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Financial Analysis of Performance and Risk

Case: Svenska Handelsbanken AB

Erika Saarman

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JAMK University of Applied Sciences

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Abstract <p>The aim of the study was to examine the development of financial performance in the 21st century through a case company, Svenska Handelsbanken AB. The element of risk was added to the study with the objective to identify correlations between performance and risk. Another objective was to identify if the financial crisis of 2007 had had an effect on the development of the financial performance as well as on the correlation between performance and risk.</p> <p>The research was conducted as a case study using the mixed method approach in the data collection. The data was primarily collected from secondary sources. The most relevant source regarding the actual research was the Annual Reports of Svenska Handelsbanken AB. Moreover, the Nasdaq-website played an important role when examining risk ratios. The research was conducted by observing the company's balance sheets and income statements in order to formulate the calculations for performance and risk ratios. The data was collected and analyzed for the period of 2000-2016. This supported the element of choosing the financial crisis as an important event during the analysis.</p> <p>The research results were explained in detail separately with regard to the performance analysis and risk analysis. The results were summarized in the end by taking the financial crisis into account. The results showed that Handelsbanken had a good financial position and that its strict risk management had worked effectively. Overall, the financial crisis had had no significant effect on the performance and risk development of Handelsbanken. Lastly, recommendations for future research were given.</p>		
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Tiivistelmä <p>Opinnäytetyön tavoitteena oli tutkia taloudellisen suorituskyvyn kehittymistä 2000-luvulla case-yrityksen Svenska Handelsbanken AB:n kautta. Tutkimukseen otettiin mukaan riski toisena osatekijänä, jotta suorituskyvyn ja riskin yhteys voitaisiin selvittää. Toisena tavoitteena oli selvittää finanssikriisin vaikutus taloudellisen suorituskyvyn kehittymiseen sekä riskin ja suorituskyvyn yhteyteen.</p> <p>Opinnäytetyön tutkimusmenetelmäksi valittiin tapaustutkimus, jossa data kerättiin monimenetelmätutkimuksen avulla. Data kerättiin pääasiassa sekundäärlähteistä, mutta yksi tärkeimmistä lähteistä oli case-yrityksen vuosiraportit. Nasdaqin nettisivuilta kerättiin myös tärkeää dataa tutkimuksen suorittamista varten. Vuosiraporteista kerättiin tietoa pääasiassa taseesta ja tuloslaskelmasta. Data kerättiin ja analysoitiin vuosilta 2000-2016, mikä tukee finanssikriisin valitsemista toisen tavoitteen osatekijäksi, sillä sen ajoittuminen on tärkeä osa finanssialan tapahtumia.</p> <p>Tutkimustulokset analysoitiin ja esitettiin erikseen suorituskyvynä ja riskinä, tuoden kuitenkin molempien tulokset lopussa yhteen sekä ottaen finanssikriisin huomioon. Tulokset osoittavat, että Handelsbankenilla on hyvä taloudellinen asema ja sen tiukka riskienhallinta on tuottanut tulosta. Yleisesti ottaen finanssikriisillä ei ole ollut huomattavaa merkitystä Handelsbankenin taloudellisen suorituskyvyn tai riskin kehittymiseen. Lopuksi esitettiin suosituksia jatkotutkimuksia varten.</p>		
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1 Introduction

1.1 Background

In the banking system, competition is desirable for efficiency and for the maximization of social welfare. However, this industry distinguishes itself from other industries due to its roles and functions, which requires it also to be stable in addition to efficiency and competitiveness. Moreover, an important factor is profitability. (Banking competition; Schubert 2015.) Adding to this the restrictions and supervision imposed by the financial crisis in 2007, the author of the thesis found it interesting and relevant to research the performance of the banking industry in the 21st century by examining a case company. The element of risk was added to the research since it was closely related to the financial crisis, which was used as a time divider in this research.

Handelsbanken was chosen as a case company since one of its goals is, compared to its peer banks, to have higher profitability than average and since it has had a better profitability for the past 45 years. One of its corporate philosophies is also a long-term perspective, which was suitable for this research since the data was collected from the years 2000 to 2016. (Handelsbanken in brief.)

1.2 Overview of Handelsbanken

Handelsbanken offers full-service for both private and corporate customers. It operates in six home markets: Sweden, Norway, Finland, Denmark, the UK and the Netherlands. It also has operation worldwide in 20 different countries. The business operations of the Handelsbanken Group are decentralized, which means that the business decisions are made in the branches within their 800 local offices worldwide. This is one of the corporate philosophies: the branch is the bank. Handelsbanken's goals are to have higher profitability, more satisfied customers and lower costs than the competitors. They have succeeded in these since they claim that they have more satisfied customers than the peer banks, they are one of the most cost-effective full-service banks listed in Europe, and they have had a higher return on equity than the

peer banks during the past 44 years. (Handelsbanken in brief; Handelsbanken's organization and working method.)

Handelsbanken was founded in 1871, by eight resigned board members of Stockholms Enskilda Bank, who formed a new bank called Stockholms Handelsbank. The bank located its activities in the capital of Sweden, Stockholm. Handelsbanken's shares were first listed in the Stockholm Stock Exchange in 1873. (History of Svenska Handelsbanken.) In Sweden, as in the rest of Europe, the first decade of the twentieth century was an era of mergers in the banking industry. Before, Stockholms Handelsbank had only had branches in Stockholm, but now it has expanded to other parts of Sweden. In 1914 Bankaktiebolaget Norra Sverige in the north was acquired and in 1919 Bankaktiebolaget Södra Sverige in the south was acquired. At this time, the name changed to Svenska Handelsbanken, which is in use in today. (History of Svenska Handelsbanken (1911-1919).)

The President and the chief executive of the Handelsbanken group is Anders Bouvin. The latest members of the Board were elected at the annual general meeting in March 2016, where Pär Boman was elected as the Chairman and Fredrik Lundberg as a Vice Chairman of the Board. (President and Group Chief Executive; The Board.) In 2016, the operating profit was SEK 20,633m, and the profit after tax for the total operations was SEK 16,245m. The income increased by 1% compared to 2015, and the net interest income also rose by 1%. The lending growth was maintained in all home markets. (Highlights of Annual Report January-December 2016 2016, 2.)

1.3 The financial crisis

Houses are usually bought mainly with debt since mortgage is usually from 80 to 100 per cent of the purchase price. Low interest rates increase the demand for housing and, furthermore, the housing prices. These can become self-sustaining and thus create a bubble, which happened in the early 2000s. According to Smith (2016) there are many causes of this phenomenon. In the asset returns, for example, if for past years, stocks have had an outstanding run or earnings growth has turned to faster trend, people might see this as a new normal and pay higher prices. This applies also to the housing markets. When assumptions about price trends are based on past

prices and other people's guesses on price trends, there becomes a belief that the recent trend is normal, willingness to pay more increases and sets the trend in place, which creates credibility to the belief. Eventually, prices will set to normal, but before that, they will get out of control. Since houses are mainly bought with loans, the banking industry was deeply involved in the bubble and when it burst, the banking industry suffered greatly as well. (Friedman & Posner 2011; Smith 2016.)

The banks had given risky mortgages to clients with poor credit histories and further given the risky mortgages to the big banks who further put them into pools and sold them further to investors. These pooled mortgages were called collateralized debt obligations that were used for back securities. Banks also used mortgage-backed-securities, that were also financial products sold further to hedge funds. The investors who were the end buyers of these products were not afraid of the risk of default since they had credit default swaps as insurance. This combination of derivatives was very profitable, but these derivatives needed mortgages to back the securities. This led to an increasing demand of mortgages and banks offered them to almost everyone since they could gain profit from the derivatives. (Amadeo 2016; Amadeo 2017; The origins of the financial crisis crash course 2013.)

The fall of the housing prices started after the late 2005 and lasted until 2007. This was very problematic to those homeowners who had taken mortgages beyond their payment capacity. They could not take care of their payments or sell their houses, and hence, the housing market bubble burst and created a banking crisis in 2007. (Amadeo 2016.)

1.4 Impact on the financial sector

At an international level, national financial authorities and standard setting bodies are coordinated by the Financial Stability Board (FSB). It was established in the beginning of 2009 and it brings together national authorities that are responsible for financial stability, and that mostly are from the G-20 countries. A great number of financial reforms have been made in order to repair and prevent the damage to the financial systems and economies after the financial crisis. (Claessens & Kodres 2014, 8.)

Basel III was developed by the Basel Committee on Banking Supervision in order to enforce the regulations, supervision and risk management in the banking sector. (Basel III: international regulatory framework for banks). It has three pillars of which the first consists of capital, risk coverage and containing leverage. The next is about risk management and supervision, and the third one focuses on market discipline. These are all for capital requirements, and the other large part concerns liquidity. The liquidity coverage ratio is required to be on the level of standing a 30-day stress scenario to cover the outflows. The capital adequacy requirements have increased as well as the supervision. The forms of the capital are required to be better especially within the core equity. The securitization model has had enhancements and some of the over-the-counter (OTC) derivatives have been reformed. For example, the capital treatment for certain complex securitizations has increased. (Claessens & Kodres 2014, 8-9; Basel Committee on Banking Supervision reforms - Basel III.)

