Financial leverage

The impact on Swedish companies’ financial performance
Abstract

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Keywords: Financial leverage, Financial performance, Return on Assets, Return on Equity, Sweden

Background: Swedish companies were negatively affected by the financial crisis between 2007 to 2009. Even if companies with a high level of financial leverage were hit harder due to the financial crisis than companies with financial leverage, the level of financial leverage about the same now as it was right before the financial crisis. Even if an increase of cash flows associated to financial leverage increase a company’s business opportunities, there are a lot of research done in the field that claim that the relation between financial leverage and financial performance is negative.

Purpose: Since there is evidence that the relation between financial leverage and financial performance differ from different countries across the world, it is important to determine the relation in different countries. There is a research gap when it comes to the relation in Sweden, since the prior research have focused on specific industries or company sizes. By extending prior research in Sweden, companies, investors and creditors could get better understanding for Swedish companies’ relation between financial leverage and financial performance.

Method: In the thesis, data from 750 companies listed on Stockholm stock exchange has been examined to determine the relation between financial leverage and financial performance. Totally, 3750 observation from the years 2012 to 2016, have been tested by a multivariate regression.

Results: The evidence from the thesis showed that the relation between financial leverage and financial performance depends on which type of measurement for financial leverage and financial performance that is used. There is partly significant evidence that company size affect the relation.
Thanks

We want to express our gratitude toward our supervisor Damai Nasution and our examiner Natalia Semenova for your time, knowledge and helpfulness to make the thesis possible.

We also want to thank all who participated in the seminars, and gave thoughtful advice and suggestions.
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1 Introduction

In this chapter, the authors present a background of the research topic. A problem discussion is being included. This is followed by a presentation of the research purpose, which derives into two research questions and the disposition of the following chapters.

1.1 Background

Before the financial crisis between 2007 and 2009 (Brealey, Myers and Allen, 2017), the topic about record high financial leverage were discussed in reputed Swedish newspapers like Svenska Dagbladet (2006). The financial crisis affected Swedish companies and brought financial distress to these companies with decreasing financial performance (Öberg, 2009). But even if the financial crisis had a negative effect on the companies’ financial performance, these companies use about the same level of financial leverage 2016 as they did 2007 (Yazdanfar and Öhman, 2014; SCB, 2017). This could be seen as surprising, since according to Vazquez and Federico (2015), companies with a high financial leverage were hit harder due to the financial crisis than companies with a low financial leverage before the crisis.

Financial leverage refer to how much debt a company has used to finance their assets. The reason why financial leverage is used differ between companies. According to the pecking order theory (Myers, 1984), it is because of lack of cash flows for short-term debts or a need of more capital to finance an investment. The financial leverage can also be used to increase the expected return measured as Net income, which is supported by the trade-off theory which claim that there is an optimal level of financial leverage where the company maximizes their financial performance (Brealey, Myers and Allen, 2017).

There are both advantages and disadvantages with financial leverage. An advantage which is supported from both the trade-off theory and the pecking order theory, is that debt can increase the business possibilities for a company. This advantage is associated to positive cash flows, which can be used to finance both the company’s operating business and investments (Brealey, Myers and Allen, 2017).
The disadvantage of financial leverage can occur if the company’s operating business is unprofitable and therefore is not able to pay back the debt or the interest rate the debt is associated with. This could lead to bankruptcy, which is a disadvantage mentioned in the trade-off theory (Brealey, Myers and Allen, 2017). The pecking order theory take this reasoning one step further and claim that financial leverage just is the symptom for a company with a lower financial performance and the company therefore have to loan capital (Myers, 1984). The reasoning from the pecking order theory is also supported from a research made by Edim, Atseye and Eke (2014), which claim that financial leverage is used by a company because of the need of capital to run the business. The authors of the research claim that the importance of capital cannot be stressed enough, and without capital it is impossible for a company to grow.

Financial leverage is possible to measure in different ways. The most common way to measure financial leverage according to Rajan and Zingales (1995) is to use a company’s total debt as the numerator and total assets as denominator. This measurement shows the relation between how much debt a company has used to finance their operating business and investments. It does not tell the user of the financial ratio anything about how much of the debt that is associated to the operating business financed by short-term debt and investments financed by long-term debt. Therefore is it also possible to measure financial leverage in different ways to provide the user with information about when the debt has its maturity date. Short-term debt has a maturity date within one year, and long-term debt has a maturity date later than one year from now. Total debt consist of both short-term debt and long-term debt (Brealey, Myers and Allen, 2017). It is important to understand the different intent of the debt used. Short-term debt can consist of Accounts payable and Tax payable, and are related to debt used to finance the operating business of a company. This is in contrary to long-term debt, which refer to capital used for investments and financing the company in a long-term perspective. An example of long-term debt is bank loans (Brealey, Myers and Allen, 2017). According to Holy and Van der Wijst (2008), it is important to separate short-term debt and long-term debt, since the terms may be different. It is common that short-term debt is less expensive, since debt associated to Accounts payable often is not interest-bearing. Long-term debt on the other hand, like a bank loan, is often interest-bearing and therefore more expensive. Another reason why Holy and Wijst (2008) claim that short-term debt is preferable is that the terms is easier to renegotiate since the
time span is shorter. With these point of views, it is motivated to treat these different kind of financial leverage different and therefore also measure them separately. By investigating short-term debt and long-term debt separately, the thesis aim to investigate if the relation between financial leverage and financial performance is different between the different kind of financial leverage. Total debt is used as a measurement as it shows the aggregated debt situation of the company.

The different ways of measuring financial leverage are used in prior research. In some research like Tsuruta (2015), and Vithessonthi and Tongurai (2015) total debt is divided by total assets used to measure financial leverage. In other research (Abor, 2005; Ebaid 2009) the authors have strived to explain the differences in the relationship between financial leverage and financial performance depending on which of the different measurements for financial leverage that is used.

There have been research made in the field before, but with shifting results. In a research from Japan including only small companies (Tsuruta, 2015), the author claim that there is a significant positive relation between a company’s financial performance measured as Return on Equity and financial leverage. This is contradicted by Ebaid (2009), where a sample from Egypt showed a negative relation between a company’s financial performance and financial leverage. The research showed a difference between how the measurement of financial performance affects the result and significance. When financial performance was measured as Return on Assets, the relation to financial leverage was negative, but when the measurement was Return on Equity instead, there was no significant relation between the financial performance and financial leverage.

