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THE DETERMINANTS OF BANK PROFITABILITY IN NORDIC COUNTRIES

Bachelor's thesis

International Business Administration, Finance and Accounting

Supervisor: Karin Jõeveer, Associate Professor

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I declare that I have compiled the paper independently

and all works, important standpoints, and data by other authors

have been properly referenced and the same paper

has not previously been presented for grading.

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ABSTRACT

This paper concentrates on relationships between bank-specific variables and profitability. The research problem is related to the absence of this type of studies based on Nordic banks. This piece of a study aims to investigate how different bank-specific factors relate to bank profitability in Denmark, Finland, Norway, and Sweden. This study also aims to determine a profitability ranking of banks in studied countries with dummy variables. The study is executed with multiple regression analysis. Two regression analyses are conducted with different dependent variables. Regression models include ten bank-specific independent variables, three country dummy variables, and dependent variables return on average equity and return on average assets. The combination of independent variables is compiled through trial and error method until the model meets the requirements which the author sets. The study aims to answer three research questions:" "Which bank-specific factors affect the bank profitability in Nordic countries?", "What kind of relationship do the chosen independent variables have with profitability" and "How the average profitability differs between the studied countries?". The author finds a positive and significant relationship with profitability and 1. net interest margin, 2. bank size, 3. net income growth, and 4. Non-interest income. The study reveals a negative relationship between profitability and cost to income ratio and proportion of loan loss provisions. Findings regarding the proportion of equity differ with return on average equity and return on average assets. According to the findings, Norwegian banks are the most profitable on average, followed by Sweden, Finland and, Denmark respectively.

Keywords: Bank profitability, Regression, Nordic countries

INTRODUCTION

Banks play a vital role in modern-day society. They provide a broad set of services for consumers, companies as well as to other banks. Traditionally, banks used to be only providers of financing in the forms of loans or a temporary target where you can store your excess cash. Nowadays banks may also offer for instance consultation, investment decisions, mobile banking, private banking et cetera. The concept of banking has expanded from the traditional one.

The bank profitability and its determinants is a quite well-studied topic. There are several studies which search for an answer to a question: "What are the factors which affect banks' profitability?". Different studies examine this subject by various measures. There are several different approaches to apply regression to study this subject. Dependent and Independent variables vary between studies. Profitability is being measured in forms of return on equity, return on assets and net interest margin ratios. Possible relationship to profitability is searched from bank-specific, industry-related and macroeconomic factors. This study concentrates on the bank-specific variables.

The author is not aware of the existence of any studies related to this very topic which were to be based on banking data from Nordic countries. This matter is which acts as a motivator for selection of this topic. The non-existence of this type of study based on Nordic banks also works as the research problem. The research questions which are aimed to be answered with the research are following: "Which bank-specific factors affect the bank profitability in Nordic countries?" and "What kind of relationship do the chosen independent variables have with profitability?" Also, a question which arose during the study was aimed to be answered: "How the average profitability differs between the studied countries?".

This paper aims to investigate how different bank-specific factors affect the profitability of Nordic banks, measured as return on average equity and return on average asset. In this study, by Nordic countries, the author refers to Denmark, Finland, Norway and, Sweden. Iceland is excluded from this study. The inclusion of banks from Iceland is expected to result as very little or no change in

the result of the research. Reason for this is the low quantity of banks in Iceland. This matter combined with the decrease of observations due to Microsoft Excel's restrictive features to implement a regression analysis is believed to omit majority if not all of the inputs from Icelandic banks.

This research implements multiple regression analysis. The sample size originally included 448 banks and 3136 observations, but (as the bank years which included "not available" inputs on any of the selected variables were omitted and statistical outliers were eliminated the final sample consists of 344 banks and 1237 observations. In the study, the author examines the bank-specific variables in two regression models. The models differ from each other by the dependent variables. The models consist of 10 bank-specific independent variables, three country dummy variables and dependent variables return on average equity and return on average assets.

This paper is divided into three sections. The first section includes an overview of earlier studies which share similarities with this paper, an introduction to the concept of banking and separate overviews of banking sectors in Nordic countries. The second section unveils the research method which this paper utilizes and an overview of the data which is used in the analysis. The second section also goes through which variables the author has chosen to be used in the study, with the hypothesized relationships. The third section reports the phases of analysis with the empirical result the author found.

1. THEORETICAL FOUNDATIONS

1.1. Literature review

This section goes through some papers which are conducted on the same topic or which touch the same issue as this study. There are several pieces of research which examine the bank profitability. However, any of the studies of bank profitability determinants are not based on the Nordic countries.

Menicucci and Paolucci (2015) studied the relationship between bank profitability and bank-specific characteristics for top 35 European banks based on their total assets. The studied period dated between years 2009 and 2013. Menicucci and Paolucci conducted multiple regression analysis using ordinary least squares regression model. They executed three regression analyses by changing the dependent variable. The dependent variables were return on equity (ROE), return on assets (ROA), and net interest margin (NIM). The researchers used five independent variables as determinants of profitability: Size of a bank, equity to total assets ratio, loans to total assets, total deposits to total assets and loan loss reserves to total loans.

In Menicucci's and Paolucci's (2015) research, size turned out to have a positive and statistically significant relationship with all of the dependent variables. In other words, this means that bigger banks tend to be more successful regarding profitability. Positive and significant relationship on profitability also had capital ratio (equity to total assets) and total deposits ratio, apart from total deposits relationship with net interest margin, which turned out to have a statistically insignificant relationship. Loans to total assets' effect to profitability turned out to be unclear. The relationship of loans to total assets and ROE and, ROA had a positive but insignificant impact while the relationship to NIM was positive and significant. Loan loss reserves to total assets had a significant adverse effect on return on equity, return on assets and net interest margin on a significance level of 0.05, 0.10 and 0.01 respectively.

Athanasoglou et al. (2006) studied determinants of bank profitability in South-Eastern Europe (SEE) during the years 1998-2002. The profitability was examined with return on assets (ROA) and return on equity (ROE) ratios. The set of determinants of profitability included bank-specific, industry-related and macroeconomic variables. Bank-specific determinants were the ratio of loans to assets, loan loss provisions to total loans, equity to assets, operating expenses to total assets, the logarithm of bank's assets and dummy variable determining the domestic/foreign-confrontation. Industry related variables included Herfindahl-Hirschman Index (HHI) of concentration and EBRD index of banking system reform, which provides a ranging of progress level in liberalization and institutional reform of the banking sector. Macroeconomic determinants were inflation and real per capita income. The study was conducted by implementing least squares method to random effects and fixed effects models.

Significant adverse effect on ROE was contributed by loan loss provisions to total loans and operating expenses to total assets. Researchers concluded that banks that have reduced credit risk and expense management tend to be less profitable. The regression analysis showed that size variable and foreign ownership variables had a significant and positive effect on profitability. According to this foreign and/or big banks tend to be more profitable regarding ROE. Also, equity to assets ratio had a significant and positive relationship with ROE while loans to total assets had a positive but insignificant effect. The industry-related variables had a significant impact. HHI index of concentration had a positive impact on profitability and EBRD index had negative. Both of the macroeconomic variables, inflation and real GDP per capita had a positive and significant effect on ROE.

The results on return on assets were rather mostly similar as ROE's. ROA was affected positively and significantly by equity to assets ratio, bank size, concentration, inflation and foreign dummy variable. Operating expenses to assets and loan loss provisions to total loans had a significant negative impact on the profitability. Loans to assets and real GDP per capita had a positive but insignificant effect on ROA.