1.5 Research problem and research questions

Adams, Raeside and Khan (2014, 2) describe why research is undertaken in the first place as follow:

“Research is undertaken in order to enhance our knowledge of what we already know, to extend our knowledge about aspects of the world of which we know either very little or nothing at all and to enable us to better understand the world we live in.”

For this thesis, the author chose the topic based on her interests and motivation. After reviewing the literature regarding the topic, the research problem was defined. Once the topic is chosen, the approach to the research process can be determined. This can be done by developing a hypothesis in case there is information already available for making a prediction of the results. Alternatively, this can be done by developing research questions, which was more suitable for this study, since it allowed the research process to be exploratory and required data collection and analysis before drawing conclusions. (Research Questions and Hypotheses.)

The research problem for this thesis is the following:

- How has the financial performance developed in the 21st century in Handelsbanken?

The research questions for this thesis are the following:

- What is the correlation between risk and performance?
- Has the financial crisis had an effect on the development of performance and risk?

2 Theoretical framework

2.1 The history of the banking industry in the Nordic countries

Banking industry in the Northern Europe covers Finland, Denmark, Norway and Sweden. All the countries share a high degree of cultural homogeneity, which gives them a potential to create a serious financial market. Sweden has the oldest existing central bank in the world, dating back to 1668. Commercial banks and other private banks emerged in the Nordic countries rather quickly after the establishment of central banks. (Howells & Bain 2005, 153.)

All the Nordic countries were dominated by relatively large domestic banks. These banks were under protection from the competition of foreign banks and still subject to wide regulation and exchange controls. In the mid-1980's this changed, and the Northern Europe faced its own financial crisis. Deregulatory measures were made to eliminate credit and interest restrictions. The Northern financial market was opened to cross-border capital flows, which accumulated new markets for a vast range of financial assets. Due to the opening of the markets, a credit boom was created, the inflation rates rose and bubbles in the property and equity market were created. In the 1990's, most of the export markets for the Nordic countries went into a recession, which led the real interest rates in the Northern Europe to unexpected levels. Due to these factors, the bubbles burst and created bankruptcies as a consequence. Furthermore, this led to a deep recession and to a banking crisis in the Nordic countries. Even though the crisis was over within few years, it reformed the

Nordic financial sector. Now it was characterized by a series of domestic and cross-border mergers and acquisitions and in some cases large financial groups of banking and insurance combined. (ibid., 153-154.)

2.2 The banking industry now

In the course of the last few years, the banking branch has changed enormously. Nowadays, the banks are struggling to adjust themselves to the modern world and its expectations. Schubert (2015) states four interesting and very accurate points of what the banks are facing today in her article. The first is the most obvious issue for all businesses: not making enough money. The banks are pressured to make enough return on investment or return on equity to such extent that will please the shareholders. The second point is customer expectations. The business environment has changed, and the customers are now more in the center of everything. The customers are assuming new technologies fast, and the banks must keep up in delivering the level of services that the customers demand. This is especially true when delivering services through different technologies. This leads to the third point, which is financial technology. This technology is changing the way in which traditional banking has been done. Banks are forced to modify their operations in every aspect, and with regard to technology, this is not a quick process. The last point is regulatory issues. The requirements and regulations have increased in the last decades, and nowadays banks are pressured to all of them into account in their core business operations. (Schubert 2015.)

Where the previous era of retail banking was defined by the “boom-to-bust” expansion of consumer credits’, digital banking defines the current one. Transfer systems’ and payments’ rapid innovation enabled by digital companies are characteristics to this era. For banks to prosper, they must take the advantage of digital innovations. Many banks have already upgraded web and mobile technologies and realized that success requires adopting the culture of digitally native companies. According to Broeders and Khanna (2015), new inflows of revenue coming from digital sales are forecasted to be half or more by 2018 in the UK, Scandinavia and Western Europe. The digital age will be a part of every aspect of banking operations now and in the future. (Broeders & Khanna 2015.)

2.3 Main functions of a bank

Banks are financial institutions that provide payment mechanisms and means of lending and borrowing. The main characteristic is to offer loans to borrowers and create assets for lenders. Banks do this by accepting deposits, which they further lend to the borrowers. (Howells & Bain 2005, 10.) Banks play an important role in the monetary system since they are one of the biggest custodians of the money supply due to deposits. (Sloman & Garratt 2010, 303).

According to Howells and Bain (2005, 33), it can be said banks take a vast number of small, short-term deposits in order to create fewer large loans with a longer maturity. This, which is the basic operation of a bank, is explained more in detail by Mishkin (2007). It is called asset transformation when a bank makes profit by selling liabilities with one set of characteristics and uses the proceeds to buy assets with, a different set of characteristics. To simplify, a deposit by a customer can provide the funds to enable the bank to create a mortgage loan to another customer. (223.) However, it cannot be stated that deposits create loans. Rather, the bank responds to the demand of loans. Customers do not demand deposits from the bank but they do demand loans from it. The demand and supply are shifting constantly. When one takes a loan, one can say that the other receives a deposit. Therefore, it is rather the loans that create deposits. (Howells & Bain 2005, 33.)

Besides offering loans and taking deposits, banks also offer a payment mechanism. All the payments made go through the CHAPS system. When a customer makes a payment, the payment goes through the system to verify that the funds are available for the action. (ibid., 37.) Banks also offer means of transmitting payments, such as different types of bank cards, credit cards, internet and mobile banking. (Sloman & Garratt 2010, 304.)

2.4 Bank as a company

A bank's balance sheet, as well as that of any other business', consists of liabilities and assets. The liabilities mainly consist of deposits since those are liabilities to banks. The customers have the right to claim the deposits at any given time. There are different types of deposits. Sight deposits can be withdrawn immediately without

any notice in advance. Time deposits cannot be withdrawn immediately but require a notice beforehand. The third is certificates of deposits (CDs). A bank issues a one to a customer, usually a company, and the customer can resell it forward to another party. The last one is sale and purchase agreements (repos). This is an action between banks. A bank can sell some of the financial assets to another bank, or a central bank can repurchase them at a fixed price on a fixed date. (ibid., 305-308.)

The other side of the balance sheet is the assets. A bank's assets are claims that are held on others. These are divided in three categories of which the first one is cash and reserve balances in the central bank. In the Eurozone, this means balances held in the ECB. Part of the assets are held as cash to meet a sudden demand from customers, such as in sight deposits for current accounts. The other part is held as reserve balances in the central bank. These can be called a bank's current accounts that can be withdrawn as cash on demand. The second and the third part are loans. These are divided in two groups short-term- and long-term loans. Short-term loans are, firstly, market loans, which are made primarily to other banks and financial institutions. These can be claimable on demand or at a 24-hour notice. Secondly, bills of exchange, which are loans to companies or government. These are promises to the holder to pay later, usually three months later. They have a specific sum and a maturity date. The last is reverse repos, where another financial institution is purchasing the assets. The other party commits to repurchasing the assets on a set date. The assets are usually temporarily held, for example, for a week or a shorter time. (ibid., 308-309.)

2.4.1 Liquidity

For a bank, liquidity acts as a measure of the ability to quickly find cash to meet the demands set for it. Banks can generate the needed cash in different ways: by selling their assets, holding quickly sold securities with minimal loss or with direct cash holdings on currency or the Central Bank's account, for example. Onaran (2016), compares the liquidity of a bank to a person drinking water. The liquid used up during the day needs to be replaced with a certain amount of drinking water. For a bank, the water is replaced with money and sometimes a bank needs to find ways to generate cash to prevent the liquidity from draining. As well as a person has

requirements for how much to drink water per day, a bank also has restrictions on liquidity. (Elliott 2014, 2; Onaran 2016.) These are explained more in detail in the coming Chapter 2.5.2.

2.4.2 Solvency

Solvency means that a bank has enough assets to cover its liabilities. A solvency crisis occurs when a bank cannot meet its liabilities through assets sold and therefore, it is unable to pay its debt. This happened in the financial crisis to the Lehman Brothers, which could have accessed temporary funds from the Federal Reserve, could not meet its liabilities. Even though liquidity and solvency are closely related, the difference during a crisis is that the liquidity issue is a temporary cash flow problem whereas insolvency occurs even though there is an access to temporary funds, but the initial problem of excess debt cannot be solved. (Pettinger 2012.) The capital requirements related to solvency from Basel III are explained further in Chapter 2.5.2.