In a Swedish context, there have been research about the relation between financial leverage and financial performance, but to the authors’ best knowledge these only focus on specific industries like electronic industrials (Pettersson, Ullah and Ahlberg, 2016) or retail, wholesale, construction, manufacturing and healthcare (Yazdanfar and Öhman, 2015). Size has been a key factor in the research made by Yazdanfar and Öhman (2015), which only included small and medium size companies (less than 200 employees).
Among Swedish companies, it is possible that companies have changed their preferences when it comes to the source from where they raise capital. According to SCB (2017), 2016 was the year with the highest level of investments associated to Swedish companies since right before the financial crisis 2007. Combined with statistics from Euroclear (2017), an organization that registers a company’s stocks before the Initial Public Offering (IPO), there has never been more companies that chosen to go public than it was 2016. This was also the case in 2015 according to the Swedish newspaper Dagens Nyheter (2015).

1.2 Research Gap
In prior research have there been showed some kind of relation between financial leverage and financial performance, but the results has been inconsistent. There have been evidence that has shown a significant positive, a significant negative and no significant relation between financial leverage and financial performance. Therefore it is still a research gap that is important to fill, where a research with the thesis’ sample and timespan of data has not been found by the authors of the thesis.

Prior research (Weill, 2008) has showed a difference in the relation between financial leverage and financial performance across countries. This means that evidence from one research in one country does not necessarily apply for another country. Since evidence from other countries may not be applicable in Sweden, it leaves a research gap to fill.

1.3 Purpose and Research Questions
The thesis aims to investigate the relation between financial leverage and Swedish company’s financial performance. Financial leverage is measured in different perspectives to determine if there is any difference in the relation between financial leverage and financial performance from a short-term, long-term and total debt perspective. Financial performance is measured both as Return on Assets and Return on Equity to determine if there is any difference between the measurements’ relation to financial leverage.

The fact that more companies than ever before choose to go public may be seen as a sign that companies prefer to issue new stocks instead of using financial leverage. It is therefore important to determine if there is any relation between financial leverage and
financial performance at all, since evidence from prior research are inconsistent. According to Brealey and Myers’ research from 2003, there is not any relation between financial leverage and financial performance, only a problem when it comes to marketing (Abor, 2005). According to the pecking order theory (Myers, 1984), it is not any direct relation between financial leverage and financial performance. The pecking order theory claims instead that financial leverage is a symptom for a company with low financial performance and missing ability to generate capital for investments and their operating business. By combining the trade-off theory, the pecking order theory and the agency theory, it should be possible to explain why companies use financial leverage and how it affect the company’s financial performance.

By extending the sample and including all companies listed on Stockholm stock exchange, the thesis aims to determine if there is any difference in a Swedish context between large and small companies when it comes to the relation between financial leverage and financial performance. The reasoning about if different company’s size affect the relation between financial leverage and financial performance is recurrent in the trade-off theory and prior research (Yazdanfar and Öhman, 2014). All different industries are included except from the financial sector, because of the capital structure of financial companies that differ too much from the rest (Lee and Li, 2016).

By extending the time period compared to research done in Sweden, the thesis aims to investigate the relation between financial leverage and financial performance in a longer time perspective and use a time period as long as the average economic cycle, which is 5 years (Riksbanken, 2008; Nationalencyklopedin, 2017), to mitigate the effect from the state of the economy. This is important according to prior research (Vithessonthi and Tongurai, 2015). The years from where data is collected are 2012 to 2016.

By including companies from all industries, all company sizes and collect data from a longer time period than prior research in Sweden, the thesis aim to give a more comprehensive view of the relation between financial leverage and financial performance. The result of the thesis provides companies with information about how financial leverage affect their financial performance and therefore their future return, but also investors and creditors to determine if the company can generate required rate of return and pay back the investment or loan when using financial leverage.
This lead to the following research questions:

1. *What is the relationship between financial leverage and company’s financial performance in Sweden?*

2. *Is the size of a company influencing how the financial leverage affect their financial performance?*

1.4 Delimitation

The research area of the thesis is focused on the perspective of a company and measure financial performance from two accounting-based measurements: *Return on Assets* and *Return on Equity* (Abor, 2005). The two measurements for financial performance are financial ratios used in a normative way, which means that there is no subjective forecast included in them (Jewell and Mankin, 2011).

1.5 Disposition

After the introduction chapter where the topic has been introduced, the following chapters are; The research methodology chapter present the philosophical views and methods that the thesis is based on, followed by the assumptions and interpretation of the multivariate regressions. The theoretical frame of reference-chapter presents theories within the topic and prior research. This chapter also include a hypotheses development and ends up in four hypotheses. In the Empirical method-chapter, the sample of the thesis is presented, which variables that have been used and different aspects that are important to be aware of. The next following chapters are Results and Analysis, where the results are presented and analyzed, and are followed by the Conclusion-chapter.
2 Research Methodology

This chapter presents the authors' prerequisites, the philosophical views and methods that the thesis is based on, followed by the assumptions and interpretation of the multivariate regressions.

2.1 Authors Prerequisites

Both of the authors have conducted three years of studies on the Degree of Master of Science in Business and Economics program (Civilekonomprogrammet) at Linnaeus University in Växjö. Over the course of the first two years, they have taken courses in Business, Accounting, Finance and Statistics to prepare them for the thesis. During the last two years of the four-year programme, the two have chosen to put an extra focus on finance.

The fifth semester both authors chose to widen their experiences with exchange studies in the U.S. One of the authors at San Francisco State University, and the other at Central Connecticut State University where they both deepened their understanding of corporate finance at an international level.

The fact that they have worked together before and they share an interest of how to effectively run a company's finances makes for a competent team to examine these research questions.

2.2 Research Approach

When approaching a research question, this can best be done with two different approaches. Either deductive or inductive theory. What divides the two is the view on the relationship between theory and research. Deductive theory is best described by distinguishing a theory, then formulating a hypothesis in order to test it empirically. A critical process in deductive theory is translating the hypothesis into something that can be measured and tested (Bryman and Bell, 2015; Saunders, Lewis and Thornhill, 2009).
In deductive theory, the chosen theory and the hypothesis formulated from it, is what drives the activity of gathering data. The whole research process can be described in 6 steps (Bryman and Bell, 2015):

1. Theory
2. Form a hypothesis
3. Collect data
4. Analyse the results
5. Reject or confirm the hypothesis
6. Revise the theory

Step number six brings us on to the next approach. Induction, which can be seen as the opposite of deduction. Instead of taking a theory and then gather data, induction is taking a stance in the data and drawing a theory from that. In step six, it is possible to view it as induction when taking the findings and bringing them together with the rest of the research on the subject, to develop the existing theory. Even though the work process contains an inductive moment in part six, the process as a whole is seen as deductive (Bryman and Bell, 2015). A deductive approach generally suits most quantitative researches where numerical data is analyzed to test hypotheses. Though it is not always as clear and linear in the process as the six steps above (Saunders, Lewis and Thornhill, 2009).