Wang and Wang (2015) studied the determinants of bank profitability in the United States. The studied period dated between years 2002 and 2014 yet also studied the time period of financial crisis 2007 to 2009, separately. The researchers conducted linear regression analyses using return on asset (ROA) and return on equity (ROE) as dependent variables. The selected independent variables were bank size, equity to total assets ratio, loans to total assets ratio, deposits to total

liabilities ratio, non-performing loans to gross loans ratio, the cost to income ratio, and income diversification. The study included a number of regressions. There were regressions concerning different sizes of banks, as well as different time periods.

The findings concerning the whole sample and study period were based on 18,204 observations. The size of a bank had a positive relationship with ROA and negative for ROE. Both of the coefficients concerning the bank size were statistically significant. The equity to total assets had a negative and significant relationship with ROE and significant and positive relationship with ROA. A positive relationship was also found with revenue diversification and both profitability ratios. The researchers found a negative and significant relationship with profitability and following variables: loans to total assets, deposits to total liabilities, non-performing loans to gross loans and cost to income ratio.

Fadzlan Sufian (2012) examined the performance of the banking sectors in South Asia between years 1997 and 2008. The sample of banks included banks from Sri Lanka, Pakistan, and Bangladesh. Sufian conducted a linear regression analysis to determine how selected variables affect the profitability; in this reviewed study measured as ROA. Sufian implemented fixed effect regression and random effect regression. In the research, a wide set of bank-specific, macroeconomic, and financial market factors were used. The author found that several variables had a positive relationship with the profitability as the whole sample was included in regressions. These variables were total loans to assets ratio, the natural logarithm of total assets, loan loss provisions to total loans ratio, non-interest income to total assets ratio; equity to assets ratio, deposits to assets ratio and GDP growth. Negative relationship with profitability had non-interest expenses to total assets ratio and inflation.

Another study by Miller and Noulas (1997) analyzed the profitability of large commercial banks in the United States. This paper utilized cross-section and pooled time-series cross-section regressions. This study as well measured the bank profitability with the ROA ratio. A pool of bank-specific variables was selected and examined whether they had positive, negative or no effect on profitability.

Miller and Noulas found that significantly positive effect on profitability had ratios like total securities to assets, total loans to assets, total non-interest income to total interest income; and amount of salaries and benefits per employee. An increase in the values of variables mentioned

above is expected to have a positive effect on the profitability. Variables which had a negative relationship with profitability were size of the bank, the ratio of loan loss provisions to total assets, and size of non-interest expenses. By further digging into the loans, Miller and Noulas found that even though the ratio of total loans to assets had a positive effect on profitability, every loan category did not have a positive impact on the profitability. The real estate loans-to-total loans ratio had an adverse effect on the profitability.

Kosmidou (2008) studied how different internal and external factors affect the bank profitability, measured as return on average assets (ROAA), in Greece. The studied period was dated between years 1990 and 2002 and, a pool of 23 banks was selected. To be selected the banks had to meet two criteria: The bank had to be a commercial bank, and there had to be accounting statement data (balance sheet and income statement) available in Bankscope Database for at least one year from the studied period. In the study, a fixed effect regression was implemented.

The findings concerning the internal factors revealed that variables which had a positive relationship with ROAA were equity-to-assets ratio and bank size. Loan loss reserves to loans ratio and cost to income ratio had a negative and statistically significant relationship with profitability. When macroeconomic factors were included, significant positive relation had GDP growth, while significant negative relation had inflation, assets-to-GDP, market capitalization to banks assets and, concentration.

1.2. A brief introduction to the concept of banking

There are three different sources from where banks can generate revenues: interest income, fees and commisions, and trading income. More traditional banks make most of their revenues through interest income (Choudry 2011, 2-3). In this paper, the revenues are determined as interest income and non-interest income.

Banking can be divided into two categories: retail banking and wholesale banking. Due to the development of the financial markets, the difference between these two is not that significant as it was before. Retail banking sector provides payment, savings, investment and credit services for households and small businesses. Retail banking continues to play a vital role in the bank operations. Typical wholesale banking is trading in foreign and domestic money and securities

markets. For example, short-term financing needs from one bank to another is an essential part of wholesale banking. Also issuing and trading securities as well as financing company acquisitions are part of wholesale banking (Kontkanen 2011, 3).

1.3. Overview of banking sectors in Nordic countries

This section reviews the characteristics of the banking sectors. Each banking sector is reviewed separately.

1.3.1. Denmark

Some characteristics can be drawn out when describing Danish banking sector. Danish banking sector is quite substantial regarding the total assets with a high total assets-to-GDP ratio. The banking sector is highly concentrated, which means that the biggest banks have a significant proportion of total assets, even though there is a large number of banks in the sector. The Danish banking sector is also widely dominated by domestic banks.

The banking sector of Denmark consisted of 101 banks in 2016. (European Banking Federation 2017). As mentioned the size of the banking sector is quite substantial concerning the assets; the ratio of banking sector's (mortgage banking institutions included) total assets to GDP of Denmark is over three times. In other words, the whole banking industry of Denmark is more than three times bigger than the Danish economy. The banking sector's assets are in total 972 billion euros while GDP of Denmark was 277.5 billion euros at the end of 2016 (European Banking Federation 2017; Eurostat). 972 billion euros of banking sectors assets consists of 482 billion euros of bank's total assets and 490 billion euros of mortgage banking assets. (European Banking Federation 2017).

The three biggest banks in Denmark hold a substantial share of total banking assets. These banks are Danske Bank, Nykredit Realkredit, and Realkredit Danmark. In terms of total assets the market shares split between these three banks followingly: Danske Bank holds a market share of 28.67%; Nykredit Realkredit has 17.26%; Realkredit Danmark is holding 11.41%. In total these three banks hold 57,34% of the total assets of the Danish banking sector. Domestic banks strongly dominate

the Danish banking sector. The local banks own approximately 87% of all the assets in the banking sector. Thus, only 13% is held by foreign-owned banks (TheBanks.eu 2017a).

The Danish banking and mortgage banking sectors are divided into two groups: Systematically important financial institutions and non-systematically important financial institutions. A bank is considered to be a systematically important financial institution if at least one of the following quantitative criteria is met for two consecutive years. The first criterion is that the balance sheet total of a bank needs to be at least 6.5% compared to GDP. Secondly, the amount of bank's lending should be at least 5% of the whole sector's borrowing. Thirdly the volume of bank's deposits should be at least 5% of the entire sectors deposits (Danmarks Nationalbank). The Financial sector is supervised by the Danish Financial Supervisory Authority. European Central Bank is not directly monitoring any of the Danish banks which transpires from the European Central Bank's List of supervised entities.

1.3.2. Finland

The ratio between the total assets of Finnish banking sector and the GDP of Finnish economy totaled 2.16 in the year 2016. The total banking assets of the sector were 467 billion euros, and the GDP of Finnish economy was 216 billion euros (Finanssiala 3; Eurostat). Finnish banking sector is exceptionally concentrated. The three biggest banks are responsible for approximately 72% of all loans, and 78% of all deposits. The three biggest banks by market share are OP Financial Group, Nordea Bank Finland, and Danske Bank Group. In the year 2016 the OP Financial Group had 35.3% of all non-MFI loans, and 37.5% of all non-MFI Deposits; Nordea Bank Finland had 27.3%, and 27.7%; Danske Bank Group had 9.6%, and 12.5% respectively (Finance Finland 2016, 5).

Predominantly, all of the credit institutions are supervised by either European Central Bank (ECB) or Finnish Financial Supervisory Authority (FIN-FSA). The only exception is Nordea Bank Finland, which is under Swedish Financial Supervisory Authority. ECB is supervising OP Financial Group, Danske Bank Finland, and Municipality Finance, leaving the rest to be monitored by FIN-FSA (Finance Finland 2016, 3-5).