2.4.3 Profitability

For all businesses, the primary goal is to make profit since, in the long run, a business cannot survive without being profitable. Hofstrand (2009) even states that profitability is the most important measure when valuing the success of a business. Traditionally, banks have relied on interest rate spreads for profitability, which means that the profit for a bank is earned by the difference between lending rate and deposit rate. When the interest rates are low, as in this time, the credit spreads tighten since they reduce the banks' interest rate receivables faster than the interest expenditures, which represents challenges for the financial sector. (Hofstrand 2009; Ross 2016.) In a larger sense, the profit consists of the difference between revenues and costs. In addition to interest receivables, revenues consist of fees and commissions on other services, whereas the costs include wages and salaries, premises and capital along with the interest paid to the depositors. Profitability also depends on the characteristics of an individual bank, such as business strategy and organizational structure as well as the characteristics of the market in which a bank

operates, for example, market competition and local economic conditions. (Howells & Bain 2005, 235; Medley.)

2.5 Performance measures in the banking sector

Performance measures can be used both internally and externally. Internally they are used by managers and executives to help them to grow, improve, reward and learn. Externally they are used for financing, investing and benchmarking. (Aliabadi, Balsara & Dorestani 2013, 22.) Financial accounting information can be used to measure a company's performance. Financial ratios enable comparisons between companies in the same business field and between periods. They also enable tracking profitability and efficiency. Ratios might not be meaningful themselves as numbers. However, they become meaningful after they are compared with historical data and field averages. Investors, for example, use ratios to compare companies. Since there are many ways to use information to measure performance, choosing the right method is important in order to monitor the wanted part of a company's performance. (Basu; Freedman; Marsh 2012, 36.) After all, financial ratios assist to identify and solve business problems. (Keown, Martin & Titman 2011, 76). In the next chapter, the types of performance measurements are explained more in detail and divided into three groups: liquidity, solvency and profitability. The last chapter discusses the regulation concerning performance.

2.5.1 Types of performance measures

In this chapter, the performance measures are divided into three categories, which are derived from the three pillars of a bank as a company: liquidity, solvency and profitability. Liquidity ratios are measurements that show the ability of a company to cover its expenses and short term payment obligations. Solvency ratios are measurements on the financial health, stability and viability of a company and its ability to repay debt. Failure for a company to comply with short-term ratios, also referred to as liquidity ratios, may cause payment risks, whereas failure to comply with long-term solvency ratios may cause a full-fledged bankruptcy. (Hundal 2017.)

Liquidity ratios

Current ratio

The current ratio compares the current assets with the current liabilities in order to assess a company's liquidity position to meet its short-term commitments. The current assets are referred to as assets that can be converted into cash usually within a year, whereas the current liabilities are liabilities, which will fall due to payment within a year. A current ratio of 2:1 is seen desirable, but the actual ratio can be equal or less or more. The higher ratio indicates that a company is capable of paying out the short-term liabilities when they fall due. On the contrary, a lower ratio indicates that a company may not be able to meet its obligations. It is important to pay attention to the composition of current assets since some assets are more liquid than others even though the current ratio is the same. Cash is the most liquid asset and, therefore, more liquid than inventories, for example. It is worth noticing that if the current ratio is too high, it might indicate that the cash is not utilized in an optimal way. (Madegowda 2006, 104-105; Hundal 2017.) The current ratio is calculated by using the following formula.

$$\text{Current Ratio} = \left(\frac{\text{Current Assets}}{\text{Current Liabilities}} \right)$$

Figure 1. Formula of current ratio (adapted from Madegowda 2006, 103)

Quick ratio

The quick ratio is used as an improvement to complement the current ratio. It is concerned with the relationship between liquid assets and liquid liabilities. As explained in the previous chapter, inventory is less liquid than cash and it is in fact the least liquid asset at all since they require more time to become liquid. The value of inventory is also fluctuating. Therefore, in the quick ratio, the liquid assets exclude the inventory and pre-paid expenses. It focuses on the assets that can be immediately or on short-term notice converted into cash and without loss or decrease in value. Pre-paid expenses are also excluded since they cannot be usually converted into cash. Liquid liabilities refer to current liabilities excluding the bank overdraft. The quick ratio of 1:1 is considered to be good current financial position.

In order to get an idea of a company's short-term solvency position, both current- and the quick ratio should be taking into consideration. For the quick ratio, the composition of quick assets must be analyzed carefully. (Madegowda 2006, 105-106.) The quick ratio is calculated by using the following formula.

$$\text{Quick Ratio} = \left(\frac{\text{Quick or Liquid Assets}}{\text{Quick or Liquid Liabilities}} \right)$$

Figure 2. Formula of quick ratio (adapted from Madegowda 2006, 105)

Cash ratio

The cash ratio is the toughest and most conservative ratio of all of these three ratios that are concerned with the short-term assets to short-term liabilities. The cash ratio excludes all the other assets and only allows the most liquid assets to count against liabilities. These are cash and marketable securities. One can argue that this would be the most realistic ratio of these three due to it excluding the inventory and collectability of company's receivables. On the other hand, this ratio gives cash an overestimated utility value whereas until a company does something with the cash it has a low ability to generate a reasonable return. (Peavler 2016.) The cash ratio is calculated by using the following formula.

$$\text{Cash Ratio} = \frac{\text{Cash}}{\text{Current Liabilities}}$$

Figure 3. Formula of cash ratio (adapted from Berk & DeMarzo 2017, 71)

Solvency ratios

Total debt ratio

This ratio indicates a long-term solvency of a business since it shows how much the company is in debt. It shows the total debt in comparison to the asset base of a

business. The ratio higher than 1 indicates that a business is in a bad condition therefore the ratio should be 1 or less in order to indicate a good position. Higher the ratio, the danger of becoming insolvent or bankrupt increases. (Ward 2016.) The total debt ratio is calculated by using the following formula.

Total debt ratio = Total debt/Total assets

Figure 4. Formula of total debt ratio (adapted from Ward 2017)

Debt-equity ratio

A company's equity is divided into owner's equity and outside debt: internal and external equity. An important factor impacting a company's long-term solvency position, is to know the proportion of owners' and other outside funds. The debt-equity ratio establishes the relationship between what a company owns and what it owes, the creditors' and owners' claim on assets. It analyses the extend, which the company's assets are financed by owners and outsiders. The debt capital is preferred to share capital due to following advantages. First, the cost of the capital differs. When entering the agreement, the cost of the debt capital is fixed and agreed by both parties. Second part is reduced tax liability. The interest charge is deductible. Therefore, using a debt capital a company can enjoy tax benefits, which is not the case with share capital. However, excess debt capital tends to cause insolvency. Therefore, when measuring company's obligations to outsiders in the relation to funds provided by owners, it is imperative to have this relationship ideal. (Madegowda 2006, 119-120.) The debt-equity ratio is calculated by using the following formula.

$$\begin{aligned} \left. \begin{array}{l} \text{Debt-Equity} \\ \text{Ratio} \end{array} \right\} &= \left(\frac{\text{Debt Ratio}}{\text{Equity Ratio}} \right) \\ &= \frac{\left(\frac{\text{Debt}}{\text{Total Assets}} \right)}{\left(\frac{\text{Equity}}{\text{Total Assets}} \right)} = \left(\frac{\text{Debt}}{\text{Total Assets}} \right) \times \left(\frac{\text{Total Assets}}{\text{Equity}} \right) = \left(\frac{\text{Debt}}{\text{Equity}} \right) \end{aligned}$$

Figure 5. Formula of debt-equity ratio (adapted from Madegowda 2006, 120)

Long-term debt ratio

Long-term debt ratio indicates relation of total amount of long term debt and the amount of total assets of a company. If a company has a high amount of debt that it might not be able to handle, it is not in a good position to meet all its financial obligations and further not in a good position to pay out dividends. Therefore, ratio being more than 1 indicates that a company has more long term debt than it has assets. (Nguyen 2017.) The long-term debt ratio is calculated by using the following formula.

$$\text{Long-term Debt Ratio} = \frac{\text{Long-term Debt}}{\text{Total Assets}}$$

Figure 6. Formula of long-term debt ratio (adapted from Nguyen 2017)

Profitability ratios

Gross profit margin

Gross profit margin expresses the sales percentage and indicates a company's profit after the cost of goods sold are being paid off. It is a measure of how efficiently raw materials and labor are used during the production process. Value varies depending on a company and an industry and it can be calculated on single products or on the entire company. Madegowda (2006), advises that the rate should be calculated for each product separately in a multi-product case since a high gross profit made in another product may conceal the loss arising in another. Higher profit margin indicates that a company is efficient and produces a product at a relatively lower cost. It also indicates the financial health of a company hence the value indicates gross profit for every dollar of revenue a company is earning. The higher the value, the more reasonable profit a company can make on sales. (85; Wilkinson 2013.) The gross profit margin is calculated by using the following formula.

$$\text{Gross Margin} = \frac{\text{Gross Profit}}{\text{Sales}}$$

Figure 7. Formula of gross profit margin (adapted from Berk & DeMarzo 2017, 69)