The thesis is no exception to the previous statement as the authors find it fitting to take on the problem using a deductive approach. There are already existing theories about the research questions. The aim of the thesis is hence not to develop new theories about the subject, but test and provide support for the already existing ones, like the pecking-order theory and the trade-off theory. This is in line with the deductive approach, where the inductive approach would be more suitable for a subject that never has been investigated. Then one can draw completely new theories from the results. Financial leverage is both well researched and there are well known existing theories, which is why it would be hard to find anything of relevance using the inductive approach.
2.3 Research Philosophy

2.3.1 Epistemological Considerations

An epistemological issue is the subject about what should be considered acceptable knowledge in a discipline (Saunders, Lewis and Thornhill, 2009). The central question in the context is if the social world, and problems, can be investigated using the same principles, procedures, and ethos as the natural sciences. There are three main positions about this, positivism, interpretivism and realism (Bryman and Bell, 2015).

*Positivism* is hard to define precisely, since it is used in different ways by different researchers. However, the foundation of it is that it highlights the importance of imitation of the natural science methods, even for the social sciences. It also draws a clear line that separates theory and research, where the role of research is to test theories and provide material for the development of scientific laws. It consists of a principle stating that phenomena and knowledge must be confirmed by the senses in order to be admitted as knowledge, a principle known as phenomenalism. The purpose of the theory is to develop hypotheses that can be tested to provide support to the formulation of laws (Bryman and Bell, 2015). A positivist believes that an objective truth exist, and the research must be conducted in an objective manner to find it (Sekaran, 2003).

*Realism* is an epistemology with some views similar to that of positivism. The natural and social sciences should apply the same research methods. There is a belief that there is a reality, which is separated from the researchers’ descriptions of it. There are two main types of realism. Empirical realism asserts that reality can be understood, using the right methods. However it fails to determine the underlying structures and mechanisms producing the observable phenomena, hence it is a superficial view. Critical realism on the other hand recognizes the natural order and chain of effects. It claims you can only understand, and change, the social world if you understand what generates its events and discourses. What separates critical realism from positivism is that while the realists see their view and description of reality as one of many, positivists argue that their description of reality is a direct reflection of the true reality. A realist would also be able to include theoretical, unobservable terms in their explanations, while this is not acceptable according to positivism (Bryman and Bell, 2015).
Interpretivism is often seen as the opposite of positivism. It is based on the concept that you need to formulate a strategy that takes into consideration the differences between humans and objects of the natural sciences. Hence the researchers have to be able to capture the subjective meaning of a social event. The people's interpretation of events is what is important, and should be measured (Bryman and Bell, 2015).

The authors find it appropriate to use positivism as the epistemological standpoint in this research. It fits the workflow related to the research good. The results of the thesis rely solely on the objective facts of the research tests to either confirm or reject the hypotheses, which is a main part of positivism. The results are not affected by individual’s subjective interpretation of financial leverage or financial performance, which would be undesirable in the thesis. This is why interpretivism is no good choice. Realism is acceptable in the way that it wants to replicate the natural sciences. However, the mindset that the description of reality is only one of many is not supported in the thesis. The research is conducted in an objective manner in order to give a reflection of the true reality.

2.3.2 Ontological Considerations

Ontological considerations cannot be separated from the way business research is conducted. It has affected the deduction of the research question and the methods used (Bryman and Bell, 2015). Social ontology clarifies how a social entity is defined. The important question is whether or not a social entity can or should be perceived as an objective entity with a reality external to social actors, or if it should be perceived as a social construction built on the perception and actions of social actors. These two different ways to look at it are called objectivism and constructionism (Bryman and Bell, 2015).

The ontological standpoint objectivism implies that social phenomena and the meaning of it exist independently from the social actors. These social phenomena are beyond the social actors reach and intellect. A company can be seen as a social phenomenon, with the people in it as the social actors. By imagining it this way the company has a reality that is external to the social actors in it. The company is separate from the actors in the way that if the actors do not follow the rules and regulations set by the company, they are simply replaced. The phenomenon is beyond the social actors influence.
Constructionism on the other hand implies that structures and organizations (companies) are created by the social actors (Bryman and Bell, 2015).

When analyzing how financial leverage affects financial performance, the authors find it appropriate to use objectivism as the ontological approach. This allows the authors to focus on the quantifiable facts about companies and see the organization separated from the social actors in it.

2.4 Research Strategy

In order to answer the research question, an appropriate research strategy must be selected. What strategy that is applied depends completely on what the research question is. There are two strategies to follow, either quantitative or qualitative.

Quantitative research is guided by the need to make the terms in the deduced hypotheses observable, and quantifiable. This allows for tests on very big samples of data (Bryman, 1997). Qualitative research does not employ such means of measurement. Instead the research often consists of interviews or surveys which are later analysed. Some argue that this is the only difference, while others claim the difference lies in their epistemological standpoints, where quantitative research is linked to positivism and qualitative research is linked to interpretivism. This is summed up in the following table by Bryman and Bell (2015).

<table>
<thead>
<tr>
<th>Research Approach</th>
<th>Quantitative</th>
<th>Qualitative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principal orientation to the role of theory in relation to research</td>
<td>Deductive; testing of theory</td>
<td>Inductive; generation of theory</td>
</tr>
<tr>
<td>Epistemological orientation</td>
<td>Natural science model, in particular positivism</td>
<td>Interpretivism</td>
</tr>
<tr>
<td>Ontological orientation</td>
<td>Objectivism</td>
<td>Constructionism</td>
</tr>
</tbody>
</table>

Table 2.1 Differences between Quantitative and Qualitative research strategy

A qualitative research is also often based on small samples, and can be very good if one wants to investigate thought processes or decision making for example. In a quantitative approach the data need to be quantifiable, as stated above, which means that this type of
data, feelings and thoughts etc, gets hard to analyze but numerical works great with a quantitative approach (Sekaran, 2003).

In order to test the research question, a lot of data need to be statistically analysed. Quantitative research is more fitting than qualitative in this case. Conducting surveys and directly contacting companies could give more, and different information than what the numbers of their financial statements do. However the thesis does not examine anything depending on something else than the information from said financial statements. A quantitative approach which allows the authors to analyse a big sample of companies is therefore more suitable.

The thesis test the relation between financial leverage and financial performance using a deductive approach while applying a positivist and objectivist view on the subject, as mentioned earlier.

