.0000 (0.00)
Lag Rev	0.0000 (0.00)	0.0000 (0.00)	0.0000 (0.00)
Firm Margin	-	0.0000 (0.03)	-
Current Liability to FI	0.0000 (0.07)	-	0.0000 (0.02)
Current Liability	0.0000 (0.05)	0.0000 (0.00)	0.0000 (0.00)
Intang Asset	0.0000 (0.01)	0.0000 (0.06)	-
Fix Asset	-	-	0.0000 (0.00)

Current Asset	0.0000 (0.00)	0.0000 (0.00)	- -
Total Asset	0.0000 (0.00)	- -	- -
Firm Cash	0.0000 (0.00)	- -	0.0000 (0.04)
Firm Cashflow	- -	0.0000 (0.00)	- -
Firm Operation Profit	0.0000 (0.00)	0.0000 (0.00)	0.0000 (0.00)
Revenue	0.0000 (0.00)	0.0000 (0.00)	0.0000 (0.00)
Return of asset	0.0002 (0.00)	0.0014 (0.00)	- -
total equity	- -	0.0000 (0.00)	0.0000 (0.00)
w/ any bank connected	- -	- -	0.0391 (0.00)
Firm Debtlvl	0.0000 (0.00)	- -	0.0000 (0.05)
Firm Age	-0.0005 (0.00)	- -	0.0008 (0.00)
Saving Bank Concentration Ratio	-0.0352 (0.00)	-0.0219 (0.04)	- -
Norge GDP	-0.0024 (0.00)	- -	- -
Norge CPI	0.0016 (0.02)	-0.0038 (0.00)	0.0084 (0.00)
Norge OBX Index	0.0001 (0.00)	0.0001 (0.02)	-0.0001 (0.06)
Norge Nibor 3-mth	- -	- -	-0.0073 (0.00)
Crude Oil Price	0.0006 (0.00)	- -	- -
Unemployment rate	- -	-0.0121 (0.02)	-0.0525 (0.00)
Lag revenue growth rate	0.0190 (0.00)	- -	0.2993 (0.00)
Lag ROA growth rate	0.0123 (0.00)	0.4936 (0.00)	0.0108 (0.00)
Lag asset growth rate	0.2122 (0.00)	0.0105 (0.00)	0.0058 (0.00)

*The table presents the results of the partial models which only include small firms. Similar to the full model; firm financial growth measures are regressed on various financial ratios, macroeconomic factors and lagged growth rates. A detailed description of the variables is presented in table 6.3. There are three variations of the partial model, thus three dependent variables, asset growth, ROA growth and revenue growth. The first column shows the models independent variables. The variable 'small firm'*

*equals 1 when the firm type is small and 0 otherwise. The savings bank concentration ratio is measured by total number of savings bank branches divided by total number of savings bank and non-savings bank branches by municipal (kommune). Regarding the lagged growth variables, a one-year lag period is applied to the relevant financial growth ratios. The second to fourth column shows the coefficients of variables for the three partial models. The bracketed numbers represent the variables p-value. There is a significance threshold of 5%. Similar to the full model, the savings bank concentration ratio is negatively correlated to asset and revenue growth. However, the savings banks concentration ratio coefficients are less negative, compared to the full model. Also, in this model there is more explanatory power in the financial variables.*

#### 6.4.3 Partial Model Results - model including only young, small firms

The theory section of this thesis argues that a high savings bank concentration ratio may benefit small businesses and start-ups. The previous model only specifies small businesses. This partial model includes corporation that are both small and young. Firms that are five years or younger are considered young. The model is applied to analyze the impact of the savings bank concentration ratio to young, small firms. The models results, which are presented in Table 6.6, show similar results as the previous full model. Compared with the partial model, that does not segment for age, the results are also similar. The savings bank concentration ratio has a negative impact on the firm asset growth. However, there is no effect on the return-on-asset and revenue growth. Also similar to the previous models, previous period growth has a rather large impact on current period growth.

The savings bank concentration ratio is only relevant for one of the partial models, only the asset growth model has a significant savings bank concentration coefficient.

The savings banks concentration coefficient is more negative compared to the previous two models, indicating the assets of young, small firms grow less in municipals with high savings bank concentration. However, the partial models for growth in revenue and return-on-assets do not have a significant coefficient for the savings bank concentration variable. This could possibly imply that areas with a high savings bank concentration have a smaller negative (more positive) influence on the young, small firms, compared to what is seen in the first partial model. This can arguably support the conjecture that the savings bank's characteristics, such as relationship lending and soft information handling, can be beneficial for young, small businesses. The partial model for young, small firms is presented in detail in table 6.6.

Presented below, is a table (table 6.7) containing a summary of the savings bank concentration ratio coefficients for the different models.

*Table 6.6 Regression Results - Partial Model with young, small firm*

**Small and young Firm**

<u>Period</u>	<u>2000 - 2015</u>		
---			
<u>Dependent Variable</u>	<u>Asset Growth</u>	<u>ROA Growth</u>	<u>Revenue Growth</u>
---			
Adj. Rsquare	0.59	0.63	0.61
Number of Records	18687	18696	18699
---			
---			

**Small and young Firm**

<u>Period</u>	<u>2000 - 2015</u>		
---			
<u>Dependent Variable</u>	<u>Asset Growth</u>	<u>ROA Growth</u>	<u>Revenue Growth</u>
---			
Adj. Rsquare	0.59	0.63	0.61
Number of Records	18687	18696	18699
---			
---			

<u>Independent Variables</u>	<u>Coefficients (P-value)</u>		
---			
Lag Roa	-0.0003 (0.00)	-0.0022 (0.00)	-0.0004 (0.00)
Lag Asset	0.0000 (0.00)	-	-
Lag Rev	0.0000 (0.00)	0.0000 (0.00)	0.0000 (0.00)
Firm Margin	0.0000 (0.10)	-	-
Firm Netincome	0.0000 (0.01)	-	-
Liability to Financial Institute	0.0000 (0.00)	-	-
Long Term Liability	0.0000 (0.00)	-	0.0000 (0.01)
Other Long Term Liability	0.0000 (0.00)	-	0.0000 (0.00)

Current Liability	-	0.0000	-
	-	(0.00)	-
Total Liability	0.0000	0.0000	-
	(0.00)	(0.01)	-
Firm Cash	0.0000	-	-
	(0.00)	-	-
Firm Cashflow	0.0000	0.0000	-
	(0.00)	(0.01)	-
Number of Employee	-0.0008	-	-
	(0.12)	-	-
Firm Operation Profit	-	0.0000	-
	-	(0.00)	-
Revenue	0.0000	0.0000	0.0000
	(0.00)	(0.00)	(0.00)
Return of asset	0.0002	0.0010	-
	(0.00)	(0.00)	-
total equity	0.0000	-	-
	(0.00)	-	-
w/ saving bank connected	-	-0.1516	-
	-	(0.00)	-
Firm Debtlvl	0.0000	-	-
	(0.00)	-	-
Saving Bank Concentration Ratio	-0.0467	-	-
	(0.00)	-	-
Norge GDP	-0.0020	0.0068	-
	(0.02)	(0.00)	-
Norge CPI	-	-	0.0055
	-	-	(0.00)
Crude Oil Price	0.0007	-0.0008	0.0006
	(0.00)	(0.00)	(0.06)
Unemployment rate	-	-0.0347	-0.0238
	-	(0.00)	(0.01)
Lag revenue growth rate	0.0221	-	0.3393
	(0.00)	-	(0.00)
Lag ROA growth rate	0.0130	0.5119	0.0152
	(0.00)	(0.00)	(0.00)
Lag asset growth rate	0.2324	0.0089	0.0124
	(0.00)	(0.00)	(0.00)

*The table presents the results of the partial model which only includes firm that are both small and young. Similar to the full model; firm financial growth measures are regressed on various financial ratios, macroeconomic factors and lagged growth rates. A detailed description of the variables is presented in table 6.3. The first column shows the models independent variable. There are three models, thus three dependent variables, asset growth, ROA growth and revenue growth. The variable 'small young firm' equals 1 when the firm type is small and 0 otherwise. The savings bank concentration ratio is measured by total number of saving bank branches divided by total number of savings bank and non-savings bank branches by municipal (kommune). Regarding the lagged growth variables, a one-year lag period is applied to the relevant financial growth ratio. The second to forth columns shows the coefficients for the three partial models. The bracketed numbers represent the variables p-value. Similar*

to the previous tables, there is a 0.05 significant level threshold for entry. Only the asset growth model shows a significant coefficient for the savings bank concentration ratio. Similar to the previous two models, it is negative and indicates that a high savings bank concentration ratio has a negative impact on growth. The models shows that current period growth is quite dependent on previous period growth.

*Table 6.7 Coefficients of saving bank concentration ratio by different models*

<b>Model Type</b>	<b>Coefficient Value</b>		
	Asset Growth	ROA Growth	Revenue Growth
1) Full Model	-0.03894414	-0.034899417	-0.019392002
2) Partial Model on small firm	-0.03524067	-0.021931407	na
3) Partial Model on young small firm	-0.04666204	na	na

Three regression models are built to test how the savings bank concentration ratio impact firm growth rate. The table summarizes the coefficients of the savings bank concentration ratio for the full model and both partial models. The partial models have fewer significant savings bank concentration ratios. This may imply the savings bank coefficient is less important for the partial models.