Net profit margin

This ratio indicates that after a company has paid its interest and taxes, the fraction of each dollar in revenues for equity holders available. It reflects the company's profitability as a percentage of net sales. This ratio is used to evaluate the business ideally when maximizing profit dollars. A high ratio is desirable since it would ensure a higher return to shareholders. On the other hand, it also indicates that the company has its own internal resources therefore future business decision, an expansion for example, might be able to conduct without financial problems. With a higher ratio, the company would be capable of withstanding possible future unfavorable conditions. (Berk & DeMarzo 2017, 70; Hoare 2016; Madegowda 2006, 95.) The net profit margin is calculated by using the following formula.

$$\text{Net Profit Margin} = \frac{\text{Net Income}}{\text{Sales}}$$

Figure 8. Formula of net profit margin (adapted from Berk & DeMarzo 2017, 70)

Operating profit margin

This ratio indicates the amount a company earns for each dollar of sales before interest and taxes. Preferably, it is expressed as a percentage. Further, the ratio shows the margin to cover the financial expenses, interest and tax for example. Therefore, higher ratio is less favorable since it would leave a smaller margin to meet financial expenses. (Berk & DeMarzo 2017, 69; Madegowda 2006, 87-88.) The operating profit margin is calculated by using the following formula.

$$\text{Operating Margin} = \frac{\text{Operating Income}}{\text{Sales}}$$

Figure 9. Formula of operating margin (adapted from Berk & DeMarzo 2017, 69)

2.5.2 Regulation

The Basel Committee on Banking Supervision have developed restrictions on liquidity in Basel III on Liquidity Coverage Ratio (LCR) and on High-Quality Liquid Asset Categories (HQLA). The LCR promotes the liquidity risk profile of a bank on short-term resilience on a 30-day stress scenario to ensure that they have sufficient HQLA to survive. The aim is to ensure that there is an adequate stock of cash or assets in a bank convertible into cash no or little loss of value in private markets. The stock of HQLA should enable s bank to survive until the day 30 at the minimum. Time period chosen is by which the management and supervisors are assumed to take appropriate corrective actions or a bank is resolved in an orderly way. It also gives additional time to central banks to take necessarily regarded appropriate measures. (Basel III: The Liquidity Coverage Ratio and liquidity risk monitoring tools 2013, 10.)

The Basel III also states new requirements on capital in Tier 1, which is related to solvency. Quality and level of the capital is enhanced, which means that the focus on common equity is higher. The minimum of risk-weighted assets will be raised to 4,5% compared to the 3,5% in 2013, and the transition period to 4,5% is set to be completed in the year 2019. Capital conservation buffer together with the minimum common equity will be set to 7% in 2019 including the common equity of 2,5%. The transition period from 2013 at 3,5% should reach the 7% in 2019. (Basel Committee on Banking Supervision reforms - Basel III; Basel III phase-in arrangements.)

2.6 Risk management of the banking sector

This chapter focuses on risk. The concept of risk is defined following with definitions on different types of risks. After, the risk measurements are explained and the last chapter introduces regulation concerning risk.

Risk as a term is closely related to the term exposure since risk is the probability of loss whereas exposure is the possibility of loss. They have a small difference in their meaning and often used interchangeably. According to Horcher (2005), the risk provides the basis for opportunity while it arises as a result of exposure.

Furthermore, the risk and return have also a relationship since the higher the risk the

higher the return. Therefore, risk is the probable variability of returns. It is the likelihood of losses arising from different types of events. (1-2; Hull 2015, 2.)

In banking, the term risk is referring to the potential loss that may occur to the bank as a consequence of some events. The events are associated with uncertainty, that they have the potential to cause loss and this is where the risk arises from. According to Ghosh (2012), banking risk has two dimensions. First, the uncertainty that a sudden event may happen or may not happen and secondly the intensity of the impact of the event happening, if the risk materializes, what will be the likely loss. Risk is not an isolated event whereas it is essentially a group of characteristics. When considerable amount of transactions is made, a few of them may cause loss to a bank even though every one of them carry the element of risk. (3.)

2.6.1 Types of risks

Risk can be categorized into financial- and non-financial risks. Financial risk causes loss to the bank directly whereas non-financial risk affect the bank's financial condition indirectly. Financial risks include credit-, market- and operational risk. Reputation risk, legal risk, money laundering risk, technology risk and control risk are classified as non-financial risks. Financial risks are measured by numerical terms whereas non-financial risks are indicated in the term of severity since they are often unquantifiable. In banking, risk management is concerned of the control and assessment on both categories of risk. (ibid., 4.) This thesis will focus on the financial risks listed before, which are explained more in detail below.

Credit risk

In banking, credit risk means that the borrower or other counterparty will fail to meet its obligations according to the terms agreed. The risk arises when there is uncertainty by the counterparty with the repayment of the bank's dues. Ghosh (2012), divides credit risk to two dimensions. First, the possibility of a default by the borrower or a counterparty on the credit exposure of a bank. The second part is that when a default occurs, what is the amount of loss the bank may suffer. The amount of risk from a default can be as high as the entire liability. When a financial institution grants a loan, for example to a company, there might be a requirement for collateral.

This is an important way of managing the credit risk. (5-6; Horcher 2005, 104; Hull 2015, 383.) Financial institutions, such as banks, have considerable credit exposure due to their emphasis on lending and traditionally, credit risk has been associated with it. However, credit risk is a concern of other businesses as well. It exists whenever there is an expected payment or performance by another organization and a likelihood of loss arising by default or a failure. (Horcher 2005, 103.)

Market risk

Market risk arises from the movements in market risk variables that can cause losses. These market risk types are commodity prices, equity prices, security prices, interest rates and foreign exchange rates. The adverse changes in these variables lead to the erosion in the value of assets and earnings. Therefore, the impact of a market risk is on the bank's earnings and capital. Banks are associated with market risk in both individual transactions and in portfolios: with the daily transactions such as sale and purchase of foreign currencies and in portfolios of investments in corporate bonds and equities, for example. (Ghosh 2012, 283-284.)

Due to banks undertaking sales and purchase of derivative products and different financial instruments to make a profit in short-term, market risk mainly exists in the trading book. However, market risk also exists in the banking book due to banks holding investments in their books for long-term to earn interest and to further make gains from redemption values on maturity dates. In a market where the volume of transactions is large and the interest rates and foreign exchange rates are highly volatile, the occurred market risk can severely erode bank's profit since the changes in financial market variables leads to fluctuations in the bottom lines of banks. The larger the volatility, the larger the potential amount of loss or gain. (ibid., 284.)

Operational risk

There are different ways of defining operational risk. Compared to credit risk and market risk, it is less visible and not as easily identifiable and predictable since it remains hidden in transactions and activities. The possible failures of the business process and the control system of a bank are sources for operational risks. (Hull 2015, 481; Ghosh 2012, 389.)

Hull (2015), presents different ways of defining operational risk. First, when removing the impact of credit losses from the income statement and the profit and losses from market risk exposure, the estimation of operational risk would be the variation in the resulting income. The other definition is that a risk arising from the operations such as risk of mistakes processing transactions and making payment etc. The first definition is seen as too broad whereas the second is seen as too narrow. (481.)

The operational risk can also be seen as all internal risks. This definition includes more than risks arising from operations whereas risks arising from inadequate controls: the risk of employee fraud, for example. Banking regulators have a definition on operational risk, which includes more than just internal risks. The impact of external events is also included in this definition however, even though it includes the legal risk, it excludes the reputations risk and risk resulting from strategic decisions. (ibid., 481.) Hull (2015, 481), states that the Basel Committee on Banking Supervision defines the operational risk in 2001 as such: "The risk of loss resulting from inadequate or failed internal processes, people, and systems or from external events."

2.6.2 Types of risk measures

Beta

Beta is used to compare the volatility of a stock or investment to the overall market. It measures the risks in relation to the market as a whole. Beta 1 indicates that the risk is mutual level with the stock market hence the stock price will move with the market. Beta indicating less than 1 shows that the stock price is remaining less risky and volatile. For example, when the beta of stock X is 0,5 it follows the movement in the overall market. However, when market goes up/down by 1% the stock price increases/decreases only 0,5%. Beta indicating more than 1 shows that the stock price is riskier and more volatile compared to the overall market. For example, beta of stock X is 1,3 means that it is 30% more volatile to the market as a whole. Beta can also be negative even though, in most cases it is positive. A negative beta indicates that the stock moves to the opposite direction from the market. (Vaidya; Russel 2014; Aldridge 2011.)