At the end of the year 2016, there were 274 active credit institutions in Finland. These credit institutions had 1063 offices in Finland. Finance Finland defines credit institutions followingly: "Credit institutions include deposit banks and other credit institutions that do not take deposits,

such as finance houses, credit card companies, mortgage credit banks, and Municipality Finance plc." (Finnish Banking 2016, 4). Out of these 1063 offices, 830 were domestic, and 233 were foreign-owned. Even though the ratio of local banks to foreign-owned banks is about 3.7 times, the foreign-owned banks employ a relatively significant proportion of total bank personnel in the sector: 9,229 employees out of 22,042 (Finanssiala 2016, 1).

1.3.3. Norway

The Norwegian banking sector consists of 172 banks (TheBanks.eu 2017b), a couple of large commercial banks and several small savings banks. The structure of banking is less concentrated than Denmark's or Finland's, yet can still be considered to have a relatively high degree of concentration. The biggest key player in the Norwegian banking sector is DNB. It has a lending market share around 30%, both in the corporate and retail market. Two other considerably big banking groups are SpareBank 1 group and Eika group. In the year 2016, The SpareBank 1 group had market shares in the retail market and corporate market of 20.1% and 16.0%, and Eika group had 10.0% and 6.1% respectively. Also, the compounded group of subsidiaries of foreign banks (Nordea Bank and Santander Consumer Bank) had notable market shares in the sector; 12.2% on the retail market, and 14.3% on the corporate market (Norges Bank, 58).

The banking sector of Norway can be considered substantial regarding the assets. At the end of 2016, the total assets of the banking sector totaled 764 billion euros (European Banking Federation 2017). This amount corresponds to 228% of Norway's gross domestic product, which totaled 336 billion euros at the end of the year 2016 (Eurostat). However, taking into account the fact that there are several branches of foreign banks, some with a significant size of assets, the actual ratio would be somewhat smaller. So due to the high presence of foreign banks, the ratio is much higher than it would be if only the Norwegian banks were considered.

The Financial Supervisory Authority of Norway is mostly responsible for the supervision of Norwegian banks. The biggest objectives of supervision are to ensure that the main tasks of the financial system are performed soundly, and also to protect the interests of the users. Since the year 2010, The supervision of the largest bank in Norway, DnB NOR Group, has been executed by FSAN and a College of Supervisors. The College of Supervisors consists of host authorities in EEA countries where DnB NOR is operating.

1.3.4. Sweden

The Swedish banking sector can be divided into three groups: Banks, Mortgage institutions, and other credit market companies. The banks can be divided further into limited liability companies, savings banks, and co-operative banks. The banks grant the most loans among all credit institutions in Sweden. In December 2015 there were 116 banks in Sweden: 39 limited liability banks, 28 branches, and subsidiaries of foreign banks; 47 savings banks and two co-operative banks (The Swedish Financial Market 2016, 63).

The Banking sector of Sweden can be considered highly concentrated because five biggest banks of Sweden hold 84% of the whole sector's assets. The market shares by assets are distributed among these five biggest banks followingly: SEB 21%, Nordea 21%, Swedbank 16%, Handelsbanken 14% and Danske Bank 12% (calculated based on data from The Swedish Financial Market 2016, 63). The four biggest banks of Sweden also have a significant part of their operations abroad. A considerable amount of these banks' lending activities to the public are carried out outside of Sweden.

The Swedish financial system is also substantial based on its assets. The financial system's total assets are about 436% of nominal GDP of Sweden which amounted to approximately 4,956 billion Swedish Crowns in the year 2015. When taking into account only banking sector (excluding other credit institutions, for instance, insurance companies), the banking sectors total assets to GDP equals approximately 284%. The banking sector's total assets were 14,094 billion Swedish Crowns at the end of the year 2015. (IMF Country Report NO. 16/353, 2016, 42)

2. METHODOLOGY

2.1. Regression

Regression analysis is a tool in statistics which can be used to describe which type of relationship different variables have with one another. The model can be complex and include plenty of variables. However complex the model is, regression analysis is a useful tool to determine how one or more variables affect the other variable. The regression is conducted with pairs of observations. Regression means an eventuality where there is cause and effect relationship between dependent variable Y and independent variable X. Regression is referred as the average relationship between the variables (KL University, 457). The general form of a regression model is presented followingly:

$$Y_i = \beta_0 + \beta_n X_n + \varepsilon$$

where

Y_i –	Dependent variable
β_0 –	Intercept
$\beta_{n(0,1,2...)}$ –	Coefficient corresponding X_n-variable
X_n –	Independent variable
ε –	Error term

In this study, the author has selected one dependent variable; which measures the profitability of a bank, ten independent variables; which are presumed to have a relationship of some nature with the dependent variable and, three dummy variables which aim to define the ranking within studied countries in terms of average bank profitability. The aim is to define the nature of the relationships. The analysis is conducted with Microsoft Excel regression tool. When trying to describe the relationship between dependent and independent variables the author concentrates on a couple of details in the regression summary output. The values which the author is interested in are R-squared, F-test (F and significance F), coefficients and P-value.

R-square is a measure which is used in forecasting and regression models. R-square is substantially important when regression model is used in forecasting because it measures the regression model

as a whole. The value of R-square is calculated by dividing explained sum of squares (SS Regression) by total sum of squares (SS total) and always ranges between 0 and 1. The value measures how big percent of the variation of the dependent variable is explained by the variation of the independent variables (Johnson 2005,196-197). If the value is zero, the regression model could not be used in forecasting. As this paper is not concerned about forecasting the value of R square is not vital for the study.

With F-test, one can determine the significance of the regression model. This test will answer the question of: "on how big confidence level can one be sure that at least one of the coefficients in the regression model differs significantly from zero?" If the confidence level of the regression analysis were to be 95% the significance F has to be lower than 0.05 (significance $F < 0.05$) to reject the null hypothesis. Thus, one could conclude that the data has a dependent relationship with the studied variables (Orlov 1996, 11; Abbott 2011, 457).

The regression coefficient measures the nature of the relationship between dependent and independent variables. The coefficients indicate whether there is a relationship between the variables and if there is what kind of relationship. Positive values of coefficients indicate that there is a positive relationship between the dependent and independent variables. This means that a change in a value of an independent variable into one direction is related to a change in the value of the dependent variable to the same direction. If the coefficient receives a negative value, this means that the changes in the variables are going in opposite direction.

The statistically significant is the probability that the relationship between the variables is caused by nothing but a chance. In finance generally, a P-value lower than 0.05 is considered statistically significant, in consequence of generally used significance level of 95% (Investopedia).

2.2. Variable selection

The author has chosen ten bank-specific and three dummy variables as independent variables. Table 1. summarises the selection of the variables and expected effects of independent variables with the dependent variables. The author has selected return on equity (ROAE) and return on assets (ROAA) ratios to represent profitability. From used profitability measures, these two ratios are

probably one of the most frequently used. In this study, the ratios are specifically referred as return on average (ROAE) equity and return on average assets (ROAA). ROAE is calculated by dividing net income of the fiscal year with the average of the beginning value of equity and ending value of equity. ROAA is calculated in exactly same manner except the net income is divided by an average of the beginning value of assets and ending value of assets. ROAE and ROAA are used as the dependent variables in this study.

The first independent variable is the loans to total assets (L/TA) ratio. This ratio indicates how big proportion of banks total assets consists of loans. The ratio can also be considered to measure risk since the loans bear a default risk. Loans can be considered to be riskier than banks' other assets like government securities, but also, they bear higher expected return. Besides, loans are the most common banking assets and traditionally a base of banks' income. Thus, one could expect them to have a positive relationship with profitability.