## 7. Conclusion

The idea behind the thesis is to analyze whether the substantial reduction in local savings banks has affected small business lending. The study uses savings bank concentration by municipal (kommune) as a proxy for the degree of savings bank presence. By examining survival rates and firm growth in each municipal, it tries to draw a conclusion. Firstly, a survival analysis is performed. Each municipal is defined as having a high, medium or low savings bank concentration. Companies are then defined by their presence in a municipal with high, medium or low savings bank concentration. The analysis indicates that firms located in areas with a high savings bank concentration, have a higher survival rate. The results are statistically significant at a 5% level. This result supports the hypothesis that small firms and start-ups benefit from being located near a savings bank. The analysis is extended by building several multiple regression models to analyzing how small firms' assets, return-on assets and revenue grow for the various levels of savings bank concentration.

The firm growth is not singularly defined by the municipals savings bank concentration; thus three variations of a multiple regression model was built, a full model and two partial models. The primary purpose of the regression is to analyze how well the savings bank concentration variable fits into the firm growth model, and how much explanatory power it holds. Three different dependent variables are used as the firm's yearly growth rate, namely growth in revenue, asset value, return-on-asset. The independent variables are various firm profile and financial variables. Also, a lagged

growth variable is included, as it is believed previous period growth provided momentum and can help explain current period growth. Finally, macroeconomic measurements are added to the model as control variables.

The results of the full model, which includes all firms, show that savings bank concentration by municipal (kommune) is negatively correlated with the local business growth, for all three business growth variables. This indicates that high savings bank exposure is associated with a low growth in assets, return-on-assets and revenue, which contradicts much of the theory presented. The full model indicated a positive correlation between being a small firm and growth in assets.

To justify the firm size effect, the first partial model focuses on small firms, larger firms are excluded. In this model we look at the bank connection variable, as well as the savings bank concentration variable. The bank connection variable indicates a specific bank-firm relationship. However, only two percent of the firms in the data set has provided this information. For this model the bank connection variable is only statistically significant when looking at the revenue growth model. Because it is not statistically significant for the other two versions of the partial model, it is concluded that the bank connection information does not add much value to the model when explaining business growth. Furthermore, the model shows a negative correlation between the savings bank concentration ratio and the small firm asset growth and ROA growth, there is no effect on revenue growth. The negative effect is smaller for this partial model, compared to the full model.

The second partial model, includes firms that are both young and small. The model is applied to analyze the impact of the savings bank concentration ratio to young, small firms. It is applied to further understand if the growth of young, small corporations may be greater affected by a high savings bank presence, compared to larger more established businesses. However, based on the regression results, the coefficient of savings bank concentration ratio is negative for asset growth. The savings bank concentration has no significant effect on the growth in ROA and revenue. Implying, high savings bank concentration is not an additional stimulant for the growth of small local businesses and start-ups.



It is evident from the models, especially the partial models, that firm financial variables and previous period growth, as well as some macroeconomic variables, have a greater influence on business growth than the level of bank presence. The results indicate, while the savings banks concentration ratio is significant for most of the regression models, other factors matter more.

In total, the study shows a high degree of savings bank presence tends to have a negative impact on the growth for local firms, also the small businesses. All three models have similar trends. This contradicts the hypothesis made and much of the theory presented. However, a high savings bank concentration ratio is related to higher survival rates for newly established enterprises. These two results oppose another, one contradicts the hypothesis, while the other is in line with it.

A reason we observe a negative correlation between the degree of savings bank presence and growth, when we expect otherwise, may be caused by a situation in which high performance companies with strong growth are more frequently present in urban areas. It is quite possible that central areas such as Oslo, Bergen, Trondheim and Stavanger simply have more economic growth. These are all areas with low savings bank concentration ratios. A similar explanation could be that areas with high savings bank concentration have a less competitive business environment, thus the larger commercial banks have less footing. Therefore, in the less urban areas the lower firm growth could be attributed to less economic activity. These areas, where savings banks have a stronger presence also tend to have less competition, lower costs and closer communities. The savings banks tend to be smaller and may have a less hierarchical structure, and are perhaps more flexible. These are arguably variables that can explain the higher survival rate in municipalities with a savings bank concentration, even though the firm growth is significantly lower.

## 8. Reference list

Agresti, Alan. *Categorical Data Analysis*. 2002. John Wiley & Sons, Inc., Hoboken, New Jersey.) *2nd ed.*, 300. University of Florida.

Berger, Allen N., and Gregory F. Udell. "Small business credit availability and relationship lending: The importance of bank organisational structure." *The economic journal* 112.477 (2002): F32-F53.

Berger, Allen N., et al. "Does function follow organizational form? Evidence from the lending practices of large and small banks." *Journal of Financial economics* 76.2 (2005): 237-269.

Berger, Allen N., et al. "The effects of bank mergers and acquisitions on small business lending." *Journal of financial Economics* 50.2 (1998): 187-229.

Blank, Steve. "Why the lean start-up changes everything." *Harvard business review* 91.5 (2013): 63-72.

Bøhren, Øyvind and Josefsen, Morten G. "Stakeholder Rights and Economic Performance: The Profitability of Nonprofits" *Journal of Banking & Finance* 37 (2013) 4073–4086.

"Centre For Corporate Governance Research (CCGR)". 2017. *Bi.Edu*.

<http://www.bi.edu/research/bi-research-centre-corporate-governance-research-ccgr/>.

Coppola, Frances. 2013. "Forbes Welcome". *Forbes.Com*.

<http://www.forbes.com/sites/francescoppola/2013/12/10/big-banks-versus-small-banks-size-doesnt-matter/#4fa7f7cb1d86>.

Diamond, Douglas W. "Financial intermediation and delegated monitoring." *The Review of Economic Studies* 51.3 (1984): 393-414.

Finansdepartementet. 2011. Bedre rustet mot finanskriser. (NOU 2011: 1). Retrieved date: 02.01.2017

<https://www.regjeringen.no/contentassets/49ec0c14a20a40288332054176b26a1a/no/pdfs/nou201120110001000dddpdfs.pdf>

Höwer, Daniel. "The role of bank relationships when firms are financially distressed." *Journal of Banking & Finance* 65 (2016): 59-75.

International Monetary Fund. Jeanne Gobat. 2012. "What is a bank?" Retrieved date: 03.01.2017 <http://www.imf.org/external/pubs/ft/fandd/2012/03/basics.htm>

Jayarathne, Jith, and John Wolken. "How important are small banks to small business lending?: New evidence from a survey of small firms." *Journal of Banking & Finance* 23.2 (1999): 427-458.

Jagtiani, Julapa, and Catharine Lemieux. "Small business lending after the financial crisis: A new competitive landscape for community banks." *Economic Perspectives* 3 (2016): 1-30.

Laeven, Mr Luc, Lev Ratnovski, and Hui Tong. *Bank size and systemic risk*. No. 14. International Monetary Fund, 2014.

Lærd Statistics. One-way ANOVA. Retrieved date: 30.05.2017.

<https://statistics.laerd.com/statistical-guides/one-way-anova-statistical-guide.php>

Mommel, Christoph, Christian Schmieder and Ingrid Stein. *Relationship lending – Empirical Evidence for Germany*. Economic and Financial Report 2008/01. European Investment Bank. Retrieved date: 12.06.2017.

[http://www.eib.org/attachments/efs/efr\\_2008\\_v01\\_en.pdf](http://www.eib.org/attachments/efs/efr_2008_v01_en.pdf)

Mjøs, Aksel, and Ove Rein Hetland. 2012. "For mye eller for lite lån?: Betydningen av banker og kreditt i oppgangs-og nedgangstider." . Magma 06.12.

Norges Bank. 2016a. Finansiell stabilitet: Sårbarhet og risiko. Retrieved date: 02.01.2017

<http://www.norges-bank.no/Publisert/Publikasjoner/Finansiell-stabilitet---rapport/2016-Finansiell-stabilitet/>

Norges Bank. 2016b. Norway's Financial System. Norges Bank Papers NO.2 2016. Retrieved date: 03.01.2017

[http://static.norges-bank.no/pages/105144/NB\\_Papers\\_2\\_2016.pdf?v=9/9/2016111733AM&ft=.pdf](http://static.norges-bank.no/pages/105144/NB_Papers_2_2016.pdf?v=9/9/2016111733AM&ft=.pdf)

Oslo Børs. 2017. Aksjeindexer. Retrieved Mai 2017

<https://www.oslobors.no/Oslo-Boers/Produkter-og-tjenester/Markedsdata/Aksjeindexer>

Ostergaard, Charlotte, Ibolya Schindele, and Bent Vale. 2009. "Social capital and the viability of stakeholder-oriented firms: Evidence from Norwegian savings banks." *EFA 2009 Bergen Meetings Paper*.

Sparebankforeningen. Undated (a). *Sparebankens strukturutvikling 1960- 2004*.

Retrieved date: 02.01.2017

<http://www.sparebankforeningen.no/siteassets/dokumenter/sparebankenes-strukturutvikling-1960---2004.pdf>

Sparebankforeningen. 2016. *Antall sparebanker*. Retrieved date: 02.01.2017

<http://www.sparebankforeningen.no/banker-og-stiftelser/antall-sparebanker/>

Sparebankforeningen. 2017. *Om Oss*. Retrieved date: 25.05.2017

<http://www.sparebankforeningen.no/om-oss/>

Sparebankforeningen. Undated(b). *Sparebankenes organisasjonsstruktur*. Retrieved date: 02.01.2017

<http://www.sparebankforeningen.no/siteassets/dokumenter/sparebankenes-organisasjonsstruktur.pdf>

Statistica. 2017. Average annual OPEC crude oil price from 1960 to 2017 (in U.S. dollars per barrel). Retrieved date: May 2017.