VaR - value at risk

VaR is a measure of market risk even though from historical perspective, in most banks these measures were developed regarding credit risk. VaR is defined as the loss in value at specified time horizon that is exceeded with the set probability. Therefore, with the X% confidence over a holding period of T days, VaR is the maximum loss that can occur. Typically, it is estimated with the confidence level of 95% or 99% and it measures the possible loss under normal, unstressed conditions. The Basel market risk charge is traditionally used as a rolling observation period of 12 months at least, with the 99% VaR of a 10-day holding horizon. (Choudhry & Alexander 2013, 30-32, 158; Saita 2007; Tapiero 2010, 90.) The formula of VaR is following.

$$P_{VaR} = P(\xi < -VaR) = \int_{-\infty}^{-VaR} P_T(\xi) d\xi$$

Figure 10. Formula of VaR (adapted from Tapiero 2010, 90)

Capital asset pricing model – CAPM

The Capital Asset Pricing Model (CAPM) was introduced by William Sharpe and John Lintner in the 1960's and marked the birth of asset pricing theory. It is still used widely since it offers predictions on how to measure risk and the relation between risk and expected return. How the investment contributes to the risks of the market portfolio should be reflecting the investment's expected return required. (Hull 2015, 8; Fama & French 2004, 25.) The formula of CAPM is following.

$$E(R) = R_F + \beta[E(R_M) - R_F]$$

Figure 11. Formula of CAPM (adapted from Hull 2015, 8)

The $E(R)$ stands for expected return and β stands for beta of the investment. When β is 0, the expected return is R_f , which stands for risk free since there is no systematic risk. When β is 1, systematic risk is the same as in the market portfolio, and the expected return is $E(R_m)$, which stands for expected return on the market portfolio. (Hull 2015, 8-9.)

2.6.3 Regulation

Risk regulators primary goal is to prevent systemic risk or the risk of collapse of the entire system due to interconnections between financial institutions. “Too big to fail” thinking is related to this phenomenon since large institution cannot be allowed to fail for the fear of them containing others, creating a domino effect, which would trigger others to fail. The systematic risk materialized in 2008 when authorities let, for example, the Lehman Brothers fail. (Bessis & O’Kelly 2015, 13-14.)

After the financial crisis, several measures were introduced by Basel regulators to make banks more resilient. Capital adequacy is the core concept of risk regulators aiming to make sure that the banks have enough capital to sustain their risks. The quality and the quantity of capital is aimed to be reinforced and the credit risk treatment is focused on risk-weighted assets and based on internal ratings of a bank. Counterparty’s credit risk treatment has been enhanced with the credit-value adjustment. It measures the impact of weakening credit standing on derivative instruments’ value. Regulation on performance, explained earlier in Chapter 2.5.2, and the regulation on risk are closely related and overlapping since liquidity and solvency become intertwined under stressed conditions. (ibid., 14, 18-20.)

3 Methodology

Adams, Raeside and Khan (2014, 5), describe research methodology as the philosophy and science behind all research since it goes deeply into how we know what we know, whereas a research method is a way to conduct and implement the research. This chapter explains more in detail the research approach, data collection methods and data analysis methods of this study.

3.1 The research design

In general, there are two main types of research approaches: quantitative research and qualitative research. The researcher decides the types and combinations of research forms that will suit best for the goal of the study. (ibid., 6.)

Quantitative research has a numerical focus on the data, whereas qualitative research has a non-numerical focus on the data. When using numerical data in the data collection or generating numerical data from a data analysis procedure, the quantitative approach is predominantly used. The qualitative approach is predominantly used when generating or using non-numerical data. Therefore, it can be referred to as data other than words; pictures and videos, for example. (Saunders, Lewis & Thornhill 2009, 151.)

The author decided to use both quantitative and qualitative research approaches, which further determined this thesis as a case study, which, as Rowley (2002) states it, can be a mix of both approaches. The chosen approach is supported by the research questions of this thesis since case studies offer a deeper and more detailed investigation on questions starting with how and why. (17-18.)

3.2 Data collection methods

Collecting information can be done by various methods, but all of them can be placed into two main categories: primary data and secondary data. When researcher collects data for the first time from sources required for the research, it is called primary data. It is unique and specifically purposed for the study in question. The sources of primary data are surveys, questionnaires and case studies, for example. Secondary data is the data that is already available and that has been collected and produced by others. The data has been collected for another purpose that is not directly related to the current research problem of the researcher. Secondary data is easily accessible and includes books, websites and journal articles, for example. (Surbhi 2016.)

The author decided to use more than one data collection method as well as use both primary and secondary data. The primary data was collected from the annual reports

of Handelsbanken for the years 2000-2016. This data was relevant for calculating the performance measurements. Another relevant source of primary data was the Nasdaq Nordic Index 40, which provided data for calculating risk measurements. The secondary data was collected from textbooks, journals, articles and websites related to the topic in order to create the theoretical base for this study.

Since this study also used both qualitative and quantitative research approaches, as stated earlier, the suitable data collection method was chosen in order to include multiple methods, in other words, both approaches and collection methods. To be explicit, the mixed methods approach was used since it combined both approaches and both analysis techniques, which are explained in the coming chapter. (Saunders, Lewis & Thornhill 2009, 151-152.)

3.3 Definition of key variables

This subchapter defines the key variables used in the calculations in order to provide a better understanding of the research. The data analysis process is discussed more in detail in Chapter 3.3.

Covariance is used as a statistical measure, which indicates the degree to which random variables move jointly. (Covariance).

Expected market return forecasts the return of market over a specific time period. (Bank 2011).

Expected rate of return is the extent to which the investment contributes to the market portfolio's risks. (Hull 2015, 8).

Gross profit is the difference between sales revenues and the costs. (Berk & DeMarzo 2017, 63).

Liquid assets, also known as current assets, are assets convertible into cash within a year. (ibid., 59).

Liquid liabilities, also known as current liabilities, are liabilities with the maturity within a year. (ibid., 60).

Long-term debt is financial obligation that has the maturity of more than a year. (ibid., 60).

Net profit, also known as net income, indicates total earnings after all expenses are subtracted from total sales and other income. (Wang).

Operating profit is a company's gross profit net of the operating expenses. (Berk & DeMarzo 2017, 63).

Risk free rate is the earned rate on an asset with no risk. (Risk-free rate).

Total assets are all the current assets and fixed assets combined. (Balance sheet 2016).

Total debt. The debt is not stated directly in the annual reports and, therefore, for this research, debt was assumed consisting of deposits and borrowings from the public, due to the credit institutions and issued securities found in the annual reports.

Total equity, also known as stockholders' equity, is the difference between assets and liabilities. (Berk & DeMarzo 2017, 61).

Total liabilities are all short-term and long-term liabilities combined. (Balance sheet 2016).

Total revenue is all the revenue that a company makes by producing goods or services. (Schoen).

Variance is the measure of spread in a data set. Differences between individual numbers as well as a set of numbers are measured. (Calculating Variance and Standard Deviation in 4 Easy Steps).

3.4 Data analysis methods

As stated previously, the data collection was based on the multiple methods and mixed methods approach. Qualitative and quantitative approaches were used in the data collection as well as in the analysis process. The mixed methods approach is divided into two subsections based on how the collection and analysis methods are used: mixed-method research and mixed-model research. In this research, the latter

was used. This means that, adding to the previously stated, quantitative and qualitative approaches can also be combined in other stages of the research. Quantitative data can be made qualitative, which means converting it into a narrative form in order to be analyzed qualitatively. (Saunders, Lewis & Thornhill 2009, 152-153.) The data was collected and organized in Microsoft Excel spreadsheets. The author created a table for every measurement separately and converted them into figures, which enabled the measurements to be analyzed and see the development during the 21st century.

4 Research results

This chapter describes the research results. First, the results from the performance measurements are explained, following the results from the risk measurements. Subchapter 4.3 combines the results from both performance- and risk measurements and discusses them with relation to each other and to the financial crisis.

This research focused separately on performance and on risk. As explained previously, the data was collected from annual reports and from Nasdaq's website. The time period considered was 2000-2016, which included an important event in the financial sector: the financial crisis. The financial crisis was used as a time divider to discover whether it had had an effect on the development of the measurements. Although the effect could be seen in some of the measurements, no significant effect was found. Another objective was to determine whether there was a correlation between the development of the performance measurements and the risk measurements.

4.1 Performance measurements

4.1.1 Liquidity ratios

Current ratio

The current ratio had an up and down movement within the years 2000-2016. The results show a sharp decrease in the year 2002 where the current ratio dropped by 98% compared to the previous year. However, the value increased sharply in the

year 2003 with only a 0.0043 difference from the value of the year 2001. From the year 2003, the current ratio developed decreasingly until the year 2008 where it turned to an increasing development.

The financial crisis had not had a significant effect on the current ratio since the major decrease occurred prior to the year 2002. However, it is notable that before the year 2008, the value had been overall decreasing whereas after the financial crisis it turned to an overall increasing development. Afterwards, the value increased from 1.0360 (2008) to 1.0547 (2016) excluding a minor downturn in the year 2011.