Loan growth percentage (LG) indicates the percentage of how much the lending of a bank has increased or decreased from the beginning to the end of a fiscal year. As the lending increases, the banks receive more interest payments which impact the banks' profits. Consequently, as the amount of interest income increases with the number of loans, it could be expected that the loan growth percentage would have a positive effect on the studied profitability ratios.

Net loans and advances to banks are the net amounts of bank's short-term and long-term lending to another bank. The net loans and advances to bank-to-total assets (NLATB/TA) is ratio which measures how much of bank's assets are loans and advances lent to another bank. Dinger and von Hagen (2005) found that interbank borrowing is related to lower risks, which is mostly due to monitoring. This said the author expects a positive relationship with NLATB/TA and profitability, due to the smaller risks of default, which could be expected to affect profitability.

The cost to income ratio (CIR) measures how efficiently the bank is able to maximize its profits while minimizing the expenses. CIR is closely related to bank profitability and value creation. The CIR is calculated by dividing operating costs with operating income. The ratio provides a clear picture of how efficiently the bank is operating. A lower ratio is preferred. A limitation of the ratio is that the change in the ratio doesn't directly imply whether there has been a change in costs or income. Nevertheless, based on the findings of research done by Kiviniemi (2018) the author expects a negative relationship between profitability and cost to income ratio.

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Loan loss provision to net interest revenue (LLP/NIR) is an asset quality measure which measures how big proportion of reserves a bank has set aside to cover losses during the fiscal period compared to the amount net interest revenue. Net interest revenue is income indicated by the difference of interest received from loans and interest paid from deposits. Loan loss provision is an income statement item, which is an amount that is added to loan loss reserves (Walter 1991, 29). Loan loss provisions is a way to prepare the bank for possible defaults or decreases customers' abilities to pay. If a bank's proportion of loan loss provisions increases, this could imply that they are expecting more defaults, which weakens the profitability of the bank. Thus, the author expects the LLP/NIR to have a negative relationship with profitability.

Non-interest income to operating revenues (NII/OR) ratio measures the proportion of income derived from other sources than interest, such as fees or trading, compared to operating income. Non-interest income such as fees bears a small or even no degree of risk whereas trading can be considered riskier with a higher expected return. The author expects the NII/OR to have a positive relationship with profitability.

Net interest margin (NIM) is a ratio which measures the difference between the interest the bank receives from its investments such as loans it lends and the cost of financing the loan, compared to the total interest-earning assets. For many banks, the financing of the loan comes from the deposits received from its customers, and the cost of financing is the interest it pays for the deposits (Choudry 2011, 4). If the banks receive more interest than it pays, the net interest margin is positive, which is expected to increase profits. So, one could assume a positive relationship between profitability and NIM.

Net income is the remaining revenue after all the expenses are taken into account. Net income growth (NIG) is the percentage of how much more or less the bank has earned profit compared to earlier year. The NIG is calculated by subtracting the net income of the earlier period from the net income of current period and then dividing the difference by the net income of earlier period. For example, if a bank had net income of 1 million in the first year and 1.5 million in the second year, the growth is calculated by subtracting 1 million from 1.5 million and then dividing the difference with 1 million resulting in NIG of 50%. Net income is part of both ROAE and ROAA acting as a numerator in both ratios. An increase in the numerator results in a higher value of the ratio. Thus, the author expects the NIG and profitability ratios to have a positive relationship.

The natural logarithm of total assets (LNTA). This variable indicates the size of the banks. We use natural logarithm because the set of independent variables is rather homogenous, and the distribution of the values are not substantial whereas if one used the actual values of the total assets this variable would have values of whole different scale. Natural logarithm scales the values to more appropriate sizes. Economies of scale refer that costs reduce, as the size of output increases. This fact could imply a positive relationship between size and profitability.

Equity to total assets (ETA) ratio measures how big proportion of banks assets is financed by equity. This ratio is also an indicator of capital adequacy, which measures the banks' stability and financial strength, with the sufficiency of equity capital to provide a cushion against financial risks it might face. The higher ratio indicates smaller leverage of a bank. Based on the findings of reviewed studies, the author expects a positive relationship between ETA and both ROAE and ROAA.

The last three variables are country-dummy variables Dden, Dfin and, Dnor, corresponding to Denmark, Finland, and Norway respectively. Sweden does not have its dummy variable because it acts as a base country. This means that the other dummy variables are compared to Sweden. The use of dummy variable aims to determine a ranking within the studied countries in terms of profitability. The author does not have any presumption about the ranking.

Table 1. Summary of variable selection

Variable	Explanation	Measure	Expected nature of a relationship
Dependent:			
ROAE	Return on average equity	Profitability	
ROAA	Return on average assets	Profitability	
Independent:			
L/TA	Loans to total assets	Loan ratio	+
LG	Loan growth	Increase in volume of loans	+
NLATB/TA	Net loans and advances to banks to total assets	Interbank lending	+
CIR	Cost to income ratio	Operational efficiency	-
LLP/NIR	Loan loss provisions to net interest revenue	Amount of anticipation against loan losses for the fiscal period	-
NII/OR	Non-interest income to operating revenues	The proportion of non-interest income	+
NIM	Net interest margin	The success of bank's investment strategy	+
NIG	Net income growth	Annual increase or decrease in net income	+
LNTA	Natural logarithm of total assets	Bank size	+
ETA	Equity to total assets	Capital ratio	+
Dden	Dummy variable for Danish banks	Average bank profitability level	
Dfin	Dummy variable for Finnish banks	Average bank profitability level	
Dnor	Dummy variable for Norwegian banks	Average bank profitability level	

Source: Compiled with Microsoft Excel by author

2.3. Overview of the data

This section provides the main information of the data which is used in this study. The author first discloses the origin of the data as well as the selection criteria. Then the section goes through some main statistical measures of the data used in this study by providing the descriptive statistics table. Lastly, in this section, some selected variables are examined and compared on the country basis.

In this paper, the data used in the regression analysis is acquired from Bureau van Dijk's Bank scope. The search strategy implemented by the author included three selection criteria. Firstly, the bank had to originate from either Denmark, Finland, Norway, or Sweden. Secondly, the bank's status had to be active. Thirdly, there had to be found an input of total assets from at least one year

between years 2011 and 2017. The author would have also included years before 2011, but the BankScope did not provide any data until the year 2011.

The author chose to conduct the regression analysis with Microsoft Excel. The whole dataset provided by Bank Scope needed to be rearranged since the formation of data was unfavorable to execute the analysis with the software mentioned above. The dataset is necessary to be in such format where columns indicated the variables and rows indicated a specific bank on a particular year. The original sample size included 448 banks with 3136 observations (specific bank on a particular year). The sample of 448 banks included 92 from Denmark, 76 from Finland, 167 from Norway and, 113 from Sweden.

The sample size was affected by a couple of reasons. Firstly, the excel regression tool has such property that forces every studied variable to have a value. This designates the default of every bank year (a bank on a certain year) which has even one blank value on any selected variable. This fact first lead to the omission of data from the year 2011, as the author had to calculate annual growth rate values for loans and net income. Because there was not any data on the year 2010, the author was not able to calculate growth rates for 2011. The second factor that affected the count of observations was the regression model formation-step combined with the elimination of blank values. A number of bank years were excluded as there had not to be any "n.a." inputs (not available) on the studied variables.