<https://www.statista.com/statistics/262858/change-in-opec-crude-oil-prices-since-1960/>

Statistics Norway (Statistisk Sentralbyrå). 2016. *Newly established enterprises, survival and growth, 2009-2014*. Retrieved date: 11.01.2017

<http://www.ssb.no/en/virksomheter-foretak-og-regnskap/statistikker/fordem/aar/2016-10-14>

Statistics Norway (Statistisk Sentralbyrå). 2016. *Many small establishments. Number of enterprises by size*. Retrieved date: 11.01.2017

<http://www.ssb.no/en/virksomheter-foretak-og-regnskap/statistikker/bedrifter/aar/2016-01-22>

Statistics Norway (Statistisk Sentralbyrå). 2008. *Standard for næringsgruppering (SN2007) med forklarende tekster. PDF*. Retrieved date 15.05.2017

[https://www.ssb.no/virksomheter-foretak-og-regnskap/\\_attachment/85512?\\_ts=13b2d1a6dc8](https://www.ssb.no/virksomheter-foretak-og-regnskap/_attachment/85512?_ts=13b2d1a6dc8)

Statistics Norway (Statistisk Sentralbyrå). 2017. Retrieved: May 2017

<https://www.ssb.no/en/nasjonalregnskap-og-konjunkturer/tables/nr-tables>

Statistics Norway (Statistisk Sentralbyrå). 2017. Norway CPI. Retrieved: May 2017

<https://www.ssb.no/en/kpi?fokus=true>

Statistics Norway (Statistisk Sentralbyrå). 2017. Interest rates in banks and mortgage companies. Retrieved: May 2017

<https://www.ssb.no/statistikbanken/SelectVarVal/Define.asp?MainTable=UtlanRent esats&KortNavnWeb=renter&PLanguage=1&checked=true>

Statistics Norway (Statistisk Sentralbyrå). 2017. Norwegian Unemployment Rate. Retrieved: May 2017

[https://www.ssb.no/a/english/kortnavn/akumnd\\_en/arkiv/tab-2011-03-23-01-en.html](https://www.ssb.no/a/english/kortnavn/akumnd_en/arkiv/tab-2011-03-23-01-en.html)

Strahan, Philip E., and James P. Weston. "Small business lending and the changing structure of the banking industry." *Journal of Banking & Finance* 22.6 (1998): 821-845.

## 9. Appendix

### Appendix 1. Largest banking groups in Norway.

*Source Norges Bank. 2016b*

Banking group:	Part of:	Head office/main area:
DNB Bank	DNB ASA	Oslo / entire country
Nordea Bank Norge ASA	Subsidiary of a Swedish bank	Oslo / entire country
Danske Bank NUF	Branch of a Danish bank	Trondheim / entire country
Handelsbanken NUF	Branch of a Swedish bank	Oslo / entire country
SpareBank 1 SR-bank	SpareBank 1 Gruppen	Stavanger / Rogaland, Hordaland, Agder
Sparebanken Vest	Independent savings bank	Bergen / Western Norway
SpareBank 1 SMN	SpareBank 1 Gruppen	Trondheim / Trøndelag, Northwestern Norway
SEB AS NIF	Branch of a Swedish bank	Oslo / investment bank
Santander Consumer Bank	Subsidiary of a Spanish bank	Oslo / Car and consumer loans
Sparebanken Sør	Independent savings bank	Kristiansand / Agder, Telemark
SpareBank 1 Nord-Norge	SpareBank 1 Gruppen	Tromsø / Troms, Nordland, Finnmark
Sparebanken Hedmark	SpareBank 1 Gruppen	Hedmark / Oppland / Akershus
Sparebanken Møre	Independent savings bank	Møre og Romsdal
Skandiabanken Group	Independent commercial bank	Entire country

## Appendix 2. CCGR annual data

## The FREQ Procedure

yr	year	Frequency	Percent	Cumulative Frequency	Cumulative Percent
2000	2000	146332	4.21	146332	4.21
2001	2001	150105	4.31	296437	8.52
2002	2002	154532	4.44	450969	12.96
2003	2003	156808	4.51	607777	17.47
2004	2004	159063	4.57	766840	22.04
2005	2005	183533	5.28	950373	27.32
2006	2006	209963	6.04	1160336	33.35
2007	2007	223269	6.42	1383605	39.77
2008	2008	235080	6.76	1618685	46.53
2009	2009	239385	6.88	1858070	53.41
2010	2010	243941	7.01	2102011	60.42
2011	2011	249570	7.17	2351581	67.59
2012	2012	262551	7.55	2614132	75.14
2013	2013	275469	7.92	2889601	83.06
2014	2014	287870	8.27	3177471	91.33
2015	2015	301495	8.67	3478966	100.00

The table presents the total number of firms by each financial year. The number of firms increases from the year 2000 to the year 2015.

## Appendix 3 Savings bank concentration by Municipal (kommune)

<u>komname</u>	<u>komno</u>	<u># of Total Bank branch</u>	<u># of Saving Bank branch</u>	<u># of Non-Saving Bank branch</u>	<u>Saving Bank Concentration</u>
midtre-gauldal	1648	6	6	0	100 %
aurskog-holand	221	6	6	0	100 %
vindafjord	1154	6	6	0	100 %
fraena	1548	4	4	0	100 %
bremanger	1438	4	4	0	100 %
rissa	1624	3	3	0	100 %
vestnes	1535	3	3	0	100 %
luster	1426	3	3	0	100 %
meldal	1636	3	3	0	100 %
tysnes	1223	3	3	0	100 %
rygge	136	3	3	0	100 %
kvinesdal	1037	3	3	0	100 %
songdalen	1017	3	3	0	100 %



kragero	815	3	3	0	100 %
ullensvang	1231	3	3	0	100 %
hjelmland	1133	3	3	0	100 %
averoy	1554	3	3	0	100 %
hemnes	1832	3	3	0	100 %
eide	1551	2	2	0	100 %
andebu	719	2	2	0	100 %
norddal	1524	2	2	0	100 %
halsa	1571	2	2	0	100 %
nord-odal	418	2	2	0	100 %
nesset	1543	2	2	0	100 %
nesna	1828	2	2	0	100 %
gulen	1411	2	2	0	100 %
nes	616	2	2	0	100 %
grue	423	2	2	0	100 %
nedre-eiker	625	2	2	0	100 %
grong	1742	2	2	0	100 %
mosvik	1723	2	2	0	100 %
vang	545	2	2	0	100 %
gjerstad	911	2	2	0	100 %
lunner	533	2	2	0	100 %
giemnes	1557	2	2	0	100 %
aamot	429	2	2	0	100 %
lindesnes	1029	2	2	0	100 %
tysvaer	1146	2	2	0	100 %
tysfjord	1850	2	2	0	100 %
audnedal	1027	2	2	0	100 %
trogstad	122	2	2	0	100 %
tolga	436	2	2	0	100 %
surnadal	1566	2	2	0	100 %
suldal	1134	2	2	0	100 %
laerdal	1422	2	2	0	100 %
birkenes	928	2	2	0	100 %
bindal	1811	2	2	0	100 %
storfjord	1939	2	2	0	100 %

askvoll	1428	2	2	0	100 %
bjugn	1627	2	2	0	100 %
tingvoll	1560	2	2	0	100 %
berg	1929	2	2	0	100 %
leksvik	1718	2	2	0	100 %
finnoy	1141	2	2	0	100 %
skaanland	1913	2	2	0	100 %
selje	1441	2	2	0	100 %
lierne	1738	2	2	0	100 %
holtaalen	1644	2	2	0	100 %
lund	1112	2	2	0	100 %
etne	1211	2	2	0	100 %
balsfjord	1933	2	2	0	100 %
hol	620	2	2	0	100 %
nome	819	2	2	0	100 %
rennebu	1635	2	2	0	100 %
rendalen	432	2	2	0	100 %
valle	940	2	2	0	100 %
gildeskaal	1838	2	2	0	100 %
lyngen	1938	2	2	0	100 %
agdenes	1622	2	2	0	100 %
aurland	1421	2	2	0	100 %
aafjord	1630	2	2	0	100 %
os	441	2	2	0	100 %
eidfjord	1232	1	1	0	100 %
hamaroy	1849	1	1	0	100 %
nordreisa	1942	1	1	0	100 %
haegbostad	1034	1	1	0	100 %
dyroy	1926	1	1	0	100 %
nissedal	830	1	1	0	100 %
austrheim	1264	1	1	0	100 %
drangedal	817	1	1	0	100 %
nesseby	2027	1	1	0	100 %
naustdal	1433	1	1	0	100 %
namsskogan	1740	1	1	0	100 %