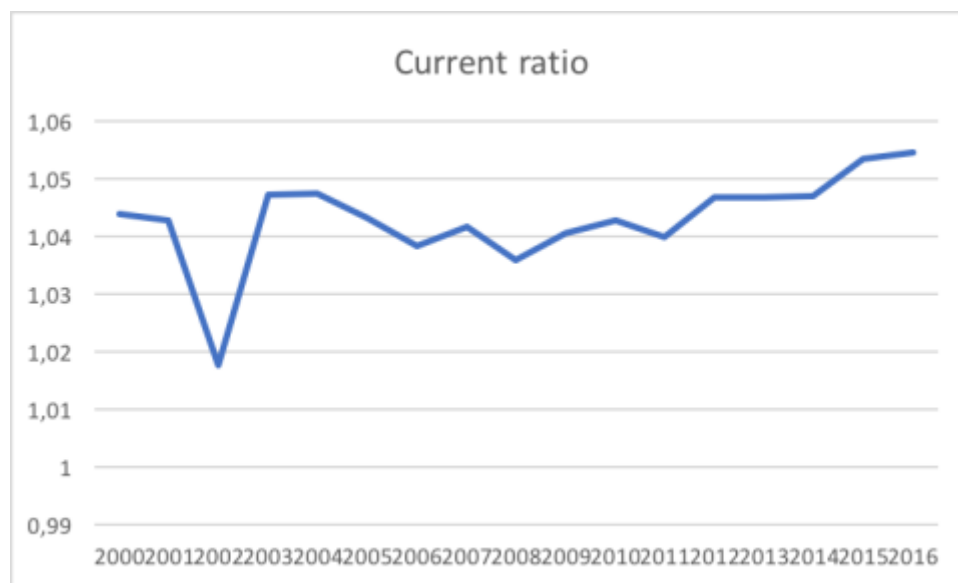


Figure 12. Current ratio

Quick ratio

Quick ratio has had a fast movement in development during the entire 21st century, but the value has moved within a small margin between 0.1602 to 0.2666. The financial crisis had no significant effect on the quick ratio since the development moved up and down during the entire period studied. Most changes in value were in the recent years with the highest value in 2014 (0.2666) and the lowest value in 2016 (0.1602) with the drop of 60%. Before this, the most notable decrease in value was in the year 2006 to 2007 with 71% drop.

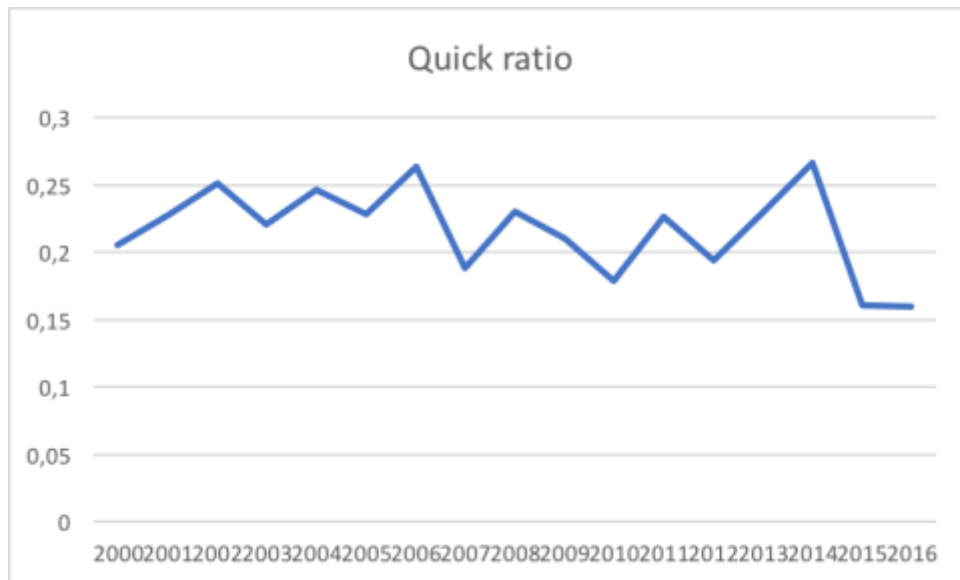


Figure 13. Quick ratio

Cash ratio

Cash ratio has remained stable in the beginning of the 21st century from 2000 until 2007 where afterwards, the value has increased significantly. From 2010 to 2011 the value increased by 385% and right after, in the year 2012 to 2014 the value increased again by 164%. After the peak in 2014, the value dropped suddenly to 0.0908 by 50%. The year of the financial crisis did not have a significant effect immediately however, a couple years later there was a notable effect on the development of the value. The sudden peak and the sudden drop can be explained by the amount of cash in the balance sheet since in the 2014, the amount of cash increased by 135% compared to the previous year and right in the following year when the value dropped, the amount of cash decreased by 45% compared to the previous year.



Figure 14. Cash ratio

4.1.2 Solvency ratios

Debt-Equity ratio

The ratio establishes a relationship between what a company owns and what it owes, as stated in the previous chapters (2.5.1.), and this has an impact on the long-term solvency position of the company. The results show that there was a significant increase in the year 2002 where debt-equity ratio increased 229% compared to the previous year. The major increase to 44.7167 was the result of a sudden decline on total equity since it dropped by 46% from the previous year. However, the ratio adjusted to the normal level with a minimal decrease right away in the year 2003 when the value returned to 16.9740 after having been at 29.5315 in the year 2001.

The financial crisis had not had a notable effect on debt-equity ratio. Overall, the value has been moving steadily between the lowest 16.6437 to the highest 23.4593. However, starting from the year 2008, debt-equity ratio has been declining steadily but without any unexpected development.

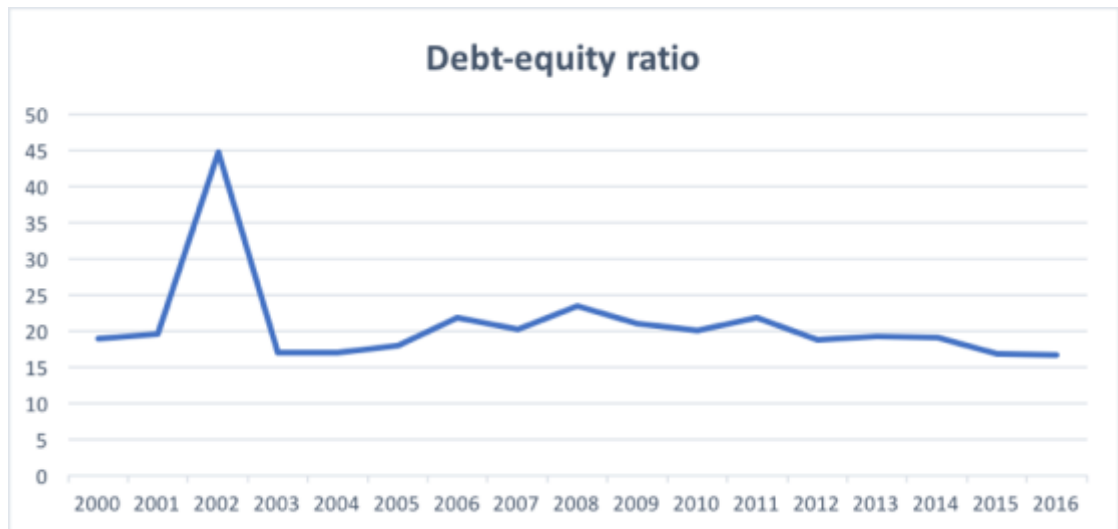


Figure 15. Debt-equity ratio

Total debt ratio

As explained in the previous chapters (2.5.1), total debt-ratio indicates long-term solvency: how much a company is in debt. The results show that the value had been decreasing in the beginning of the 21st century during the years 2001-2005. In the year 2006, the value increased suddenly by 108% and from that year on it has been increasing as far as the year 2016. The financial crisis had had no notable effect on total debt ratio since the increase occurred before the crisis. The sharp increase is explained by the amount of total debt that increased 122% from the year 2005 to the year 2006.



Figure 16. Total debt ratio

Long-term debt ratio

Long-term debt ratio has a stable development during the years 2000-2016 excluding the year 2005 with the highest value 0.1221. The value had a sudden increase from the year 2004 by 238% however the value returned with a sudden drop in 2006 following the decrease until the year 2008. The financial crisis had had no significant effect on long-term debt ratio since the notable change in development happened prior to the crisis. After the crisis, the value has remained stable with a moderate increase in development in the recent years.



Figure 17. Long-term debt ratio

4.1.3 Profitability ratios

Gross profit margin

As explained previously in a chapter (2.5.1.), gross profit margin indicates efficiency and shows the gross profit for every dollar in revenue. Gross profit margin has had a minimal movement during the years 2000-2016 overall, however, the movement has been fastest in the beginning. The year 2002 has been the lowest with the value of 0.4732 following with the highest value in the year 2003 (0.6246). The results show that the financial crisis had not had a notable effect on gross profit margin since the value has been steadily moving within 0.5021 to 0.5574 starting from the year 2006.



Figure 18. Gross profit margin

Net profit margin

Net profit margin is desired to have a higher value since it shows the fraction of a dollar available to shareholders as explained in a chapter (2.5.1.). The results show that there has been movement in the values during the entire time period however, the movement has been fastest prior the financial crisis. Therefore, there is a notable effect of the financial crisis on net profit margin. In the year 2007, the value was at its highest (0.5717) and it took a sharp decline to the year 2008 continuing to the year 2009 (0.3168). Comparing to the value before the crisis, it had decreased 55% in the year 2009. Afterwards, the development of net profit margin has been steadily positive.