Lastly, the author had to eliminate statistical outliers from the sample to ensure that the regression is not driven by outliers. Booth (1986) defined the statistical outlier followingly: "We say that a data point is an outlier if it is not likely to be representative of the rest of the data or if it causes problems in a standard statistical procedure." The author implemented a non-recursive outlier elimination method for each dependent and independent variables. The method is implemented in a way which Selst and Jolicoeur (1994) recommended in their study. The outliers were eliminated with 2.5 standard deviation cutoff. An outlier is detected if the value is higher than the upper bound or lower than the lower bound. The upper bound and lower bound was defined followingly: Upper bound is a sum of mean and 2.5 times the standard deviation, and a lower bound is the difference of a mean and 2.5 times standard deviation. Finally, the sample decreased from 448 banks with 3136 observations to 344 banks with 1237 observations. Out of the 344 banks, 71 were Danish, 54 were Finnish, 133 were Norwegian, and 86 were Swedish.

The descriptive statistics table gives a summary of the data used in the regression model. Descriptive statistics is a useful statistical tool to summarize and comprehend a sample of data. The descriptive statistics table includes four data categories: Mean, the minimum value (Min.), the maximum value (Max.) and standard deviation (St. Dev.). From Table 2, it can be seen that an average value of a Nordic bank's ROAE was 7.63%, with a standard deviation of 4.15. The value of ROAE ranged between -9.99% and 24.02%. The other dependent variable ROAA had an average value of 0.83% and standard deviation of 0.49. The range of the values was rather small as the minimum value of ROAA was -0.87% and the maximum value was 2.98%.

Table 2. Descriptive statistics table (values in percent)

	Mean	Min.	Max.	St. Dev.
ROAE	7.63	-9.99	24.02	4.15
ROAA	0.83	-0.87	2.98	0.49
L/TA	73.01	25.97	99.45	14.51
LG	6.72	-50.15	539.08	25.67
NLATB/TA	4.45	-0.01	19.71	4.13
CIR	56.41	6.32	104.97	16.68
LLP/NIR	9.11	-661.37	186.23	25.89
NII/OR	32.00	-39.88	103.88	18.57
NIM	2.09	-0.14	8.92	1.13
NIG	10.20	-956.03	842.84	107.81
LNTA	13.81	9.57	19.19	1.81
ETA	11.65	2.71	29.97	4.64

Source: Generated with Microsoft Excel by author

On average, a studied bank had NIM of 2.09%. The value of NIM ranged between -0.14% and 8.92%. The standard deviation of 1.13 denotes relatively small dispersion within the NIMs of the banks. The banks' total assets consisted of 73.01 percent of loans on average. The sample included rather different L/TA structures. Some banks had a rather small percentage of loans, 25.97% on the lowest, whereas the highest percentage of loans was 99.45% of total assets. The NII/OR had an average of 32.00%, which means that on average the banks' income derived from other sources than interest income is about a third of its operating revenues.

On a country level, there are some differences in the average values of the studied variables. With annual figures, we can detect some trends as well as compare the measures with each other. The following graphs include the profitability ratios, bank size, the cost to income ratios and loan loss provisions to net interest revenue.
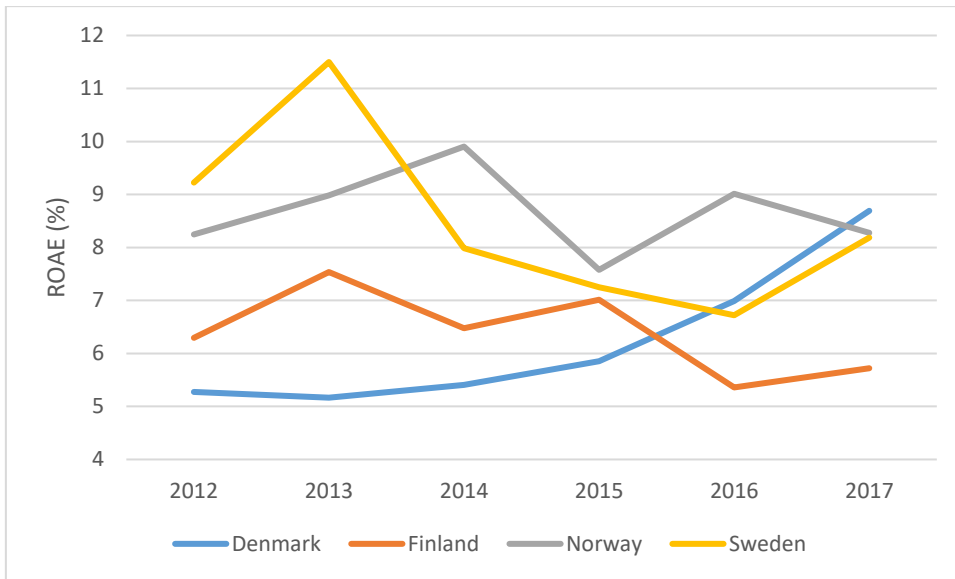
Figure 1. Average ROAE ratios of studied countries
Source: Compiled by the author with Microsoft Excel

The figures 1. and 2. present the country-specific graphs for the average annual values of ROAE and ROAA. The figures are based on the same sample as the regression analysis. Thus, the year 2011 is not included. What is prominent in Figure 1., is the growth of ROAE for Danish banks. The Swedish banks' profitability has decreased from the level it was at the end of the year 2013. The Finnish and Norwegian banks have not shown any drastic changes in terms of ROAE.
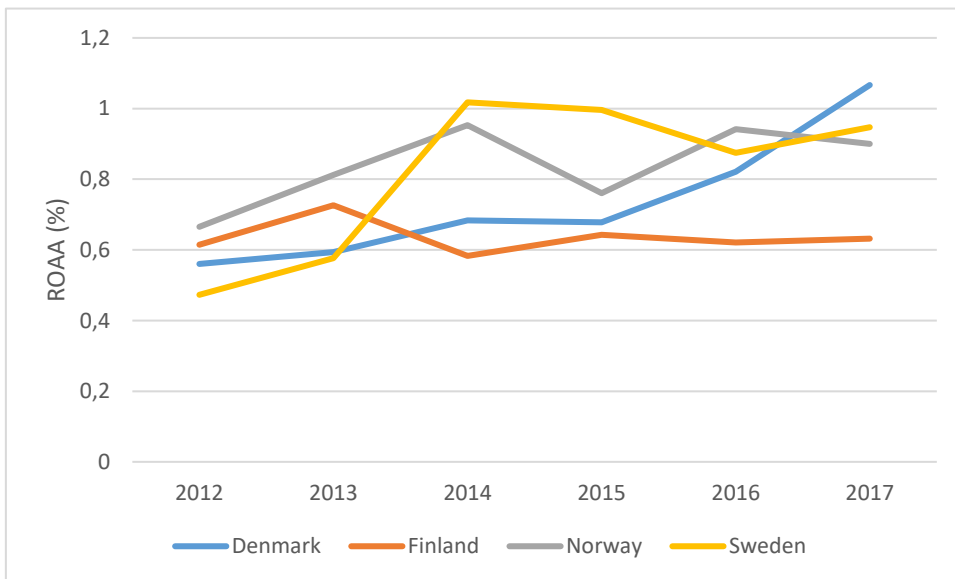

Figure 2. Average ROAA ratios of studied countries
Source: Compiled by the author with Microsoft Excel