alvdal	438	1	1	0	100 %
gratangen	1919	1	1	0	100 %
namdalseid	1725	1	1	0	100 %
granvin	1234	1	1	0	100 %
naeroy	1751	1	1	0	100 %
donna	1827	1	1	0	100 %
grane	1825	1	1	0	100 %
moskenes	1874	1	1	0	100 %
bykle	941	1	1	0	100 %
midsund	1545	1	1	0	100 %
bygland	938	1	1	0	100 %
meraaker	1711	1	1	0	100 %
meland	1256	1	1	0	100 %
giesdal	1122	1	1	0	100 %
masfjorden	1266	1	1	0	100 %
marnardal	1021	1	1	0	100 %
marker	119	1	1	0	100 %
malvik	1663	1	1	0	100 %
vik	1417	1	1	0	100 %
maasoy	2018	1	1	0	100 %
vevelstad	1816	1	1	0	100 %
vestre-slidre	543	1	1	0	100 %
vestre toten	529	1	1	0	100 %
verran	1724	1	1	0	100 %
aure	1569	1	1	0	100 %
vegaarshei	912	1	1	0	100 %
luroy	1834	1	1	0	100 %
vega	1815	1	1	0	100 %
vanylven	1511	1	1	0	100 %
vaksdal	1251	1	1	0	100 %
bokn	1145	1	1	0	100 %
gaular	1430	1	1	0	100 %
vaeroy	1857	1	1	0	100 %
vaaler	137	1	1	0	100 %
aal	619	1	1	0	100 %

fyresdal	831	1	1	0	100 %
lom	514	1	1	0	100 %
aukra	1547	1	1	0	100 %
fusa	1241	1	1	0	100 %
lodingen	1851	1	1	0	100 %
ulvik	1233	1	1	0	100 %
tydal	1665	1	1	0	100 %
bo	1867	1	1	0	100 %
frosta	1717	1	1	0	100 %
tustna	1572	1	1	0	100 %
froland	919	1	1	0	100 %
tranoy	1927	1	1	0	100 %
torsken	1928	1	1	0	100 %
leka	1755	1	1	0	100 %
tjeldsund	1852	1	1	0	100 %
leirfjord	1822	1	1	0	100 %
leikanger	1419	1	1	0	100 %
tana	2025	1	1	0	100 %
sveio	1216	1	1	0	100 %
lavangen	1920	1	1	0	100 %
sund	1245	1	1	0	100 %
bjerkreim	1114	1	1	0	100 %
forsand	1129	1	1	0	100 %
kvitsoy	1144	1	1	0	100 %
stordal	1526	1	1	0	100 %
stor-elvdal	430	1	1	0	100 %
folldal	439	1	1	0	100 %
steigen	1848	1	1	0	100 %
kvaenangen	1943	1	1	0	100 %
spydeberg	123	1	1	0	100 %
kvaefjord	1911	1	1	0	100 %
sorreisa	1925	1	1	0	100 %
sorfold	1845	1	1	0	100 %
flakstad	1859	1	1	0	100 %
sor-fron	519	1	1	0	100 %

kviteseid	829	1	1	0	100 %
berlevaag	2024	1	1	0	100 %
flaa	615	1	1	0	100 %
somna	1812	1	1	0	100 %
solund	1412	1	1	0	100 %
sokndal	1111	1	1	0	100 %
aamli	929	1	1	0	100 %
snaasa	1736	1	1	0	100 %
smola	1573	1	1	0	100 %
fjaler	1429	1	1	0	100 %
klaebu	1662	1	1	0	100 %
skodje	1529	1	1	0	100 %
lebesby	2022	1	1	0	100 %
skjervoy	1941	1	1	0	100 %
kautokeino	2011	1	1	0	100 %
skjaak	513	1	1	0	100 %
frei	1556	1	1	0	100 %
fitjar	1222	1	1	0	100 %
karlsoy	1936	1	1	0	100 %
skaun	1657	1	1	0	100 %
kaafjord	1940	1	1	0	100 %
sirdal	1046	1	1	0	100 %
jondal	1227	1	1	0	100 %
seljord	828	1	1	0	100 %
jolster	1431	1	1	0	100 %
selbu	1664	1	1	0	100 %
beiarn	1839	1	1	0	100 %
fedje	1265	1	1	0	100 %
jevnaker	532	1	1	0	100 %
inderoy	1729	1	1	0	100 %
sandoy	1546	1	1	0	100 %
ibestad	1917	1	1	0	100 %
bardu	1922	1	1	0	100 %
hyllestad	1413	1	1	0	100 %
samnanger	1242	1	1	0	100 %

hoylandet	1743	1	1	0	100 %
salangen	1923	1	1	0	100 %
rost	1856	1	1	0	100 %
loppa	2014	1	1	0	100 %
vaaler	426	1	1	0	100 %
aaseral	1026	1	1	0	100 %
romskog	121	1	1	0	100 %
evenes	1853	1	1	0	100 %
hornindal	1444	1	1	0	100 %
rodoy	1836	1	1	0	100 %
loten	415	1	1	0	100 %
etnedal	541	1	1	0	100 %
roan	1632	1	1	0	100 %
rindal	1567	1	1	0	100 %
rennesoy	1142	1	1	0	100 %
engerdal	434	1	1	0	100 %
randaberg	1127	1	1	0	100 %
aremark	118	1	1	0	100 %
ballangen	1854	1	1	0	100 %
hjartdal	827	1	1	0	100 %
radoy	1260	1	1	0	100 %
oystre-slidre	544	1	1	0	100 %
oygarden	1259	1	1	0	100 %
balestrand	1418	1	1	0	100 %
hemsedal	618	1	1	0	100 %
overhalla	1744	1	1	0	100 %
osen	1633	1	1	0	100 %
hattfjelldal	1826	1	1	0	100 %
os	1243	1	1	0	100 %
eidskog	420	1	1	0	100 %
hasvik	2015	1	1	0	100 %
orskog	1523	1	1	0	100 %
melhus	1653	8	7	1	88 %
kvinnherad	1224	8	7	1	88 %
haram	1534	7	6	1	86 %

time	1121	5	4	1	80 %
voss	1235	5	4	1	80 %
haa	1119	5	4	1	80 %
bronnoy	1813	5	4	1	80 %
ringerike	605	9	7	2	78 %
narvik	1805	9	7	2	78 %
karmoy	1149	9	7	2	78 %
stange	417	4	3	1	75 %
modum	623	4	3	1	75 %
flekkefjord	1004	4	3	1	75 %
hoyanger	1416	4	3	1	75 %
alstahaug	1820	4	3	1	75 %
tynset	437	4	3	1	75 %
vestvaagoy	1860	4	3	1	75 %
sogndal	1420	4	3	1	75 %
sola	1124	4	3	1	75 %
vefsn	1824	4	3	1	75 %
kvam	1238	4	3	1	75 %
vennesla	1014	4	3	1	75 %
bomlo	1219	4	3	1	75 %
ovre-eiker	624	4	3	1	75 %
orsta	1520	4	3	1	75 %
orkdal	1638	4	3	1	75 %
osteroy	1253	4	3	1	75 %
odda	1228	4	3	1	75 %
hamar	403	11	8	3	73 %
kristiansand	1001	14	10	4	71 %
molde	1502	9	6	3	67 %
bamble	814	6	4	2	67 %
stranda	1525	3	2	1	67 %
oppdal	1634	3	2	1	67 %
vestre-toten	529	3	2	1	67 %
aardal	1424	3	2	1	67 %
meloy	1837	3	2	1	67 %
lyngdal	1032	3	2	1	67 %

ulstein	1516	3	2	1	67 %
risor	901	3	2	1	67 %
sorum	226	3	2	1	67 %
sor-odal	419	3	2	1	67 %
strand	1130	3	2	1	67 %
sogne	1018	3	2	1	67 %
stryn	1449	3	2	1	67 %
aasnes	425	3	2	1	67 %
tinn	826	3	2	1	67 %
enebakk	229	3	2	1	67 %
sauda	1135	3	2	1	67 %
evje-og-hornnes	937	3	2	1	67 %
vestby	211	3	2	1	67 %
roros	1640	3	2	1	67 %
rauma	1539	3	2	1	67 %
heroy	1818	3	2	1	67 %
maalselv	1924	3	2	1	67 %
notteroy	722	3	2	1	67 %
sunndal	1563	3	2	1	67 %
andoy	1871	3	2	1	67 %
drammen	602	14	9	5	64 %
arendal	906	8	5	3	63 %
klepp	1120	8	5	3	63 %
sandnes	1102	13	8	5	62 %
rana	1833	5	3	2	60 %
stord	1221	5	3	2	60 %
levanger	1719	5	3	2	60 %
kongsvinger	402	5	3	2	60 %
stjordal	1714	5	3	2	60 %
mandal	1002	5	3	2	60 %
harstad	1901	5	3	2	60 %
kongsberg	604	5	3	2	60 %
ringsaker	412	5	3	2	60 %
vaagsoy	1439	5	3	2	60 %



tromso	1902	14	8	6	57 %
forde	1432	7	4	3	57 %
stavanger	1103	22	12	10	55 %
bodo	1804	10	5	5	50 %
porsgrunn	805	8	4	4	50 %
larvik	709	8	4	4	50 %
haugesund	1106	8	4	4	50 %
halden	101	8	4	4	50 %
ostre-toten	528	6	3	3	50 %
kristiansund	1503	6	3	3	50 %
gran	534	4	2	2	50 %
grimstad	904	4	2	2	50 %
vaagan	1865	4	2	2	50 %
lindaas	1263	4	2	2	50 %
fjell	1246	4	2	2	50 %
steinkjer	1702	4	2	2	50 %
hadsel	1866	4	2	2	50 %
austevoll	1244	4	2	2	50 %
lillesand	926	4	2	2	50 %
farsund	1003	4	2	2	50 %
nord-fron	516	4	2	2	50 %
orland	1621	2	1	1	50 %
hareid	1517	2	1	1	50 %
oksnes	1868	2	1	1	50 %
baatsfjord	2028	2	1	1	50 %
hammerfest	2004	2	1	1	50 %
notodden	807	2	1	1	50 %
nordkapp	2019	2	1	1	50 %
nittedal	233	2	1	1	50 %
nes	236	2	1	1	50 %
hitra	1617	2	1	1	50 %
gol	617	2	1	1	50 %
gloppen	1445	2	1	1	50 %
alta	2012	2	1	1	50 %
volda	1519	2	1	1	50 %