2.5 Ethical Considerations

An important ethical consideration to take into account is if the participants could experience harm in any way (Bryman and Bell, 2015). Since the authors of the thesis do not conduct any surveys or interviews, this is not an issue. The thesis does not address any ethically sensitive subjects. Neither is there an issue with anonymity to take into account as the data is publicly available in the company's financial statements. What can be considered as an ethical risk is the way the data is analyzed and the way the tests are conducted. The authors have to the best of their ability practice the necessary measures to ensure that the tests and analyses are conducted objectively and give the most fair view of reality. The results are only presented for the sample, and not for individual companies, to maintain their right to privacy.
3 Theoretical Frame of Reference

This chapter gives a presentation of the general theory about financial leverage and the measurements of financial performance. Then a walkthrough and comparison of the trade-off theory, pecking-order theory, agency theory and prior research is given. This is followed by the hypothesis development and lastly the hypotheses.

3.1 Financial Leverage

Financial leverage is possible to measure in different ways. In the thesis, financial leverage is measured from three different perspectives; short-term, long-term and total debt, like in prior research (Abor, 2005; Ebaid, 2009). The benefit of using these perspectives is that the user of the information could understand how the different types of debt affect the financial performance. In a prior research (Abor, 2005; Holy and Van der Wijst 2008), the authors claim that there is a difference between short-term debt and long-term debt when it comes to the expenses associated with it, for example interest expenses. Short-term debt is not often interest-bearing, unlike long-term debt like a bank loan which instead often is interest-bearing. There is according to Myers (1984) a difference between how short-term debt and long-term debt is used and for which purpose. Short-term debt is used to finance the company’s operating business, while long-term debt is used to finance investments.

Short-term includes debt that has a maturity date within one year, while long-term includes debt which has a maturity date later than one year from now. Total debt includes both the short-term debt and the long-term debt, and shows all debt that the company has (Brealey, Myers and Allen, 2017). The three different definitions are then divided by total assets to see the proportion between the debt and all assets belonging to the company.

The purpose of financial leverage is to increase the expected financial performance measured as Return on Equity. By providing the company with capital from example a bank loan, the company could increase their business possibilities and maybe afford new investments. This could lead to better financial performance (Brealey, Myers and Allen, 2017). This reasoning is contradicted by Rajan and Zingales (1995), where they claim that companies with lower debt often have higher financial performance. Rajan
and Zingales (1995) claim that companies only use debt to finance their business when they need to do it, and not to improve their financial performance.

How much financial leverage that is used differs from industry to industry and also from company to company within the industry. There is a pattern that companies use more financial leverage when the whole economy seems to be strong and try to use less financial leverage when there is a recession in the economy. It is difficult to find the optimal level of debt and every company need to manage their financial leverage so it works for their unique needs and situation (Brealey, Myers and Allen, 2017).

3.2 Measurements of Financial Performance

To measure financial performance are financial ratios used in the thesis. The financial ratios are used to provide the user with different types of information and help the user to see how a company has performed before. Financial ratios can also be used to predict future performance (Brealey, Myers and Allen, 2017). An advantage with financial ratios is according to Lan (2012) that it is possible to link different financial statements together. An example is comparing Net income (from the Income statement) and Total assets (from the Balance sheet) to get the company’s Return on Assets. According to Jewell and Mankin (2011), the use of financial ratios is to gather information about financial performance that already happened. The use of only these numbers is called normative use. This information could be used to compare in an objective way the company’s financial performance to other companies in the same industry or compare the company’s financial performance with the whole economy.

The opposite of normative use, when the user of the financial ratio aim to gather information for decisions about the future, is called positive use. Positive use could be used when for example a company’s credit rating need to be proved or when a financial analyst make a prediction about future return from trading a stock. The positive use of financial ratios include a forecast that is subjective and the outcome of the use depend on who the user is (Jewell and Mankin, 2011).

In the thesis two different financial ratios for financial performance are used, the Return on Assets and the Return on Equity. The use of two different measurements for financial performance can be motivated by who the user of the financial ratio is. For the company
and creditors, \textit{Return on Assets} is the most interesting financial ratio since it shows the company’s total return without regard for the capital structure of the company. For the company’s shareholders (investors), \textit{Return on Equity} is more interesting, since it shows the return on the shareholders’ invested capital (Brealey, Myers and Allen, 2017).

\textit{Return on Assets} is a financial ratio that shows the user the percentage of the return a company has during a time period, often a fiscal year, in relation to the company’s total assets. The financial ratio tell the user about the company’s ability to convert their assets into profit, and therefore is a high percentage to prefer above a low percentage. The formula used is Net income divided by Total assets (Encyclopedia of small business, 2007; Brealey, Myers and Allen, 2017). This financial ratio includes all assets, both those financed by the shareholders’ equity and with debt, which provide the user of the ratio information of all the return that can be associated to the company (Jewell and Mankin, 2011).

\textit{Return on Equity} is a financial ratio that show the user the percentage of return a company has during a time period, often a fiscal year, in relation to the company’s shareholders’ equity. This financial ratio tell the user about how the company has converted the shareholders’ equity into profit. The formula is Net income divided by Shareholders’ equity (Encyclopedia of small business, 2007). The purpose of using \textit{Return on Equity} as a measurement for financial performance instead of \textit{Return on Assets} is to focus on the remaining return which belong to the shareholders’ when the interest expenses associated to debt is paid (Brealey, Myers and Allen, 2017).

3.3 Trade-off Theory
The trade-off theory claims that companies should aim to find the optimal level of financial leverage. With optimal level of financial leverage, it means when gains and costs of financial leverage is balanced (Myers, 1984). This implies that there should be a relationship between financial leverage and financial performance, where the financial leverage affect financial performance (Brealey, Myers and Allen, 2017). The advantages of financial leverage are according to the theory related to “tax advantage of debt” because of the deductibility of interest expenses, but also the increased cash flows (Modigliani and Miller, 1963; Kraus and Litzenberger, 1973). The tax advantage of debt
indicates that larger companies measured by total assets should use more financial leverage than small companies, since they have more capital to “protect” (Ebaid, 2009).

According to Kraus and Litzenberger (1973) could a disadvantage of financial leverage be the potential costs associated to bankruptcy. There are two types of cost that is associated to bankruptcy according to the trade-off theory. The direct cost refers to legal advice, credit cost and reconstruction, while costs like loss of employees is referred to as indirect costs in the trade-off theory (Murray and Vidhan, 2008; Brealey, Myers and Allen, 2017). According to the trade-off theory does the margin benefit of financial leverage decrease, unlike the disadvantages of the financial leverage-curve which constantly increases when the financial leverage increases. These factors could according to the trade-off theory be the reasons why it is more common that large companies use financial leverage than small companies (Brealey, Myers and Allen, 2017).