Figure 19. Net profit margin

Operating profit margin

The results show that operating profit margin had had a rapid movement in values during the years 2000-2009. In the beginning the value was decreasing however, in the year 2003 it increased sharply 132% to its highest with the value of 0.6296. From there on, the value had been overall decreasing to its lowest in the year 2009 (0.4245). The financial crisis had not had a significant effect on net profit margin however, it is notable that from the year 2009 on, the movement has settled down compared to the years prior the crisis, and the values have increased steadily.



Figure 20. Operating profit margin

4.2 Risk measurements

4.2.1 Beta

Beta has had a positive and a stable development during the entire time excluding the sharp move from the year 2001 (-0.2165) to the year 2003 (-0.0808). The calculations show that beta has stayed negative however steadily approaching the value 0 in the positive side, in the recent years. As explained in the previous chapters (2.6.2.), beta indicates the volatility of a stock to the overall market and with the value less than 1 indicates less risk and volatility. However, since beta is negative, it indicates that the stock of Handelsbanken is moving to the opposite direction

compared to the overall market. The opposite movement is rarely significant since the negative value has moved between -0.0539 to -0.0444 in recent years 2009-2016.

The results show a minor downturn during the financial crisis from the year 2007 to the year 2008 however, the value of the shift was only 0.0035. This shows that the financial crisis did not have a notable effect on beta of Handelsbanken.

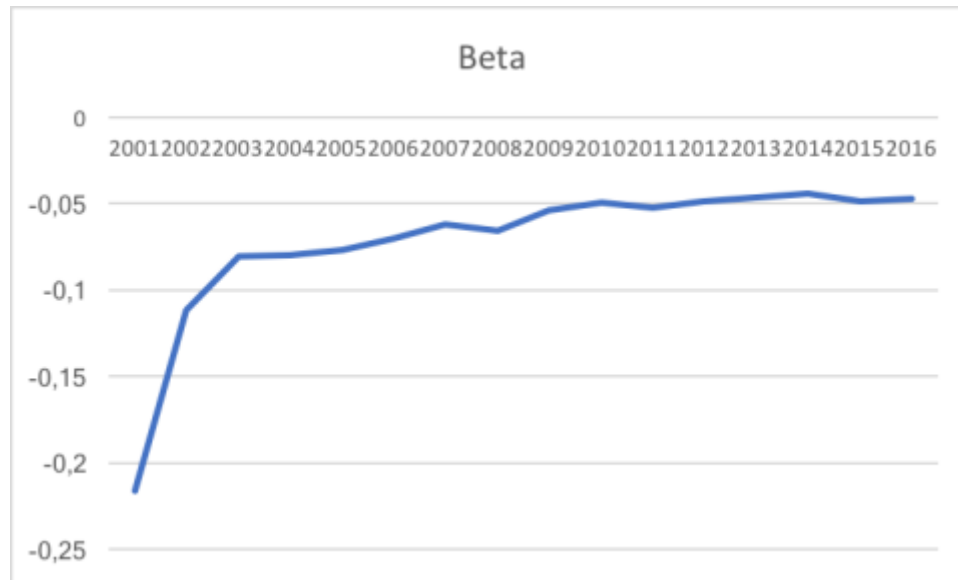


Figure 21. Beta

4.2.2 Value at risk (VaR)

VaR of the share of Handelsbanken was examined with the 99% confidence level since it is a typical confidence level used especially with the Basel market charge as explained earlier in the chapter 2.6.2. The results show that VaR has remained negative during the entire time. In the beginning of the 21st century, VaR has had a rapid development from the year 2001 (-0.0640) to the year 2006 (-0,0429).

The year 2007 showed already a change in the development of VaR however, the effect of the financial crisis can be seen clearly in the year 2008 since the value has changed to -0.0599 from the value of -0.0444 in the year 2007. After the financial crisis, the value of VaR has not recovered to the same level than it was prior to the crisis. Beginning from the year 2008, the development has been steady however, remained within a small margin between -0.0599 to -0.0537 (2016).

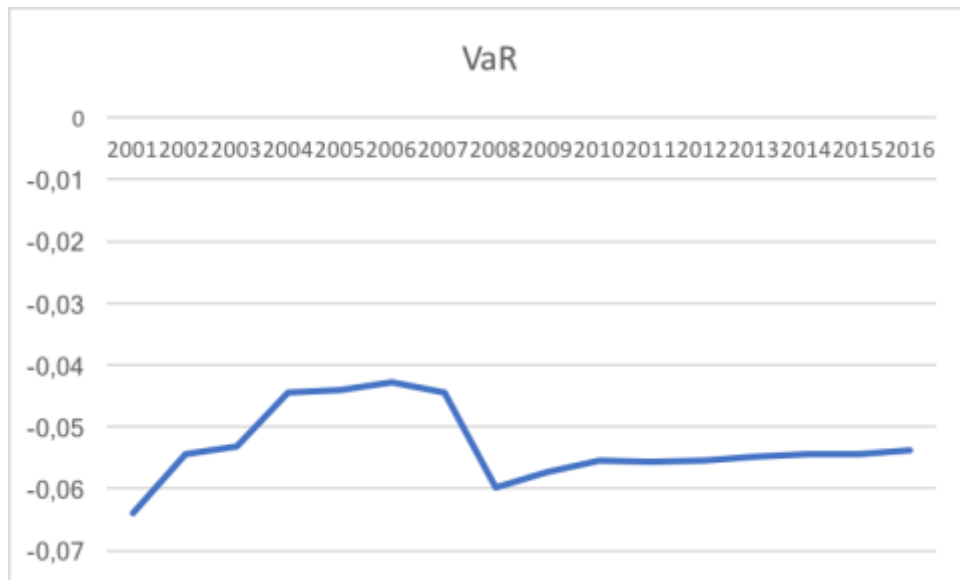


Figure 22. VaR

4.2.3 Capital Asset Pricing Model (CAPM)

As well as the other risk measurements, the expected rate of return has also remained negative during the entire time. The results show that the expected rate of return has remained stable within a small margin between -0.0052 and -0.0054 excluding the years 2001 and 2005. This shows that the financial crisis did not have any effect on the expected rate of return of Handelsbanken since the value has remained identical -0.0053 from 2007 to 2013.

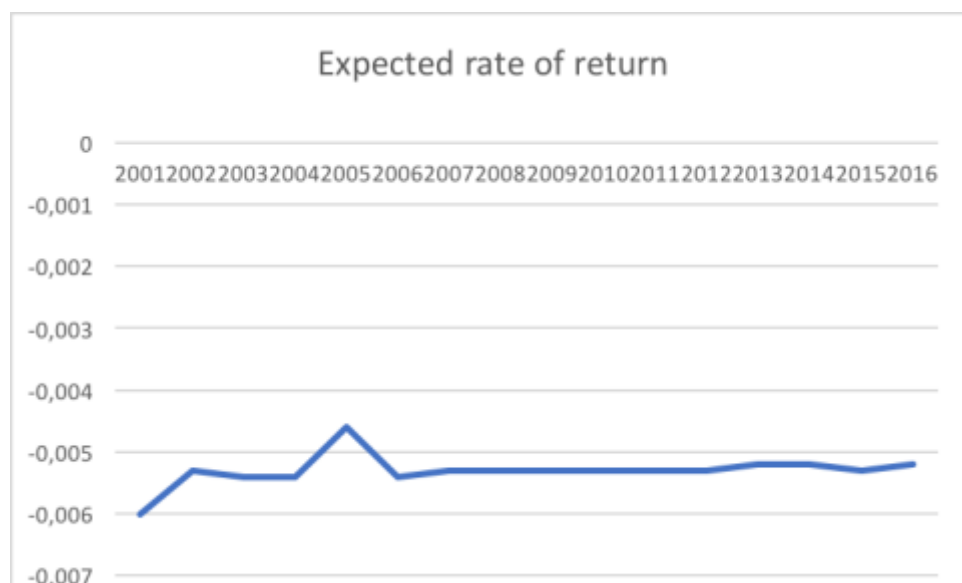


Figure 23. Expected rate of return

4.3 Conclusions

Liquidity ratios differ from each other the most compared to other measurements studied. The financial crisis had had no notable effect on liquidity ratios however, cash ratio had most significant effect on the development of the values after the time of the crisis.

Solvency ratios share a similarity in the beginning of the studied time since in the years 2002-2003 there is a sudden increase in all ratios excluding the long-term debt ratio where the peak was in the year 2005. The financial crisis had not had any significant effect on ratios except total-debt ratio where there is a major effect on the value and since the time of the crisis, the value has not returned to normal level.

Profitability ratios have a similar development during the studied time. Prior to the financial crisis, the movement was rapid in all ratios whereas after the crisis the movement has slowed down and the development has started to increase steadily. All the ratios show that there was a fall in the years 2002-2003 when the value was at its lowest and even though overall, the development afterwards was increasing, the years prior to the crisis were shifting to a downturn.