giske	1532	2	1	1	50 %
verdalen	1721	2	1	1	50 %
varde	2002	2	1	1	50 %
vaagaa	515	2	1	1	50 %
froya	1620	2	1	1	50 %
bo	821	2	1	1	50 %
karasjok	2021	2	1	1	50 %
trysil	428	2	1	1	50 %
sykkylven	1528	2	1	1	50 %
sula	1531	2	1	1	50 %
vinje	834	2	1	1	50 %
sor-varanger	2030	2	1	1	50 %
askoy	1247	2	1	1	50 %
sigdal	621	2	1	1	50 %
fet	227	2	1	1	50 %
lenvik	1931	2	1	1	50 %
sauherad	822	2	1	1	50 %
fauske	1841	2	1	1	50 %
sande	713	2	1	1	50 %
tvedestrand	914	2	1	1	50 %
saltdal	1840	2	1	1	50 %
ringeby	520	2	1	1	50 %
rakkestad	128	2	1	1	50 %
nore-og-uvdal	633	2	1	1	50 %
raade	135	2	1	1	50 %
porsanger- pors?ngu- porsanki	2020	2	1	1	50 %
vikna	1750	2	1	1	50 %
hemne	1612	2	1	1	50 %
aaesund	1504	11	5	6	45 %
trondheim	1601	28	12	16	43 %
bergen	1201	47	20	27	43 %
gjovik	502	5	2	3	40 %
ski	213	5	2	3	40 %

skedsmo	231	8	3	5	38 %
tonsberg	704	9	3	6	33 %
skien	806	6	2	4	33 %
hole	612	3	1	2	33 %
eid	1443	3	1	2	33 %
nord-aurdal	542	3	1	2	33 %
flora	1401	3	1	2	33 %
namsos	1703	3	1	2	33 %
sortland	1870	3	1	2	33 %
askim	124	3	1	2	33 %
moss	104	3	1	2	33 %
sel	517	3	1	2	33 %
vadso	2003	3	1	2	33 %
eidsberg	125	3	1	2	33 %
nordre-land	538	3	1	2	33 %
eigersund	1101	3	1	2	33 %
elverum	427	3	1	2	33 %
eidsvoll	237	3	1	2	33 %
baerum	219	15	4	11	27 %
asker	220	4	1	3	25 %
sarpsborg	105	4	1	3	25 %
horten	701	4	1	3	25 %
lillehammer	501	5	1	4	20 %
ullensaker	235	5	1	4	20 %
sandefjord	706	5	1	4	20 %
fredrikstad	106	7	1	6	14 %
oslo	301	72	10	62	14 %
lorenskog	230	3	0	3	0 %
oppegaard	217	2	0	2	0 %
nesodden	216	2	0	2	0 %
frogn	215	2	0	2	0 %
sor-aurdal	540	2	0	2	0 %
lier	626	2	0	2	0 %
hurum	628	2	0	2	0 %
rollag	632	2	0	2	0 %

holmestrand	702	2	0	2	0 %
aas	214	2	0	2	0 %
nannestad	238	1	0	1	0 %
dovre	511	1	0	1	0 %
gausdal	522	1	0	1	0 %
lesja	512	1	0	1	0 %
tjome	723	1	0	1	0 %
lardal	728	1	0	1	0 %
stokke	720	1	0	1	0 %
krodsherad	622	1	0	1	0 %
sondre-land	536	1	0	1	0 %
svelvik	711	1	0	1	0 %
skiptvet	127	1	0	1	0 %
tokke	833	1	0	1	0 %
sande	1514	1	0	1	0 %
royken	627	1	0	1	0 %
hof	714	1	0	1	0 %
hobol	138	1	0	1	0 %
re	716	1	0	1	0 %
gjerdrum	234	1	0	1	0 %
oyer	521	1	0	1	0 %

*The full list of savings bank concentration by municipal, in descending order. The savings bank concentration ratio is a ratio of the number of savings bank branches to non-savings bank branches by municipal (Kommune).*

## Appendix 4 Preliminary thesis

### **Executive summary**

Local and regional savings banks do not have owners or shareholders with a conventional claim to the residual surplus or equity. The savings banks are by regulation governed by its depositors, employees and representatives from the local government councils. The majority of these banks are not required to pay dividends, which make them more flexible. An important part of the Norwegian savings banks mission, is to contribute to the local community, which may make them inclined to support local companies, perhaps also in more challenging times. If this is the case, it could be advantageous for start-ups and smaller local businesses, to seek funding and a financial relationship with local savings banks rather than with nationwide franchises or Scandinavian cross-border players. In this thesis, we intend to apply multivariate regressions and time series models using panel data of banks and companies' location by regions.

## **1. Introduction**

Local and regional savings banks do not have owners or shareholders with a conventional claim to the residual surplus or equity. The savings banks are by regulation governed by its depositors, employees and representatives from the local government councils. The majority of these banks are not required to pay dividends, which make them more flexible. However, in recent years some of the larger saving banks have issued a form of hybrid capital, named Primary Capital Certificates (PCC). Traditionally, the local savings banks have close ties to the local community and its businesses. Part of the savings bank's mission is to contribute locally, which may make them more inclined to support local companies, perhaps also in more challenging times. If this is the case, it may be argued that start-ups and smaller local businesses should look for funding and a financial relationship with local savings banks rather than with nationwide franchises or Scandinavian cross-border players.

This thesis will explore which types of financial institutions local businesses and start-ups have a relationship with, and how businesses using savings banks perform compared to similar businesses with funding in commercial banks. The analysis will be conducted by comparing areas in which savings banks are present to areas where savings banks are less available. Furthermore, the thesis will explore whether the location of savings bank has a larger effect on certain industries.

The analysis will be done applying panel data obtained from Statistics Norway, CCRF and the Norwegian Bank. To test for an association between a savings bank's presence and local business growth, a cross sectional data analysis is utilized. The association can be directly checked by a ANOVA-test. Further, an industry preference model will be established, using a multinomial logit model, to investigate whether certain industry types benefit more from establishing a financial relationship with the local savings bank than others. Based on the pairwise logit comparison results attain, it is possible to conclude whether certain industries are more dependent on relationships with local savings banks than others. Finally, it is the intent to use a time series analysis to test whether or not, and how, a savings bank's location influences the establishment and growth of local business community.

## **2. A Brief Review of The Norwegian Financial System and Bank Sector**

### 2.1 Characteristics

The Norwegian financial system has three main undertakings: 1) provide the market participants with the ability to borrow and deposit, and to contribute and allocate savings and available funds towards profitable investment projects, 2) make payment services available and 3) handle risk. In a well-functioning financial system, these tasks are implemented in a safe and efficient way. (Norges Bank 2016a).

Different countries financial sectors vary regarding size and structure. However, it is common that the banking sector plays a vital and important role, which is also the case in Norway. The Norwegian financial sector, measured in GDP, is rather small compared to other countries such as Switzerland, The UK or The US, where the financial sectors are large compared to the country's economy. The explanation follows the fact that the Norwegian economy has a relatively small part of its business directed at international markets (Finansdepartementet 2011, 81). Compared to other countries, the Norwegian financial system is largely dominated by banks, in which over 80% domestic credit to Norwegian households and companies is provided by banks and their mortgage companies (Norges Bank 2016b, 61)

According to The Norwegian Bank (2016a) the definition of a *financial institution* includes, banks, “kredittforetak”, pension- and insurance companies and mutual funds. The main purpose of these institutions is to function as intermediaries between those who save or make deposits and those who invest. A bank performs all the three main tasks. The International Monetary Fund (IMF) defines a bank as a “*Institution that matches up savers and borrowers and helps to ensure that economies function smoothly*”. Banks differ from other financial institutions as they have the exclusive right to create and accept depositions from the public (Norges Bank 2016b). Banks have another fundamental role in the economy, beyond being an intermediary between lenders and borrowers, as an efficient provider of information and monitoring of borrowers. Thus, by providing credit analysis and displaying lenders, a part of their function is compensating for the information asymmetry in the capital markets (Hetland and Mjøs 2012, 53).

The environment in which the Norwegian banks operate has changed significantly in the past decades. Before the 1980s, the sector was heavily regulated. In 1985, free competition was introduced, resulting in foreign subsidiaries and branches entering the market. Especially large Scandinavian banking groups acquired significant market shares, resulting in reduced shares for the Norwegian commercial banks. The liberalization intensified the competition and the 1990s were characterized by mergers and acquisitions. The largest financial group in Norway today, Den Norske Bank (DnB), was created through several mergers of primarily commercial banks such as Bergen Bank and DnC. DnB is technically, following the merger with Sparebanken Nor, a savings bank. However, the bank has no typical characteristic of a regional savings bank and in our thesis is excluded from the definition of a regional savings bank. Also in the 1990s, saving banks started creating alliances to enhance their competitiveness (Norges Bank 2016b, 56, 61).