Myers (1984) is reasoning about if there is the same optimal level of financial leverage for every company, but the companies' management is not able to find it, or if the optimal level of financial leverage differ from each company. In this reasoning, Myers introduce a cost of adjustment. This cost of adjustment refer to the costs associated to changing level of financial leverage depending on the business situation and what the company needs for the moment. It could be questioned, if there is an optimal level of financial leverage, why do not companies use financial leverage in the same way and always have this level of financial leverage.

The trade-off theory can with some success explain factors that affect how companies behave when it comes to financial leverage. It can be how risk avert the decision makers are, but also if the company’s assets contain a lot of intangible assets or if the company’s return differ a lot from year to year. High-tech companies often use a relatively low financial leverage, unlike industries like airlines which borrow a lot of capital because their assets are relatively “safe” and tangible (Brealey, Myers and Allen, 2017).

There is a gap in the trade-off theory, where it fails to explain why some large and successful companies do not use financial leverage (Brealey, Myers and Allen, 2017).
In a Swedish context, the mining company Lundin Mining use 40 percentage financial leverage. Lundin Mining is a company with a lot of tangible assets, especially compared to the company’s intangible assets (Avanza, 2017). Another example is the large Swedish company Holmen, a material company with a financial leverage around 40 percentage as well (Avanza, 2017; Thomson Reuters Eikon, 2017). Compared to the companies at the list of the 100 largest companies in Sweden 2016 measured by total assets (see “Prior research”) are these companies’ use of financial leverage relatively low. The trade-off theory fails to explain this phenomenon, which is recurrent for other companies also in other countries like the company Johnson & Johnson from the U.S. According to the trade-off theory should companies with a high profit use more debt to lower their tax expenses (Ebaid, 2009; Brealey, Myers and Allen, 2017).

3.4 Pecking Order Theory

In the pecking order theory, unlike the trade-off theory, there is no optimal level of financial leverage. Instead the pecking order theory focuses on the pecking order for how to finance the company’s operating business and investments. There are different types of financing sources that are valued differently from the company’s perspective (Edim, Atseye and Eke, 2014);

1. Internal financing (Equity in form of cash flows and retained earnings).
2. Debt from a lender (for example banks).
3. New equity financing (such as issuing new stocks).

The first thing to notice is that there are both equity financing in the top and the bottom of the preferences (Brealey, Myers and Allen, 2017). According to the pecking order theory is this because of the different costs associated to the different financing sources (Abor, 2005). If the capital comes from internal financing like retained earnings from earlier years, the pecking order theory means that there are no new costs to acquire this capital. The only cost that could be associated to the internal financing is the alternative costs, which mean the non-existing return from other investments that the company does not chose. Another reason why internal financing is preferred is since external financing sources, like creditors or new investors from issuing new equity, require a higher rate of return. New investors and creditors require a higher rate of return since they do not know everything about the company and therefore have less understanding
for how the future financial performance may be (Abor, 2005). This is the first of two main parts of the pecking order theory; the other is that debt with an associated interest cost is a better alternative of financing source than new equity financing (Myers, 1984).

The other “critical” part of internal financing is associated to shareholders, who often require some kind of dividend from the company. According to the pecking order the company will decide the dividend payout ratio from the prediction for how much capital the company needs for investments now and in the future. This reasoning follows the thought about how the company prefers to finance the business. In other words, the company aims to avoid a situation where they need to use debt, or even worse new equity financing, to finance a future investment (Myers, 1984).

New equity financing is the financing source a company prefers the least according to the pecking order theory (Edim, Atseye and Eke, 2014). This financing source is only used when the “debt capacity” is reached and there is no other way of financing the operating business or investment. When a company uses this option, the decision makers in the company believe the market valuate the company too high because of asymmetric information between the company and external investors (Brealey, Myers and Allen, 2017). This is possible because the management in the company has inside information which is not possible for external investors to read or know about. This reasoning is based on an assumption that the company’s management has an interest to do what the existing shareholders want and gain on (Abor, 2005). So according to the pecking order theory, the only time a company chooses to finance their business by issuing new equity is when the company’s market value is higher than it should be (Edim, Atseye and Eke, 2014). Therefore is the pecking order theory based on an assumption that a company’s management try to time when to sell equity or issue new equity, so it is more profitable for the shareholders.

The pecking order theory claims that profitable companies use less financial leverage than companies with a low or non-existing profit. This could be seen as that the financial performance affect the financial leverage, instead of the opposite way as the trade-off theory claim (Brealey, Myers and Allen, 2017). This claim is supported by the reasoning about financing source. If the company is profitable, they are able to finance the operating business and investments with their own cash flows or retained earnings.
instead of debt or external capital from investors (Myers, 1984). According to Ebaid (2009), this is the reason why there should be a negative relation between financial leverage and a company’s financial performance.

3.5 The Trade-off Theory versus The Pecking Order Theory

There has been research done by Rajan and Zingales (1995), which has shown support for both the trade-off theory and the pecking order theory, even if they contradict each other. The research was done with a sample of large companies from Canada, France, Germany, Italy, Japan, the UK and the U.S (in the research referred to as the G-7 countries). The result shows four factors that affect the level of financial leverage:

1. **Size**, there is a relationship between how large the company is and how much financial leverage the company use. Large companies tend to use more financial leverage, which could be associated to the smaller risk of default and bankruptcy. This is evidence that support the trade-off theory. Another reasoning is that a large company’s decision makers as insiders has less information that external investors miss (less asymmetric information), which makes external investors more willing to invest money. This reasoning support the pecking order theory instead.

2. **Tangible assets**, if the company has a lot of fixed assets in proportion to total assets, it is common to use more financial leverage in the business. This support the trade-off theory.

3. **Profitability**, if the company has high financial performance, the company often chooses to use less financial leverage. This is evidence in line with the pecking order theory.

4. **Market-to-book**, this is a measurement used to predict the growth of the company and is associated to the financial performance of the company. This is supporting the pecking order theory.
3.6 Agency Theory

A company consists of different groups with different primary interests. These types of groups can be shareholders and management (referred to as the agents), but also external actors like creditors and future investors (Brealey, Myers and Allen, 2017). The theory about these different interests is referred to as the agency theory (Yazdanfar and Öhman, 2014). For example, shareholders want to maximize their return on invested capital, while management wants to present satisfying results to get higher salaries or bonuses. The management’s compensation policies are often decided by the shareholders, which often put pressure on the management by tying the management’s salaries and bonuses to the growth of the company’s market value or profitability. The reason why shareholders put this pressure on the management is since growth in the company’s market value gain the shareholders. Creditors on the other hand aim to get their capital back with as low risk as possible, but also with as high interest revenue as possible (Brealey, Myers and Allen, 2017).