Figure 2. presents the ROAA average values. From the figure, it can be observed that all of the countries except are showing a trend of growth in terms of ROAA. The average profitability of banks in Finland hasn't changed much. Biggest growth again is showing Denmark, which at the beginning of the studied period had second lowest profitability and has the highest at the end of the studied period. From these figures, the author hypothesizes that the average profitability ranking which is executed as a part of regression analysis will be, in terms of ROAE; (1.) Norway, (2.) Sweden, (3.) Finland and (4.) Denmark; and in terms of ROAA, (1.) Norway, (2.) Sweden (3.) Denmark, and (4.) Finland.
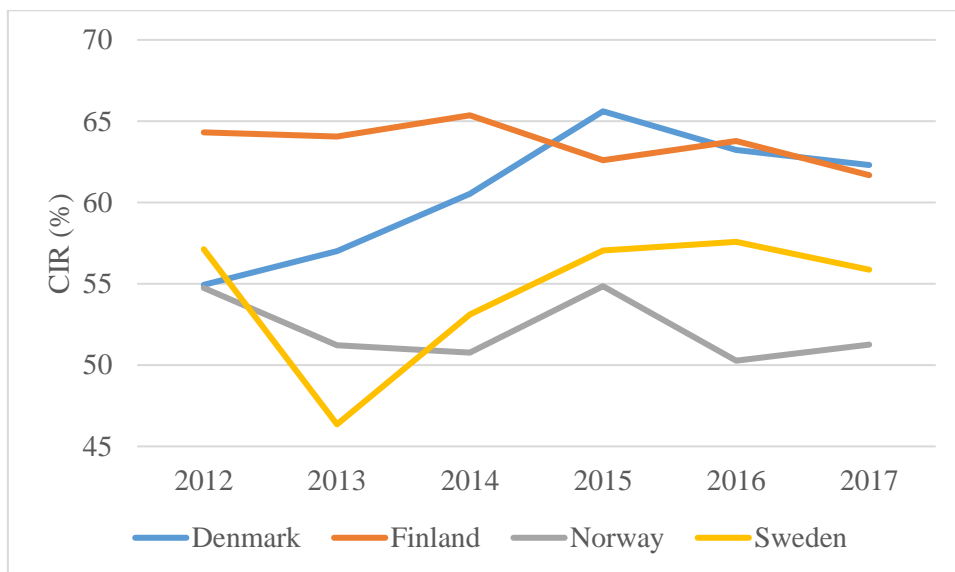

Figure 3. Average CIR ratios of studied countries
Source: Compiled by the author with Microsoft Excel

Average cost to income ratios is shown in Figure 3. It can be observed from the figure that the most efficient banks on average are located in Norway, whereas the most inefficient banks on average are from Finland. This can be stated as the lower cost to income ratio measures higher efficiency. The CIR graph of Finland has been decreasing, and at the end of the year 2017, the Finnish banks were slightly more efficient than Danish banks, on average.
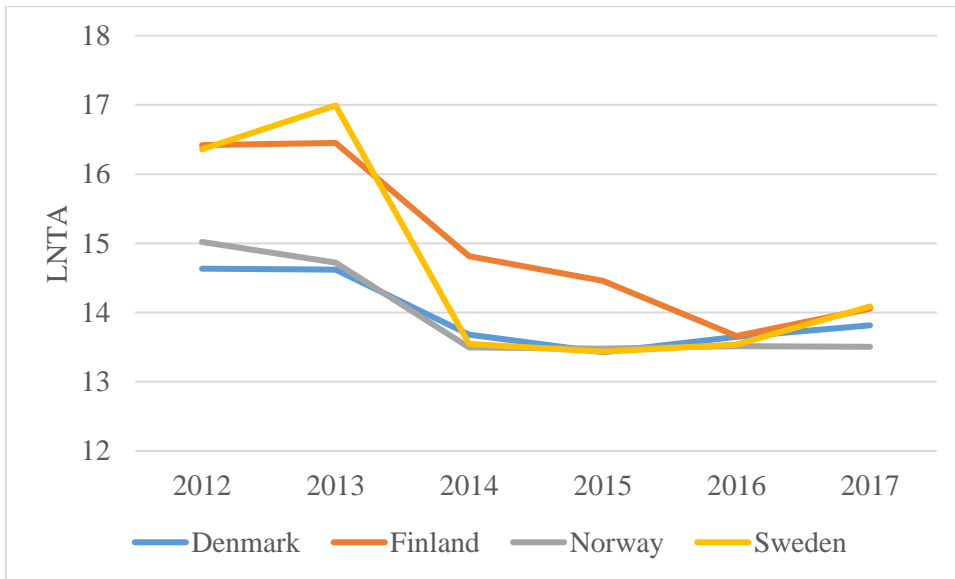
Figure 4. Average LNTA ratios of studied countries
Source: Compiled by the author with Microsoft Excel

Figure 4. illustrates the average bank sizes in the studied countries. The graphs are rather similar to each other. Every country had a substantial decrease in the average size of banks between the years 2013 and 2014 and kept decreasing until 2015. The only exception is Finland whose average value decreased until the year 2016. At the end of the studied period, there were not huge differences in the average bank sizes between the studied countries.
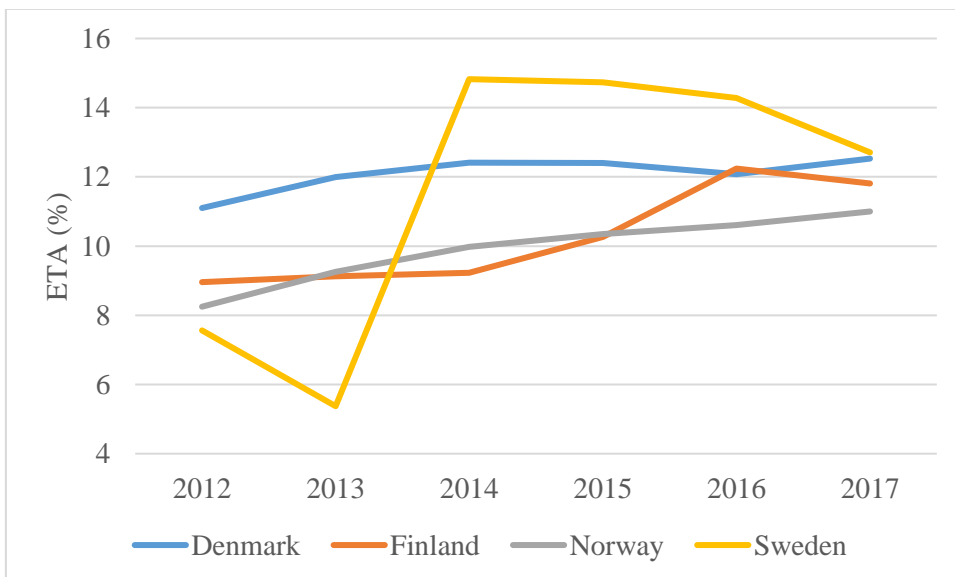

Figure 5. Average ETA ratios of studied countries (In Percent)
Source: Compiled by the author with Microsoft Excel

In Figure 5. the average equity to total assets in the studied countries are presented. The proportion of equity has been showing a trend of increase between the years 2012 and 2017 in every studied country. The highest change has occurred in Sweden between the years 2013 and 2014. In the other countries, the increase has been more stable.

One probable reason for the changes in the decrease in bank sizes (total assets) and increase ETA is the deleveraging of EU banks. Bologna et al. (2014) wrote an article about EU bank deleveraging. This deleveraging or in other words, decreasing in bank leverage, was executed by decreasing the assets and/or increases in equity. Norway also as a European Economic Area (EEA) country is implementing the deleveraging through Capital Requirement Directive (Ahi 2016, 47).

3. ANALYSES AND EMPIRICAL RESULTS

This section goes through how the regression analyses were conducted and what were the results of the regression analyses. The analyses are conducted with Microsoft Excel regression analysis tool based on the data of Danish, Finnish, Norwegian and Swedish banks. The analysis explains what type of relationships the independent variables have with the dependent variable.