In Norway, banks are primarily classified as either savings banks or commercial banks. The difference in classification is mainly due to ownership structure, other distinctions have faded over time. A commercial bank can only be established as a private or public limited liability company, opposed to a savings bank, who cannot be established as a limited liability company. Traditionally, savings banks are independent entities, with no shareholders with a claim to the residual surplus. (Norges Bank 2016b, 55, 61).

In Norway, the banking sector is dominated by the presence of multiple savings banks and a few larger commercial players with significant market shares. In comparison, other Scandinavian countries such as Sweden and Denmark, have a greater presence of larger commercial banks with high market shares, and fewer small players.

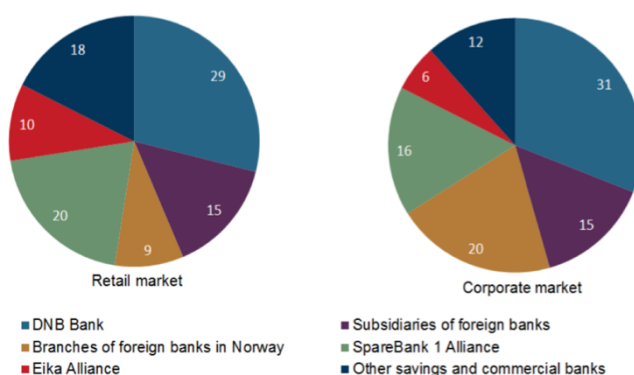
As of 2016, 126 banks are operating in Norway, not including the 10 foreign branches and franchises. The largest player in the Norwegian banking sector is DnB, with a market share of around 30%, in both the commercial and retail market. The foreign subsidiaries and branches have a significant presence in the commercial market, corresponding to a total market share of about 35%. Dominating this segment is Nordea, which is the largest foreign-owned subsidiary, and Danske Bank and (Svenska) Handelsbanken, which are the largest foreign-owned branches. Besides the



country's largest companies (Statoil, Norsk Hydro etc.) are being served by foreign banks without any physical presence in Norway. They will for certain products typically be served out of London or New York by banks such as JP Morgan, Deutsche Bank, HSBC etc.

The Eika Alliance and the Sparebank-1 alliance are two major groups of saving banks, which cooperate primarily within certain product categories, IT and other relevant areas. The saving banks which are part of to an alliance are independent. The alliances mentioned above have a market share in the commercial segment of 6% and 16%, respectively (Norges Bank 2016a, 56-57). Appendix 1 provides an overview of the largest banking groups in Norway. Figure 1 below, shows the lending market share in the Norwegian bank sector.

Figure 1 The lending market share in the Norwegian bank sector



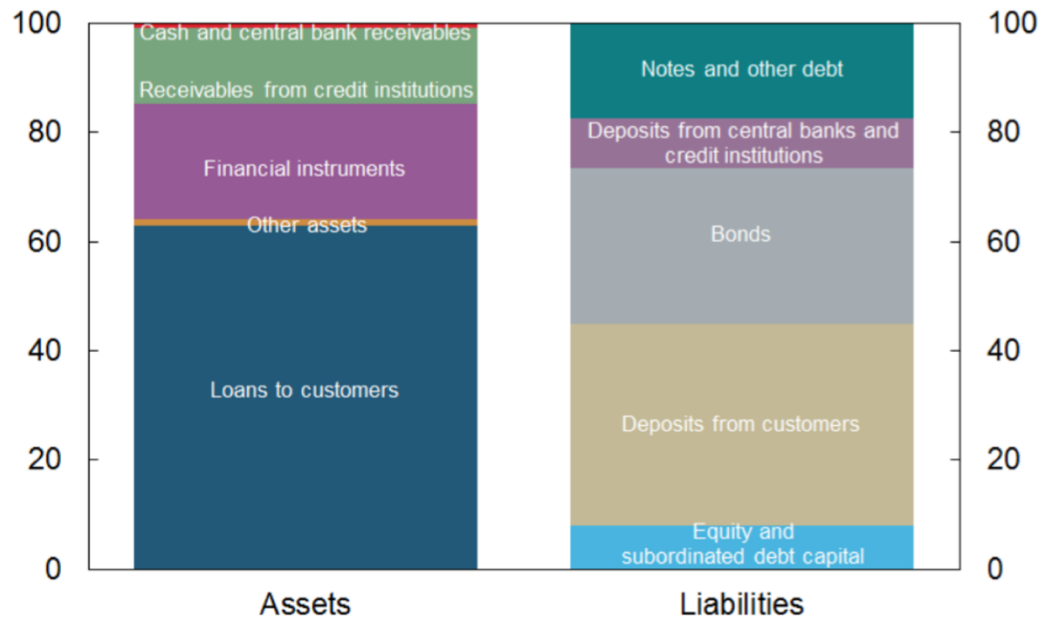
Source Norges Bank 2016b, 62

## 2.2 Bank's balance sheet and source of income

Loans to customers make up the majority of a bank's assets, of which residential mortgages and commercial real estate loans are the largest single loan items. The majority of the lending and risk provided by Norwegian banks are funded by deposits and bonds, beside regular or hybrid equity. The banks short-term funding may also be provided by overnight funding in the interbank-market or by certain short term facilities with Norges Bank. Customer deposit comprise approximately 30% of a bank's liabilities. Figure 2 demonstrates the Norwegian-owned banks assets and funding. Customer deposits are considered the most stable and safe source of financing (in times of crisis

this may not be the case). The smaller savings banks are to a larger degree funded by customer deposit than commercial banks, and the asset part of their balance sheet is to a larger extent dominated by loans to customers. Foreign subsidiaries and branches receive a substantial part of their funding from the parent of the foreign banking group (Norges Bank 2016b, 63-64).

Figure 2 Norwegian-owned banks assets and funding



1) Total of all banks and covered bond mortgage companies excluding subsidiaries and branches of foreign banks in Norway.

Source Norges Bank 2016b, 64

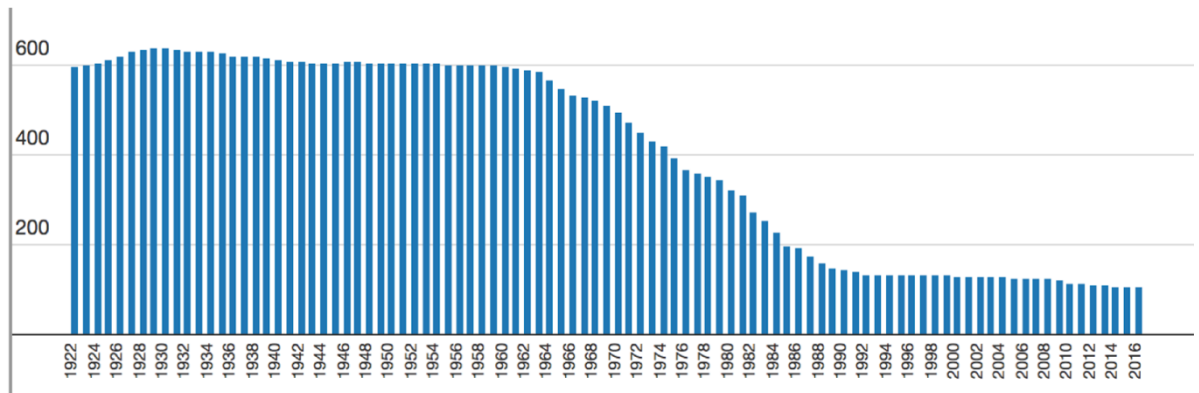
### 2.3 Norwegian Savings Banks

Norwegian savings banks clearly differentiate themselves from commercial bank through their organizational form and set-up. Savings banks are independent entities with no shareholders. Norwegian savings banks are governed by their depositors, employees and representatives from the local government. Thus, the bank is governed by stakeholders, not shareholder. Ostergaard et al (2007) claims that the bank's' non-profit organizational form is designed so that the banks internalize the preference of its stakeholder and the local community. It is referred to as community-based banking.

Since the late 1980s saving banks have been able to convert their organizational form. Savings banks can issue Primary Capital Certificates (PCC) to their equity capital. A PCC-bank is hybrid between a commercial bank and a non-profit savings bank. Owners have a right to the residual cash flow, however stakeholder continue to be represented in the governmental body. Also, the bank typically continues with its community commitment and its objective to promote local interests and provide liquidity in the community. These PCCs are usually traded on the Oslo Stock Exchange, and give the owners claim to the residual surplus. (Ostegaard et al 2007, 9 and Sparebankforeningen)

In the 1960s about 600 saving banks existed in the country, since then the number has dropped significantly. Today we find 105 savings banks in Norway (Sparebankforeningen, 2016). Figure 3 shows the development. The reduction is mainly due to consolidation. This consolidation is expected to continue.

Figure 3 Number of Norwegian Savings Banks 1922-2016



Source Sparebankforeningen 2016

As of 2016, 25 savings bank alliances were in operation, the largest being the Eika alliance and the Sparebank-1 alliance. The alliances are a consequence of the increased competition in the industry, allowing savings banks to cooperate and attain a larger portfolio, while still maintaining their independence and root in the local community.