The agency theory is used in the thesis to explain why the relation between financial leverage and financial performance could be both positive and negative. The agency theory could according to Yazdanfar and Öhman (2014) be used to explain why there are differences in the relation between financial leverage and financial performance depending on if the company is small or large. According to the authors of the thesis is this why it is suitable to use the agency theory in this thesis. The agency theory claim that the positive impact on the relation could be explained by the management's interest of running the company with high efficiency (Gonzalez, 2013). This because of the management's own interests for the company to perform well. When financial leverage increases, the company increase the risk of liquidation which could affect the management personally. If the company have high financial leverage and low financial performance, there is a risk that the management get a bad reputation, decreased salary or even lose their jobs (Berger and Bonaccorsi di Patti, 2004). The pressure from shareholders to keep the company profitable, so the company’s market value increases, can also increase the management's incentives to perform better (Yazdanfar and Öhman, 2014).

According to Berger and Bonaccorsi di Patti (2004) could a negative relation between financial leverage and financial performance be explained by the possible interest conflicts between different parts of the company. The shareholders and the management
may have different interests, which could affect how efficient the company is and which decisions that are made. An example of this is if the company should do investments. Investments decrease the company’s financial performance in a short-term perspective, but may increase the financial performance in the future. For shareholders, which often think in a long-term perspective, is an investment a good thing since it may increase the expected return in the future. The company’s management on the other hand, with a compensation tied to the growth in the company’s market value, often thinks about the company’s financial performance right now and prefer a satisfying return in a short-term perspective. This type of interest conflict tends to decrease the company’s financial performance, since the shareholders and management do not collaborate efficiently (Brealey, Myers and Allen, 2017).

According to Yazdanfar and Öhman (2014), the size of the company influences how the relation between financial leverage and financial performance is. They claim that large companies that often have shareholders with no direct connection to the company’s management have a positive relation. The positive relation is associated to the fact that the management need to run the company efficient to satisfy the shareholders. Small companies on the other hand, were the shareholders tend to be the management, could have a negative relation since small companies tend to have less free cash flows which is associated to less business possibilities. Another aspect is that the management in small companies does not feel the same pressure to run the business efficiently, since they also often are the shareholders.

3.7 Prior Research

In the previous research made by Abor (2005), the author found that the relationship between financial leverage and financial performance differs depending on which type of debt that is included into the financial leverage ratio. There was a significant positive relation between both short-term debt ratio (STD) and total debt ratio (TTD) to the financial performance measured as Return on Equity (ROE). The result was the opposite when it comes to the long-term debt ratio (LTD), which shown a negative relation to ROE. The author explain these results with a reasoning about which debt that is more expensive than the other. For example Abor (2005) claims that the interest expenses associated to long-term debt often is more expensive than for short-term debt. Therefore is it according to the author preferable to use short-term debt than long-term debt. Abor (2005) states that the choice of capital structure has a significant impact on the financial
performance, which is supported by the trade-off theory. The trade-off theory claim that there is an optimal level of financial leverage for a company, which indicate that there should be a positive relation between financial leverage and financial performance in some way (Brealey, Myers and Allen, 2017). Abor (2005) claim that companies with high financial performance depend more on financial leverage than companies with low financial performance, which also contradicts the pecking order theory. Abor (2005) also contradicts the pecking order theory when he claims that companies with high financial performance use short-term debt “as their main financing option”.

Ebaid (2009) conducted his research with two more dependent variables in order to get a better understanding of the relationship. His research was conducted with the same independent variables as Abor (2005), but with a longer time period and only non-financial companies. The results showed a negative relationship between Return on Assets (ROA) and all the different financial leverage ratios (especially short-term and total ratio). There was no significant relationship between financial leverage and either Return on Equity (ROE) or Gross Profit Margin (GPM). This lead to his general conclusion that capital structure has a little to no effect on the financial performance, which is in line with the pecking order theory’s claim about that financial leverage does not affect a company’s financial performance (Brealey, Myers and Allen, 2017). The negative relation between Return on Assets and all different financial leverage ratios are also in line with the pecking order theory, which claim that companies with high financial performance do not need to use debt for financing their business or investments (Myers, 1984). Ebaid claims that the trade-off theory and pecking order theory could combined explain why companies use financial leverage, but alone do the theories have some shortcomings. Ebaid claim that "the searching for an optimal capital structure is not one-way to go", which could explain the contradictory results among research in the field. The author explain that his results partly depend on the composition of companies in the sample. According to the author belonged a major part of the companies to the public sector only a few years before the test period. These companies maybe still suffered from problems associated to the public sector in Egypt like a lack of managerial skills and obsolete inventories in their total assets. Another explanation for the findings from the author is that near 60 percent of total assets of Egyptian listed companies is financed by debt, which mean that the companies consequently use high financial leverage (Ebaid, 2009).
In a research from Norway, made by Holy and Van der Wijst (2008), the authors found evidence that rejected the pecking order theory. The sample consisted of around 100,000 to 130,000 companies with data collected between year 1995 and 2000. The authors used short-term debt (STD), long-term debt (LTD) and total debt (TTD) as the depending variables in their regression models. As independent variable, the authors used Return on Assets (ROA) as the measurement of profitability. The authors aimed to investigate many relations, but since this thesis is focused on the relation between financial leverage and financial performance, only the results associated to this relation are presented. The research from Norway (Holy and Van der Wijst, 2008) found that “profitability appears to be positively, rather than negatively, related to debt”. The results showed a positive relation between STD and TTD, and ROA. The relation between LTD and ROA was negative. All the relations were significant at 5 percent level. The authors do not support any theory when it comes to this relation, instead they chose to reject the pecking order theory.

The research made by Tsuruta (2015) finds that small companies in Japan with high financial leverage have better financial performance than companies with low financial leverage. Both when measured as Return on Equity (ROE) or Sales growth. This is in line with the trade-off theory, that financial leverage does have an impact on the company’s financial performance (Brealey, Myers and Allen, 2017). The authors explain this relation mostly because of the opportunities of investments that are possible to do with more capital available to the company. This reasoning is instead supported by the pecking order theory’s claim that the chosen financing source used by the company depends on the financial performance. Tsuruta (2015) also claim that it is important to be aware of where the debt comes from, and how the bank as the lender can bring knowledge and distinctive management to the company. The research show that companies with financial leverage can perform better because of the requirements from banks. When a bank provide a company with a loan, the bank expect to get the money back, and has therefore an interest in helping the company to run the business in an efficient way with a focused management team. In the research (Tsuruta, 2015), it is unclear if the relationship between financial leverage and a company’s financial performance is direct or if the financial performance depends more on the contribution from the bank, like monitoring, and impose different covenants to keep the company
healthy, such as minimum net worth or debt to equity ratio (Smith and Warner, 1979). Regardless, it is possible to conclude that there is a relationship between financial leverage and financial performance (Tsuruta, 2015), which is in line with the trade-off theory.