Risk ratios share a similarity of negative value during the entire time. As well as in the performance ratios, the time before the financial crisis have created fast movement to the development of the values whereas the time after the crisis, the movement has slowed down and remained steady. This shows that the financial crisis had a minimal effect on most of the ratios studied since the movement has remained stable however, only liquidity ratios show a clear effect from the financial crisis since the values have had a fast movement afterwards.

5 Discussion

The aim of this study was to find how the financial performance of Handelsbanken has developed during the 21st century and the research question was supported by research objectives. Different data sources and calculations were used to answer the research question. The research objectives were met to identify the relationship between performance and risk through calculations of performance- and risk

measurements and further should the financial crisis had had an effect on development of the values.

Performance was divided into three groups according to the relevant categories from bank as a company: liquidity, solvency and profitability. The results indicate that the overall performance of Handelsbanken has remained in a good level throughout the 21st century.

The results indicate that the liquidity position of Handelsbanken has remained stable excluding few years with a sudden increase in the value however, total debt ratio has a notable change in development after the financial crisis since the value had a sudden increase in value in the year 2006 and so on the development has been rapidly increasing. As explained in the chapter 2.5.1., the total debt ratio indicates long-term solvency of a company. The liquidity management of Handelsbanken ensures that it is able to meet financial commitment in short- and long-term therefore the funding is well diversified. It is important for Handelsbanken to have an adequate liquidity reserve so that it can continue its operations for predetermined periods during stressed market conditions and without new funding. (Annual Report 2016 Handelsbanken 2016, 55). The sudden increase in the value in the year 2006 is explained by the increased amount of total debt. The assumed variables in total debt such as deposits and borrowing from the public as well as the amount of issued securities have increased notable after the year 2006 and in 2016, liquid assets invested in central banks as well as cash amounted to SEK 225 billion. Also, liquid bonds and other liquid assets amounted to SEK 158 billion. (Annual Report 2016 Handelsbanken 2016, 11.) The statements from the annual report 2016 support the research results, which show that Handelsbanken has a strong liquidity position.

According to the results from profitability measurements, Handelsbanken also has a good financial health position. Notable effect of the financial crisis on profitability can be seen with the net profit margin. In the year 2008 until 2009, the value had a significant drop however, this is explained by the use on internal resources to cover financial crisis. One of the qualities on net profit margin is that a high value indicates that there are internal resources available, which contribute to withstand future unfavorable condition as explained in the chapter 2.5.1. In the annual report 2009, Handelsbanken states that it did not have to utilize any government or central bank

support during the crisis. (2009 Annual Report Handelsbanken 2009, 75.) This explains the drop in the value of net profit margin in 2008 until 2009.

This research has also shown that Handelsbanken has a strong risk management since the time of financial crisis, the studied ratios did not have a significant effect. After the financial crisis, in 2009, Handelsbanken states in its annual report that the crisis has not changed the way they do business. Externally changed conditions are taken into consideration in all business decisions and this strict approach to low tolerance of risk has been manifested in the longer term. (ibid., 75.) The annual report 2016 supports these statements and the results of this research show that Handelsbanken has maintained its low risk tolerance since the development in the values of risk measurements have remained steady. Handelsbanken mentions in the year 2016's annual report that it aims to restrict all other risks as far as possible, such as market and liquidity risks. (Annual report 2016 Handelsbanken 2016, 80).

5.1 Reliability and validity

The essential element of reliability is consistency. It estimates the consistency of measurements, which means that measurement instrument used is reliable when the measurement process is reproducible. However, this does not mean validity, whereas merely that the measuring instrument produces unpredictable results. According to Adams, Raeside and Khan (2014), validity is considered to be more important than reliability since validity indicates the strength of conclusions by concentrating on the accuracy of research measurements. The statement is justified by if there is no accuracy on the measurement, there is no use for reliability since if it is not measuring what it is supposed to, there is no use of consistency. (245, 247-248.)

The reliability of this research is ensured by using commonly known ratios used to analyze company's performance and risk. The calculations are easy to reproduce by following the formulas stated in the theoretical framework. The data used in calculations is collected by annual reports accessible on the website of Handelsbanken and on the website of Nasdaq from where it can be derived anytime

to reproduce the calculations. The key variables used are defined in the methodology chapter in order to provide better understanding of the study to the readers.

The validity of this study should be considered more carefully. The data was collected by the author in hand to excel spreadsheets in order to perform the calculations. Even though, a strict caution was used when collecting the data, there is always possibility for human errors. The studied time period was the entire 21st century from the year 2000 until the year 2016. The length of the studied time period creates credibility to the research results since it is long enough to see and analyze development of performance measurements and development of risk measurements during studied time period.

5.2 Limitations and recommendations for future research

As mentioned earlier, data was collected from generally accessible sources. The access to unpublished information could have deepened the understanding of Handelsbanken's risk management and financial performance actions. However, this type of information was not accessible to the author and might have limited the reliability of this research since it would create difficulties to future research to reproduce this study. Also, interviews or questionnaires would have deepened the understanding of management policies however, this study was conducted by author herself therefore the time and resources were limited.

The studied time period was creditable with the 16 years studied however, longer time period could be studied in the future research in order to determine a more specific view on the development of performance measurements as well as risk measurements. Also, Handelsbanken was studied on a group level, which creates an opportunity for future research to study Handelsbanken more in detail with specific regions separately. The development of performance measurements and risk measurements could be compared within the regions of Handelsbanken to determine differences and coherences. Another interesting point of view would be to reproduce this study with another financial institution operating in the Nordic region to compare the development of performance measurements and risk measurements of Handelsbanken and another financial institution. Since Handelsbanken has a strict

risk management and a long-term perspective in its actions, especially on profitability, it would be interesting to see whether the results of the future research would support these statements when compared to another financial institution operating in the same area.

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Appendices

Appendix 1. Results of performance measurements

Performance measurements									
	Liquidity			Solvency			Profitability		
	Current ratio	Quick ratio	Cash ratio	Debt-equity ratio	Total debt ratio	Long-term debt ratio	Gross profit margin	Net profit margin	Operating profit margin
2000	1.0439	0.2054	0.0057	18.9372	7.9605	0.0500	0.6035	0.4397	0.5650
2001	1.0430	0.2274	0.0010	19.5315	8.0441	0.0481	0.5359	0.3858	0.5216
2002	1.0177	0.2509	0.0071	44.7167	7.7678	0.0532	0.4732	0.3408	0.4769
2003	1.0472	0.2209	0.0068	16.9740	7.6537	0.0610	0.6246	0.4424	0.6296
2004	1.0474	0.2465	0.0054	17.0654	7.7300	0.0514	0.5633	0.4037	0.5847
2005	1.0433	0.2288	0.0053	17.9904	7.4737	0.1221	0.5850	0.4313	0.5951
2006	1.0384	0.2636	0.0030	21.8852	8.0970	0.0745	0.5021	0.4441	0.5040
2007	1.0417	0.1882	0.0081	20.3082	8.1359	0.0628	0.5441	0.5717	0.5430
2008	1.0360	0.2301	0.0339	23.4593	8.1462	0.0526	0.5574	0.4059	0.5127
2009	1.0407	0.2099	0.0261	21.1296	8.2701	0.0605	0.5293	0.3168	0.4245
2010	1.0428	0.1789	0.0292	20.1334	8.2637	0.0579	0.5201	0.3523	0.4719
2011	1.0401	0.2266	0.1124	21.8659	8.4211	0.0488	0.5287	0.3756	0.5040
2012	1.0469	0.1943	0.1091	18.8742	8.4632	0.0473	0.5367	0.4004	0.5009
2013	1.0469	0.2291	0.1485	19.2877	8.6250	0.0480	0.5303	0.3935	0.4979
2014	1.0472	0.2666	0.1787	19.1990	8.6448	0.0518	0.5478	0.3963	0.5014
2015	1.0536	0.1610	0.0908	16.8631	8.5760	0.0648	0.5470	0.4052	0.5076
2016	1.0547	0.1602	0.0859	16.6437	8.6387	0.0645	0.5477	0.3985	0.5061

Appendix 2. Results of risk measurements

Risk measurements			
	Beta	VaR	Expected rate of return
2001	-0.2165	-0.0640	-0.0060
2002	-0.1120	-0.0545	-0.0053
2003	-0.0808	-0.0532	-0.0054
2004	-0.0801	-0.0445	-0.0054
2005	-0.0767	-0.0441	-0.0046
2006	-0.0701	-0.0429	-0.0054
2007	-0.0624	-0.0444	-0.0053
2008	-0.0659	-0.0599	-0.0053
2009	-0.0539	-0.0573	-0.0053
2010	-0.0497	-0.0554	-0.0053
2011	-0.0522	-0.0557	-0.0053
2012	-0.0485	-0.0554	-0.0053
2013	-0.0464	-0.0549	-0.0052
2014	-0.0444	-0.0545	-0.0052
2015	-0.0486	-0.0545	-0.0053
2016	-0.0469	-0.0537	-0.0052