#### 2.4 Characteristics of Norwegian Savings Banks

Traditionally, savings banks have had a strong position in the Norwegian society, and been a large part of the financial community, as well as the national and regional banking community (Sparebankforeningen, undated (a)). Norwegian savings banks,

except for DnB, are located in certain regions or certain community of the country. Thus, their main business activities are largely contained by geographics.

An important feature of savings banks is their mission to stay close to the customers, creating roots in the local society. Undertaking social responsibility in the community is an important part of savings banks profile and mission (Sparebankforeningen undated (b)). Savings banks have traditionally provided liquidity in their local community by distributing parts of their surplus to public utility and charity. Savings banks can distribute 25% of their surplus as gifts or donations to various organizations and causes considered to create value to the community over time. By doing the savings banks may or be perceived to, contribute to growth and development in local communities.

### 2.5 Obstacles related to the financing of start-ups and smaller local businesses

Only half of new established companies survive after a year and less than 30% after 5 years. It is believed that a key factor in sustaining small business growth is a stable source of funding. Figure 4 shows the survival rate of newly established enterprises in Norway in the period 2009-2014.

Figure 4

Survival rate of newly established enterprises					
	Per cent survived enterprises				
	1 year	2 year	3 year	4 year	5 year
Year of establishing					
2009	48.4	44.1	37.2	31.7	27.4
2010	48.5	44.0	36.7	31.3	
2011	48.0	43.4	36.3		
2012	50.5	46.3			
2013	48.2				

Source Statistics Norway (SSB) 2016

Figure 5

Number of enterprises by size			
	2016		Change in per cent
	Number of establishments	Per cent	2015 - 2016
All size groups	558 959	100.0	2.1
No one employed	366 444	65.6	8.6
1-4 employees	91 273	16.3	-20.3
5-9 employees	41 159	7.4	1.3
10-19 employees	29 614	5.3	5.4
20-49 employees	20 712	3.7	14.1
50-99 employees	6 181	1.1	15.1
100 - 249 employees	2 790	0.5	16.3
250 employees and more	786	0.1	14.9

Source Statistics Norway (SSB) 2016

### 3. Literature review

Smaller local banks are with some justification, believed to be more effective providers of financing to local business, than larger national and international banks. Such is due to local knowledge making them better at assessing risk and the proximity to the local business community, which makes them more adept at managing relationships (Coppola 2013).

If local businesses benefit from being located near a savings bank, it can be argued that the industry consolidation, which is creating larger banks and reducing the number of smaller local players, is threatening the financing of smaller businesses and start-ups. The most frequently used argument that supporting the claim that consolidation in the banking industry will reduce small businesses credit availability, is that larger banks make proportionately fewer loans to small businesses than smaller savings banks. Peek and Rosengren (1998) argue that a bank's portfolio share of small business loans tends to be inversely related to the institution's size, measured by total assets. With consolidation sweeping the industry, thinning the ranks of small banks and resulting in larger and more complicated banking companies, it is relevant to look at the effect on small business lending. However, consolidation will only have a negative effect on small business credit if saving banks hold an advantage when lending to smaller businesses (Jayaratne and Wolken 1999). In other word, there could be an advantage for smaller businesses to seek financial relationships with the smaller and local savings banks (Straham and Weston 1998, 822).

Relationships between banks and businesses are key in reducing information asymmetries. The main advantage of local savings banks is their relationship with the local community. Local banks may be better situated to mitigate the information asymmetry that exists between lender and borrower. DeYoung et al (2008) concluded in their research that small banks are better at utilizing qualitative information about borrowers due to their commitment and involvement in the local community, contributing to the comparative advantage in relationship lending. Research suggests that larger, more complex commercial banks are less able to process soft information than savings banks which are rooted in the local community. Arguing that their local presence gives them more access to local information and knowledge, as well as their place in the community makes them more motivated to apply the “soft information”. Höwer (2016) analyses firms in distress, and whether the probability of a firms’ survival is dependent on the banks’ ability to process soft information. Using data from the German banking industry, Höwer finds that the locally rooted Sparkassen banks are more likely to support distressed but viable firms, while private banks tend to make tougher liquidation decisions. He also finds that banks can make more efficient liquidations if they are regionally active and have close relationships with the firm.

One can however question today's relevance of relationship lending. Knowledge about the community is being replaced by the internet and technology. Lending technology such as automated lending processes is facilitating entry into local markets and increasing the distance between small businesses borrowers and lenders (Jagtiani and Lemieux 2016 and DeYoung et al 2008).

The local savings banks are usually smaller in size than the commercial banks, possibly resulting in the management being more active in the day-to-day business. This increases information flow and reduces the cost of monitoring. A more involved management and the flexibility to personally oversee loans could be advantageous for smaller businesses and start-ups. Also, in larger commercial banks with a more complex hierarchical structure loan officers may have fewer incentives to produce soft information (Ostergaard et al 2007, 3)

Larger commercial banks tend to have lower capital, less stable funding and more market-based activities. They also tend to be organizationally more complex

(Laeven et al 2014). Norwegian savings banks may have a less stringent credit policy because of social welfare maximization rather than profit maximization goal, and a less complicated management structure. These are all factors suggesting savings banks may be more flexible than the larger commercial banks. On the other hand, the larger commercial banks tend to have a larger, more diversified portfolio. Thus, their portfolio risk is less affected by the added specific risk of a smaller local business or start-ups. The smaller, locally concentrated savings banks may not have the same ability to reduce the unsystematic risk through diversification. Enhanced level of capital requirements and more complicated funding sources, may in some cases make the smaller banks more expensive.

If savings banks are more flexible and can better adapt at utilizing soft information than commercial banks, this may be a reason for local start-ups and smaller businesses to seek financial relationships with the local saving bank, instead of a international or nationwide franchise.

An important part of the Norwegian savings banks mission is to contribute to the local community and businesses. I.e. through allocating up to 25% of its profits to various charities and organizations. One of which might be contributing to fund start-up companies. This is however is rare, but could going forward allocations to such purposes may increase through various vehicles. The savings bank's mission to be involved in the community often serves as a foundation for close and long- term relationships with local businesses and industries. Studies show that banks who have close relationships with their lenders, are more likely to support the business, also in more challenging times. If it is the case that a savings banks root in the local community is advantageous to local business, and if the banks flexibility and relationships with the local community fosters leniency towards the local businesses, then it may be case that smaller and relatively new businesses should look for financial relationships with local savings banks rather that with nationwide franchises and Scandinavian cross-borders players.

#### **4. Assumptions**

1. It is assumed that businesses can always benefit from banks that can provide ample liquidity and funding, whether it towards funding a startup, working capital, or a buffer on “rainy days”. It is also assumed that the bank's main products and service can help the business's daily financial requirements. Thus, our study expects that the businesses in question, have no prior preference when choosing a bank, as long as the terms and conditions do not differ.

2. It is assumed that all banks, including the local savings banks, are subject to the same capital coverage constraints and reporting requirements, and there is no impact from regulatory policies to bias the study. It is also assumed that there are no specific rules or major barriers that may weaken savings banks from operate in same market and geographic area as commercial banks.

3. It is assumed that the characteristics of a savings bank will influence and be drivers in the bank's business strategy and affect its risk appetite and lending to the local community. Furthermore, a strong assumption is made; the nature and characteristics of savings banks have not changed during the sample period. Having said that, this will be subject to the data and results that may require us a control variable.

## **5. Methodology**

The intent of the thesis is to analyze whether smaller local businesses and startups benefit from having financial relationships with local savings banks rather than nationwide franchises and cross-border players. It is the intent to explore whether there are any material effects from the presence of savings banks in terms of their municipal coverage and financial profile on local business growth. We propose that this can be done by studying the characteristics of a savings banks, and if and how there is an influence on the local businesses in the municipality.

The main sources for the components of the panel data is (i) Statistics Norway's business registration information (2) CCGR and (3) The Norwegian bank registration data. The plan is to apply multivariate models to test the relevant hypothesis. We shall further investigate whether or not the model selected is complex enough to fit the banking and business data well; while remaining simple to interpret, and reducing the risk of overfitting the data.



### 5.1 Cross sectional Data Analysis

By applying a cross-sectional data analysis, it is possible to test for any association between a savings bank's location and the business growth small local businesses and startups by different municipality. This association can be directly checked through an ANOVA-test. For example, to test whether there is a relationship between municipalities with a high exposure of savings bank compared to commercial banks, and the level of small local business registration. In this connection, the study of the small business activity influenced by savings banks “characteristics/factors”, can be categorized in different levels: High/ Medium/ Low growth by checking (i) year-on-year percentage change in total business asset size, and (ii) year-on-year percentage change in new company establishment. Thus, we can classify local small business growth in different municipalities as a dependent variable in response to various input factors such as the savings bank municipal branch growth, regional inputs factors, macroeconomic factors, bank balance sheet ratio and other banks “lending behavior” parameters as well.