The research made by Vithessonthi and Tongurai (2015) measures financial performance with ROA, and investigates its relationship with financial leverage as well. What differentiates this research from the others is that it divides the sample into domestically oriented companies and internationally oriented companies. This is a unique perspective on the relationship, and the findings are that the different subsamples have different relationships between financial leverage and financial performance. Domestically oriented companies experience a negative relationship while internationally oriented companies experience a positive relationship between the two variables. These findings support the trade-off theory, with the evidence for the relation between financial leverage and financial performance (Brealey, Myers and Allen, 2017). Vithessonthi and Tongurai (2015) comments in their research that the companies with business in more than one country could be seen as large companies. With this assumption, the trade-off theory could be supported since the theory claims that large companies are able to utilize financial leverage better than small companies (Brealey, Myers and Allen, 2017). This reasoning about how large companies can handle financial leverage better than small companies is present in the agency theory as well (Yazdanfar and Öhman, 2014).

To investigate the relation between financial leverage and financial performance, Yazdanfar and Öhman (2014) used Return on Assets (ROA) as the dependent variable, and short-term debt (STD), long-term debt (LTD) and Accounts Payable (AP) as the independent variables. They found evidence for a significant negative relation between financial leverage and financial performance. They used the agency theory and the pecking order theory to explain their results. Their conclusion was that companies with a high financial performance tends to use less financial leverage, and use retained earnings instead to run their business and invest. Yazdanfar and Öhman (2014) claim that there is a difference between small and large companies’ relation between financial leverage and financial performance. They claim that large companies are able to handle financial leverage better, since large companies often are
active at different markets and have different products. The authors comment how industry affect the size relation. For example could the authors find evidence for a significant negative relation when it comes to retail trade and wholesale sectors. In these sectors are the small companies better to handle financial leverage than large companies.

<table>
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Table 3.1 Prior Research

Weill (2008) investigated if there is any differences across countries when it comes to the relation between financial leverage and financial performance. The research investigated seven countries, Belgium, France, Germany, Italy, Spain and Norway. The sample consisted of medium-size manufacturing companies and the data was collected from year 1998 to 2000. In the research, the author present the mean value of financial leverage for each country, where Italy had the highest financial leverage (73 percent) and Portugal lowest financial leverage (55 percent). The research presented evidence for differences across the countries when it comes to the relation, and the author claim that institutional factors affect the relation. Institutional factors include the architecture of
the financial system and the legal system. Since the countries in the research have the same architecture of the financial system (bank-oriented financial system), the author claim that the legal system is the reason for differences across these countries. These factors are “access to bank credit for firms, protection of shareholders’ rights, protection of creditors’ rights and efficiency of legal system”. Weill (2008) cannot determine the effect of the different factors, but claim that the differences in the legal system across the countries affect the relation between financial leverage and financial performance.

3.8 Hypothesis Development

According to the prior research, there are evidences for a relation between financial leverage and financial performance. The relation has been tested with different results, which show inconsistency that could depend on other factors. Some of these factors have been presented in the trade-off theory and the pecking order theory, from where the hypotheses have been developed. The agency theory’s reasoning about how financial leverage affect financial performance is included as well.

The pecking order theory claim a company that has high financial performance does not need to use external financing to operate and therefore choose to use internal financing like retained earnings for investments (Abor, 2005). The authors of the thesis claim that this mean that a successful company with a high financial performance does not need to use financial leverage. Abor’s (2005) evidence is supported by a Swedish research Yazdanfar and Öhman (2014), were the authors claim that the agency theory combined with the pecking order theory can explain the relation between financial leverage and financial performance. In the agency theory is there a reasoning about financial distress and how it negatively affects a company’s financial performance. This should indicate a negative relation between financial leverage and financial performance measured as Return on Assets.

According to the general theory about financial leverage, the purpose of financial leverage is to finance a company’s operating business and investments. It allows them to engage in business opportunities otherwise unavailable to them. This reasoning is also supported by the pecking order theory, which claim that companies only chose to finance their operating business or investment by debts if they not are able to finance it with internal funds (Myers, 1984). According to the agency theory can financial
leverage affect a company’s financial performance in a positive manner, since the management feel pressure from the shareholders, who require to get a satisfying return. The authors of the thesis claim that there should be a positive relation between financial leverage and financial performance measured as Return on Equity. The amount of equity is the same, but the business or investment opportunities increase when the cash flows increase.

The trade-off theory claims that companies with high financial leverage often are large companies. This reasoning is supported in prior research, like the research made by Rajan and Zingales (1995). In the research made by Yazdanfar and Öhman (2014), there was evidence for a positive relation between company size and how well a company handle financial leverage. This is a pattern which could be associated to the fact that large companies often can afford expenses related to debt like interest expenses. This means that there could be differences in how financial leverage affects financial performance depending on the size.

According to the agency theory could financial leverage both influence a company’s financial performance in a positive and a negative way. The positive influence is associated to the pressure management possibly feels from shareholders when the companies use borrowed capital. The contradiction, when the agency theory claim that financial performance may decrease by financial leverage, refer to when companies’ free cash flows increase and therefore make it possible for management to use capital in an inefficient way to satisfy their own interests instead of the shareholders’. The agency theory also claims that there should be differences in the relation between financial leverage and financial performance influenced by company size. According to the agency theory, large companies should have a better relation between financial leverage and financial performance than small companies. Since the personal distance between the shareholders and the management is bigger, it makes it possible for the shareholders to put a larger pressure on the management in large companies (Yazdanfar and Öhman, 2014).

Supported by prior research and economic theories, the authors of the thesis have developed four hypotheses.
3.9 Hypotheses

The first hypothesis is stated to determine if there is a negative relationship between financial leverage and financial performance measured as Return on Assets. The relationship in this hypothesis is predicted to be negative, which is supported by evidence from prior research (Ebaid, 2009). This hypothesis is also supported by the pecking order theory (Myers, 1984), which claim that companies with a high financial performance use less financial leverage since they prefer to finance their operating business and investments with internal capital like retained earnings instead of debt. The agency theory’s reasoning about how financial distress could be a product from financial leverage supports the hypothesis as well.

Hypothesis 1: There is a negative relation between Swedish companies’ financial leverage and financial performance measured as Return on Assets.