The regression models were conducted by trial and error method. With this author implies that different sets of independent variables were tested for the regression analysis. The author created several combinations of independent variables. The dependent variables were both the same in the models. The regression model compilation process included two steps. The first step was to test the independent variables in the correlation matrix. According to Dormann et al. (2012) absolute value of correlation coefficients which can be considered to be critically high is from 0.5 or higher. The author compiled a regression model where none of the independent variables had a correlation value bigger than 0.5 with another independent variable. The high correlations could distort the regression output. From Appendix 1. can be perceived the absence of high correlations within the independent variables in the correlation matrix. The second step was to ensure an adequate Significance F-value.

Conformably the author aimed to include such blend of independent variables where the variables did not correlate with each other and had explanatory power at least to some extent. The author tested several different combinations of independent variables until the regression model met the requirements. Also, country-dummy variables were included in the models to answer the question of ranking of average profitability within the countries. The author tested the models with both profitability ratios separately. The regression model, which fitted best to the requirements, is the following:

$$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \beta_{10} X_{10} + \varepsilon$$

where

Y_i – ROAE (model 1) / ROAA (model 2)
B_0 – Intercept
$\beta_{n\,(1,2...13)}$ – Coefficient corresponding X_n-variable

X_1 – LT/A	X_2 – LG	X_3 – NLATB/TA	X_4 – CIR
X_5 – LLP/NIR	X_6 – NII/OR	X_7 – NIM	X_8 – NIG
X_9 – LNTA	X_{10} – ETA	X_{11} – Dden	X_{12} – Dfin
X_{13} – Dnor	ε – Error term		

As mentioned earlier in this section, the author conducted two regressions, Model 1, which had an independent variable ROAE; and Model 2, which had an independent variable ROAA. The models included the same independent variables and had the same count of observations (1237). Model 1 ended up having R Square value of 0.551. This means that 55.1% of ROAE's variation is explained by the variation of independent variables. If the author were to use the regression model to forecast the value of ROAE, this model would not necessarily do it accurately. The R Square value, in this case, tells us that the rest 44.9% (100% - 55.1%) of ROAE's variation is explained by some other variables than the ones that are used in the author's regression model. Model 2 had an R Square value of 0.579, which corresponds to 57.9%. The chosen independent variables can explain the slightly bigger percentage of ROAA's variation than ROAE's variation.

Both regression models have a favorable Significance F value. The significance level of the regression analysis is 95%, and because Significance F values of both models are smaller than 0.05, the author can reject the null hypothesis. The Significance F value for Model 1 is 3.51E-202 and for Model 2 is 5.77E-219. Thus, the author can be 99% sure that at least one of the coefficients in the regression models differ significantly from zero.

Table 3. below provides the findings concerning the regression models. The first independent variable of the regression models is the ratio of Loans to total assets (L/TA). The relationship of L/TA with ROAE is negative and statistically insignificant, whereas for ROAA the relationship is positive yet also statistically insignificant. This finding implies that banks have a chance to increase their profitability by increasing the proportion of loans to total assets, but because the finding is statistically insignificant, there is a bigger possibility that this positive relationship is caused by chance. The findings concerning ROAA are similar to findings of Menicucci and Paolucci (2015), and Athanasoglou et al. (2006) in terms of being statistically insignificant and positive. The findings concerning ROAE is similar to Wang and Wang's (2015) finding in terms of negativity. However, their finding was statistically significant.

The loan growth (LG) variable has a positive, yet statistically insignificant effect on the profitability. The finding concerns both profitability ratios. This finding seems to go hand in hand with the L/TA. As the P-values of this finding are 0.256 for ROAE and 0.185 for ROAA, there is a rather high probability that these relationships are indeed caused by chance.

Net loans and advances to banks to total assets (NLATB/TA) ratio has a positive and insignificant effect on return on equity. Then again, the relationship with ROAA was positive and significant. This finding could be related to Dinger and von Hagen's (2005) research, which found the relation of interbank borrowing and lower credit risks. The authors speculated this to be a result of monitoring of the banks. The relationship could then indicate that the lower credit risk goes hand in hand with lower losses, which again boosts profitability.

The cost to income ratio (CIR) has a statistically significant and negative relationship with the dependent variable in both models. The finding implies that a smaller proportion of costs in relation to income a bank has the bigger the profitability tends to be. Naturally, this is the case as the costs need to fall below the income in order a bank to make any net profit. This finding is supported by findings from researches carried out by Kiviniemi (2018), Wang and Wang (2015) and Kosmidou (2008).

The loan loss provision to net interest revenue (LLP/NIR) ratio has a statistically significant and negative relationship with ROAE as well as to ROAA. The result is in conformity with Athanasoglou et al.'s. (2006). Also, Miller's and Noulas (1997), and Kosmidou (2008) found a positive and significant relationship with the proportion of loan loss provisions and ROAA. The results are not entirely comparable with these aforementioned studies, because the independent variable in Athanasoglou's study was loan loss provisions to total loans and the independent variable in the other two studies were loan loss provisions to total assets. However, all of these independent variables measure the proportion of loan loss provisions, so it could be expected that they have a similar relationship. It can be expected if a company has a higher exposure to credit risk that this could influence profitability.

The proportion of non-interest income to operating revenue (NII/OR) has a positive and statistically significant effect on profitability. The variable is significant at 1% level on both profitability ratios. This finding indicates that the company which derives a higher proportion of income from other sources than interest on loans compared to operating revenue, tend to be more profitable on average. From this, one could conclude that banks should also derive income from non-interest sources. Sufian (2012) ended up in similar conclusion, although the independent variable used in the study was non-interest income to total assets.

The net interest margin (NIM) is an independent variable which has a considerable impact on profitability according to the regression output. The relationship of NIM and ROAE is positive and statistically significant at 1% level, as well as with ROAA. On average a one unit increase in NIM contributes an increase of 2.02 units in ROAE and an increase of 0.23 units in ROAA. Thus, the findings match the expectations the author had.

Net income growth has a significant and positive relationship with ROAE and ROAA. This result came as no surprise as the net income is a numerator in both of the profitability ratios. The coefficient values for ROAE is 0.006 and for ROAA 0.001. The expected impacts on the growth of income are not considered high. The author evaluates that the other factors which impact these ratios such as asset turnover on both and leverage on ROAE have a higher impact on the ratios. With this the author refers to the DuPont identity of the ratios where the return on assets ratio divided into a product of net margin, assets turnover and, return on equity is divided into a product of net margin, asset turnover, and leverage.

The nature of the relationship between the natural logarithm of total assets (LNTA) and profitability is significant and positive in both models. This means that the bigger banks tend to be more profitable. One unit increase in the natural logarithm of total assets tends to result in 0.221 unit increase in ROAE on average and 0.023 unit increase in ROAA. Similar findings were stated by Menicucci and Paolucci (2015), and Athanasoglou et al. (2006). One factor that could explain this is the earlier speculation of the concept of economies of scale.

The tenth independent variable equity to total assets (ETA) ratio had a negative and significant relationship with ROAE and positive and significant on ROAA. The findings concerning ROAA are supported with Menicucci and Paolucci's (2015), Athanasoglou's (2006) and, Wand and Wang's (2015) study. Similar findings concerning the ROAE ratio were introduced by Wang and Wang. One possibility which the author suspects to cause the negative relationship of ROAE and ETA is that on average banks tend to increase their profits with leverage. As a bigger proportion of assets are financed with equity, the leverage decreases which then impacts the ROAE ratio.