### 5.2 “Industry Preference” Model

It is possible to investigate the preferences of local entrepreneurs (start-ups), and understand how the characteristics of the bank region influences the business decisions of smaller local businesses. In other words, the effects of geographic location can be tested, small vs large firm (defining a small firm a one with less than 50 employees, which can be used to check the industry type preference between large and small firms on different regions), and most importantly the savings banks vs non-savings (commercial) banks branch concentration’s (or concentration proxy) influence on the industry preference. Thus, if the statistical inference of savings banks “branch factors” is meaningful, it implies that certain industry types of Norwegian start-up and smaller businesses can benefit from being located in an area serviced by local savings banks. Since the response is nominal (i.e. industry type preference where it can be grouped into for example manufacturing, financial, servicing, technological, fishery and forestry), a multinomial logit model can be applied for the test. It is possible to produce logits models in pairs on each industry preference with reference from baseline-category logit models Agresti (2002) .For example, by picking the most common

industries in Norway, such as fishing and forestry and compare it to another industry's logits. Based on these pairwise logit comparison results, it is possible to test whether it is more likely that a certain industry chooses a region with a high concentration savings banks. In other words, it is possible to check how savings bank benefit different types of industries in certain region. For example, we may observe that a high concentration of savings bank branches has a higher correlation with certain industry types such as technology startups, rather than the baseline category e.g. traditional fishery business. Thus, it is possible to conclude whether certain regions with a higher concentration of savings branch can benefit certain startup business. Or it is a possibility that some business regions are not as sensitive to the numbers of bank branches, of either type.

### 5.3 Time-Series Analysis

The panel data can facilitate a time series data analysis which can be utilized to test whether or not, and how, bank location influences the establishment and growth of local businesses. This will depend on the amount of company account information obtained from CCGR.

### 5.4 Data specification

Response variables (dependent variables)

- Growth percentage of small local businesses, or asset size, numbers of new company setup by regions. We can define of small company as less than 50 employees which reference from EU definition. [For cross section analysis and time series analysis]
- Preference of industry to start-ups [for industry preference test]

Explanatory variables (independent variables)

- Number of savings bank branch by regions (Fylke, Kommune, Sted)
- Percentage of saving bank branch by regions
- Branch competition factor, Bøhren (2013)- by number of bank branches owned by other banks in particular regions.
- Bank competition factor, Bøhren (2013) - by number of other banks in particular regions.

- Macroeconomic factors e.g. unemployment rate, nitor, property price index, OSEBX etc.
- Regional input factors ... to be further investigated
- Company finance information e.g. debt amount, asset to debt ratio.
- Bank finance information e.g. overall asset to liability ratio, debt level, wholesale lending ratio, non-performance ratio
- Donation ratio, Ostergaard (2009) - Donation Ratio is the door-collected contribution to charity per capita, divided by average municipality income and multiplied by 1000 for scaling, measured at the municipality level.
- Deposit percentage of total deposit in the region of bank HQ The input factors above will be collected from the data source. We expect to do some adjustment in regards to lagging factors, normalization and data transformation technique to give unbiased hypothesis testing. Control factor may be considered where there was a bank deregulation and financial crisis in Norway in 90s.

## 6. Plan for Data Collection

- Panel data from Bankregisteret. Information on the location of all Norwegian banks.
- Panel data: Number of new businesses and information in regards to industry, region, company ownership type. Relevant period from 2001 to 2015 sourced from Statistisk Sentralbyrå.
- CCGR data: Individual company data for empirical research. Referencing the CCGR website, it consists of six different type of data, namely:
  - Account\_Data: Accounting data from 1994 to 2013.
  - Consolidated\_Account\_Data: Consolidated accounting data for 1994 to
  - Industry\_Code: NACE industry codes for years 1998-2013
    - A company can be member of more than one industry.
  - Ownership\_Control: Governance data from 2000 to 2013.
  - Misc\_1994: Misc data from 1994 to 2013.
  - Misc\_2000: Misc data from 2000 to 2013.

Study businesses in areas with a savings bank present, and areas where there are no savings banks.

- Study if there is a link between a regions concentration of savings banks and its business growth.

## **7. Data Limitations**

- Data granularity - not all necessary information is available by regions (i.e. sted, kommune, fylke)
- CCGR data period may not have the most recent data, reflecting the significant oil price drop since 2015 up to present day. Bank and local business may have different response patterns that we do not observe.
- Endogenous factors - In short, the savings banks coverage is also influenced by local business activities. Some control or instrument variables could be added to make the model less bias.
- Exogenous factors - For example, customers nowadays rely less on physical branch location to get financial service. The shared economy trend such as crowdfunding are now a hot topic, which may decrease the demand for physical branch presence. On the other hand, it may open a niche market for the savings bank who are willing to maintain physical branches as compared to the commercial banks (like DNB which had cut hundreds of branches over the last two years). Therefore, this branch closing factor should somehow be “fix” or controlled for.
- Savings banks have significant political influence in Norway. The district we studied are more egalitarian and community influenced (75% of board members are from the depositors and government) which protect small business, this may be an intrinsic bias to the study of claiming that savings banks are more benefit to the small local businesses.
- Consideration when using categorical data - the upside to using categorical data is that it is simpler to use for interpretation of the results, it is also good at handling outliers. However, one may lose a certain information, which is subject to be tested and verified.

## 8. Reference list

Agresti, Alan. *Categorical Data Analysis*. 2002. John Wiley & Sons, Inc., Hoboken, New Jersey.) *2nd ed.*, 300. University of Florida.

Blank, Steve. "Why the lean start-up changes everything." *Harvard business review* 91.5 (2013): 63-72.

Bøhren, Øyvind and Josefsen, Morten G. "Stakeholder Rights and Economic Performance: The Profitability of Nonprofits" *Journal of Banking & Finance* 37 (2013) 4073–4086.

"Centre For Corporate Governance Research (CCGR)". 2017. *Bi.Edu*. <http://www.bi.edu/research/bi-research-centre-corporate-governance-research-ccgr/>.

Coppola, Frances. 2013. "Forbes Welcome". *Forbes.Com*. <http://www.forbes.com/sites/francescoppola/2013/12/10/big-banks-versus-small-banks-size-doesnt-matter/#4fa7f7cb1d86>.

Finansdepartementet. 2011. Bedre rustet mot finanskriser. (NOU 2011: 1). Retrieved date: 02.01.2017

<https://www.regjeringen.no/contentassets/49ec0c14a20a40288332054176b26a1a/no/pdfs/nou201120110001000dddpdfs.pdf>

Höwer, Daniel. "The role of bank relationships when firms are financially distressed." *Journal of Banking & Finance* 65 (2016): 59-75.

International Monetary Fund. Jeanne Gobat. 2012. "What is a bank?" Retrieved date: 03.01.2017

<http://www.imf.org/external/pubs/ft/fandd/2012/03/basics.htm>

Jayarathne, Jith, and John Wolken. "How important are small banks to small business lending?: New evidence from a survey of small firms." *Journal of Banking & Finance* 23.2 (1999): 427-458.

Jagtiani, Julapa, and Catharine Lemieux. "Small business lending after the financial crisis: A new competitive landscape for community banks." *Economic Perspectives* 3 (2016): 1-30.

Laeven, Mr Luc, Lev Ratnovski, and Hui Tong. *Bank size and systemic risk*. No. 14. International Monetary Fund, 2014.

Mjøs, Aksel, and Ove Rein Hetland. 2012. "*For mye eller for lite lån?: Betydningen av banker og kreditt i oppgangs-og nedgangstider.*". Magma 06.12.

Norges Bank. 2016a. Finansiell stabilitet: Sårbarhet og risiko. Retrieved date: 02.01.2017

<http://www.norges-bank.no/Publisert/Publikasjoner/Finansiell-stabilitet---rapport/2016-Finansiell-stabilitet/>

Norges Bank. 2016b. Norway's Financial System. Norges Bank Papers NO.2 2016. Retrieved date: 03.01.2017

[http://static.norges-bank.no/pages/105144/NB\\_Papers\\_2\\_2016.pdf?v=9/9/2016111733AM&ft=.pdf](http://static.norges-bank.no/pages/105144/NB_Papers_2_2016.pdf?v=9/9/2016111733AM&ft=.pdf)

Ostergaard, Charlotte, Ibolya Schindele, and Bent Vale. 2009. "Social capital and the viability of stakeholder-oriented firms: Evidence from Norwegian savings banks." *EFA 2009 Bergen Meetings Paper*.

Sparebankforeningen. Undated (a). *Sparebankens strukturutvikling 1960- 2004*. Retrieved date: 02.01.2017

<http://www.sparebankforeningen.no/siteassets/dokumenter/sparebankenes-strukturutvikling-1960---2004.pdf>

Sparebankforeningen. 2016. *Antall sparebanker*. Retrieved date: 02.01.2017

<http://www.sparebankforeningen.no/banker-og-stiftelser/antall-sparebanker/>

Sparebankforeningen. Undated(b). *Sparebankenes organisasjonsstruktur*. Retrieved date: 02.01.2017

<http://www.sparebankforeningen.no/siteassets/dokumenter/sparebankenes-organisasjonsstruktur.pdf>

Statistics Norway (Statistisk Sentralbyrå). 2016. *Newly established enterprises, survival and growth, 2009-2014*. Retrieved date: 11.01.2017

<http://www.ssb.no/en/virksomheter-foretak-og-regnskap/statistikker/fordem/aar/2016-10-14>

Statistics Norway (Statistisk Sentralbyrå). 2016. *Many small establishments. Number of enterprises by size*. Retrieved date: 11.01.2017

<http://www.ssb.no/en/virksomheter-foretak-og-regnskap/statistikker/bedrifter/aar/2016-01-22>

Strahan, Philip E., and James P. Weston. "Small business lending and the changing structure of the banking industry." *Journal of Banking & Finance* 22.6 (1998): 821-845.