The dummy variable coefficients are all statistically significant at 1% level except Norway's in Model 1. In Model 1 negative coefficients ended having Dden and Dfin dummy variables with values -2.576 and -1.544 respectively. From this, the author could conclude that Danish banks are the least profitable on average. On average a Danish bank has 2.576% lower ROAE than a Swedish

bank. Finnish banks have 1.544% lower ROAE than Swedish banks on average. The Norwegian banks seem to be the most profitable on average, with a coefficient of 0.068, although the coefficient is not statistically significant.

Model 2 had statistically significant coefficients. The coefficients for Danish, Finnish and Norwegian banks were -0.198, -0.126 and 0.091, respectively. According to these coefficients, the Norwegian banks are most profitable on average. Second most profitable are the Swedish banks followed by Finnish and Danish banks respectively.

Table 3. Ordinary least squares estimations for ROAE and ROAA

Dependent Variable:	Model 1				Model 2			
	ROAE				ROAA			
	Coeff.	St. Err.	P-value		Coeff.	St. Err.	P-value	
Intercept	11.347	1.675	1.96E-11	***	0.135	0.190	4.76E-01	
L/TA	-0.001	0.010	9.16E-01		0.001	0.001	2.44E-01	
LG	0.004	0.003	2.56E-01		0.000	0.000	1.85E-01	
NLATB/TA	0.008	0.024	7.30E-01		0.007	0.003	1.40E-02	**
CIR	-0.149	0.007	2.49E-93	***	-0.014	0.001	5.84E-70	***
LLP/NIR	-0.039	0.003	9.81E-32	***	-0.003	0.000	1.01E-20	***
NII/OR	0.089	0.006	8.21E-45	***	0.010	0.001	6.53E-42	***
NIM	2.015	0.094	4.55E-87	***	0.231	0.011	1.73E-88	***
NIG	0.006	0.001	1.08E-14	***	0.001	0.000	1.81E-14	***
LNTA	0.221	0.063	4.83E-04	***	0.023	0.007	1.26E-03	***
ETA	-0.373	0.024	5.13E-51	***	0.027	0.003	8.25E-23	***
Dden	-2.576	0.310	2.46E-16	***	-0.198	0.035	2.21E-08	***
Dfin	-1.544	0.314	1.03E-06	***	-0.126	0.036	4.11E-04	***
Dnor	0.068	0.249	7.84E-01		0.091	0.028	1.24E-03	***
Obs.			1237				1237	
R Square			0.551				0.579	
Significance F			3.51E-202				5.77E-219	

Note: ***, **, * notations after P-values measure the statistical significance at 1%,5% and 10% level respectively.

Source: Generated with Microsoft Excel by the author.

CONCLUSIONS

There are several studies which concentrate on determinants of bank profitability. Studies have been made based on banking data from different countries for instance in Asia, Europe, Africa et cetera. The research problem was related to the lack of studies on this very topic based on Nordic countries. The studied countries Denmark, Finland, Norway and Sweden are referred to as Nordic countries. The object of the study is the banking sectors of Denmark, Finland, Sweden, and Norway. The research successfully answered the research questions which were: "Which bank-specific factors affect the bank profitability in Nordic countries?", "What kind of relationship do the chosen independent variables have with profitability?" and a question which arose during the study "How the average profitability differs between the studied countries?". The aim of the study was to develop a regression model and to examine the relationships of different bank-specific independent variables and dependent variable return on average equity based on banking data of Nordic countries. The model also included country-dummy variables. The aim of the dummy variables was to determine the average profitability for a country corresponding the dummy variable compared to the base country.

The author conducted a multiple regression analysis. The original data included 448 banks from Denmark, Finland, Norway and, Sweden. The original number of observations was 3136 (a certain bank on a certain year). The data of these banks was originated from Van Dijk's BankScope and included inputs from the year 2011 to 2017. The sample size, as well as the count of observations, decreased for two reasons. The first reason was the variable selection combined with the omission of blank inputs. Rows which had blank inputs on one or more selected variable had to be disregarded. Reason for this was Excel's incapability to execute regression on a sample which included blank inputs. This reason, for example, caused the year 2011 to be left out from the regression as the author had to calculate annual growth values, which were used as independent variables. The second factor which affected the sample size was the process of statistical outlier elimination.

The author ended up conducting two different regression models. The models differed from each other only by dependent variable. Model 1 used return on average equity (ROAE) as a dependent variable, whereas Model 2 used return on average asset (ROAA) as a dependent variable. Both models included ten independent variables and three country dummy variables. This model ended up having suitable Significance F and P-values. The model was also tested in case of multicollinearity.

The final sample included 344 banks with 1237 observations. The regression models included 10 independent variables, 3 country dummy variables and the dependent variables ROAE and ROAA. The model was tested with correlation matrix in case of correlations between independent variables. The hypothesized effects of the independent variables held true apart from the expectation of positive impact of L/TA to profitability which ended up having a negative relationship with ROAE. Also, an expectation of equity to total assets (ETA) having precisely a positive relationship with both profitability ratios, was proved to be incorrect. The ROAE had a negative relationship with ETA.

The author found a positive connection between profitability and net interest margin, non-interest income and, net income growth. Additionally, the size of banks was a noteworthy factor when considering profitability, as it also had positive relationship. The economies of scale theory seemed to hold true. The variables concerning loans had mostly statistically insignificant relationship with profitability. The proportion of equity had a positive relationship with ROAA and negative with ROAE. The author speculated that the studied banks elevate their ROAE with leverage and a higher ETA value correspond lower leverage.

Naturally, the proportion of loan loss provisions had a negative impact on profitability. The loan loss provisions decrease with the number of expected defaults decrease. Thus, banks should have versatile methods to verify the customer's ability to pay at present as well as in the future in order to minimize the loan losses. Another option is to make the requirements of granting loans stricter. Although, this could result in a decrease in demand for a bank because the borrowers could then switch to a bank which has less stringent policies.

The author also found that there are differences between the studied countries concerning the average profitability of banks. The findings indicated that the Norwegian banks are the most profitable on average. Sweden, which was used as the base country ended up being the second

most profitable, followed by Finland and Denmark respectively. The hypothesized rankings differed slightly as the ranking concerning both ratios were the same. The author hypothesized that Denmark would have been more profitable than Finland in terms of ROAA. That was not the case. The dummy variable of Norway in Model 1 was statistically insignificant. However, the figures presented in section 2, do support the findings concerning the ranking in Model 1. The regression analysis, in the current form, does not directly indicate which factors cause these differences. Thus, the author cannot make any conclusions on this part. A possible way to study further the topic of this study could be to examine the factors which contribute to these differences between the countries.

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APPENDICES

Appendix 1. Correlation matrix

	ROAE	ROAA	L/TA	LG	NLATB/TA	CIR	LLP/NIR	NII/OR	NIM	NIG	LNTA	ETA
ROAE	1											
ROAA	0.71	1										
L/TA	0.21	0.01	1									
LG	0.00	0.03	-0.01	1								
NLATB/TA	-0.12	0.09	-0.23	0.03	1							
CIR	-0.45	-0.34	-0.43	0.07	0.12	1						
LLP/NIR	-0.16	-0.13	-0.10	0.06	- 0.00	0.03	1					
NII/OR	-0.07	0.16	-0.47	0.02	0.24	0.38	0.02	1				
NIM	0.09	0.29	-0.34	0.05	0.02	0.25	0.23	-0.06	1			
NIG	0.27	0.22	0.04	0.01	- 0.10	-0.14	- 0.04	0.06	-0.02	1		
LNTA	0.26	-0.10	0.13	-0.00	- 0.24	-0.40	0.01	-0.17	-0.35	0.07	1	
ETA	-0.22	0.43	-0.28	0.02	0.28	0.03	- 0.05	0.34	0.23	-0.03	-0.46	1