The second hypothesis is supported from prior research (Vithessonthi and Tongurai, 2015) and the trade-off theory (Brealey, Myers and Allen, 2017), which claim that the relation between financial leverage and financial performance measured as Return on Assets is affected by the company’s size. The trade-off theory and agency theory claim that large companies have the ability to utilize financial leverage better than small companies, which the research done by Yazdanfar and Öhman (2014), and Vithessonthi and Tongurai (2015) showed evidence for.

Hypothesis 2: The relation between financial leverage and financial performance measured as Return on Assets differ between small companies and large companies.

The third hypothesis is stated with support from the general theory about financial leverage and Return on Equity, where the purpose of financial leverage is to increase the Return on Equity. This reasoning is also supported by the trade-off theory (Brealey, Myers and Allen, 2017) which claim that there is an optimal level of financial leverage for a company and therefore a significant relation between financial leverage and financial performance. It could therefore be favorably to use financial leverage to increase the company’s business opportunities, which is a reasoning supported by the pecking order theory (Myers, 1984). The agency theory claim that financial leverage
can make the company more efficient since the free cash flows decrease when the company need to pay interest. Evidence from prior research by Edim, Atseye and Eke (2014) supports this hypothesis, and partly evidence from the research by Abor (2005).

**Hypothesis 3**: There is a positive relation between Swedish companies’ financial leverage and financial performance measured as Return on Equity.

The fourth hypothesis is supported from prior research (Tsuruta, 2015) and the trade-off theory (Brealey, Myers and Allen, 2017), which claim that the relation between financial leverage and financial performance measured as Return on Equity is affected by the company’s size. The trade-off theory claim that large companies have the ability to handle debt better than small companies. According to the agency theory have large companies often

**Hypothesis 4**: The relation between financial leverage and financial performance measured as Return on Equity differ between small companies and large companies.
4 Empirical Method

In this chapter the thesis’ sample is presented. This chapter also describes how data has been collected and how the selection of references has been handled. Even delimitations of the thesis are presented with motivations for why measurements are used and why some are not. The regression models and included variables are presented as well.

4.1 Population Description

The population is selected from active public Swedish companies listed on the Stockholm stock exchange. The companies are listed at Large Cap, Mid Cap and Small Cap. The total population from where the sample is selected contained 750 companies and totally 3750 observations from the years 2012 to 2016.

4.2 Multivariate Method

It is important to choose the appropriate multivariate method for the research. The relationship between financial leverage and financial performance is suitable to analyze with a multiple regression. Multiple regression fits research where there is a single metric dependent variable which is related to two or more independent variables. This fits the thesis’ research questions. Financial performance is the dependent variable, and the other variables, including financial leverage, are affecting it (Hair et al., 2013).

It is possible to use structural equation modelling instead. It allows for testing of more dependent variables and relationships at once. This might be good as financial leverage is measured in two different ways. The downside is that it is far more complex to use (Hair et al., 2013). There is no need to have the variables in the same regression as they can be tested separately by running the regression one more time. Considering the extra work needed to use structural equation modelling instead of a multiple regression, a multiple regression is an easier and more time effective way to go.

To estimate the coefficients in the multiple regression, Ordinary Least Squares (OLS) estimators are used. OLS estimators are widely used in multiple regression. It estimates the unknown parameters by minimizing the sum of the deviations of the actual observations from the predicted values. Given that the expected value of the error terms
are 0, uncorrelated, and have equal variances, OLS estimators are BLUE (Best Linear Unbiased Estimator), which makes it the best choice (Barreto and Howland, 2006).

4.3 Assumptions of Multivariate Regression

There are four assumptions that possibly affect every univariate and multivariate technique. If these assumptions are violated the results of the regression may be biased.

4.3.1 Normality

Normality is the most fundamental of all assumptions. It refers to the shape of the distribution of every independent metric variable, which should be normally distributed. This is tested by running tests for kurtosis and skewness on the variables. Both present how the variable is distributed compared to the normal one. Skewness describes the balance of the distribution, if it is shifted to one side or asymmetrical. Kurtosis describes the peakedness of the distribution, if the distribution is more concentrated, (higher peak) or evenly distributed among the observations (flatter) (Hair et al., 2013).

Univariate normality is when a variable is normally distributed, by itself. Multivariate normality refers to two more variables that are univariate normal and so are the combinations of them. Multivariate normality is harder to test, and most of the time it is sufficient that the variables have univariate normality (Hair et al., 2013). The authors have therefore only tested for univariate normality to see if the data is normally distributed.

If the variation from the normal distribution is too big, all the tests conducted with that variable could be invalid. However, what degree of deviation from normality that is considered too much is subjective. It depends on the size of the sample as well. What might be considered unacceptable with a small sample of 30 observations may be negligible with a big sample of 200 observations (Hair et al., 2013).

4.3.2 Homoscedasticity

Homoscedasticity is when the variance for the independent variables is equal for the whole range of the observations. If it is not, the variable suffers from heteroscedasticity. Homoscedasticity is important when using OLS estimators because OLS estimators give equal weight to all observations in the sample. If some observations have higher
4.3.3 Linearity

The multiple regressions detect correlation, and correlation only represents the linear relationship between the variables. If the relationship between the variables is not linear it is not represented in the results. If a non-linear relationship is detected a transformation of the variable (or variables) is often needed to achieve linearity. Different kinds of transformation are needed depending on what is causing the issue (Hair et al., 2013).

4.3.4 Absence of Correlated Errors

No model of reality is perfect, which is why an error term is included in the models. What is important though is that these prediction errors are uncorrelated with each other. If they are not, it means that there is an unexplained relationship present which has not been addressed properly. Some other factor is affecting the results, but it is not included in the model. This problem is often due to sampling methods, but is also often present in time series data (Hair et al., 2013). The problem is solved by identifying and including a variable that represents the omitted factor into the model.

4.4 Interpretation of regression models

4.4.1 Quality of the Regression Models

When running the regressions, the different models are evaluated using the coefficient of determination, usually referred to as $R^2$. It is a measurement of the predictive accuracy of the regression models. It represents the combined effects of all the independent variables and the intercept when predicting the dependent variable. To calculate it, you square the correlation between the actual and the predicted values of the dependent variable. The product is a number between 0 and 1, where 1 represents a perfect model which explains every single variation in the dependent variable. A value of 0 is the opposite meaning the model has no explanatory power (Hair et al., 2013). The adjusted $R^2$ measures the same thing but also takes into account the number of variables included in the model. This gives a more fair result when using a multivariate
regression model (Nagelkerke, 1991). The authors have used the adjusted $R^2$ to evaluate how good the models are at explaining financial performance, which is important for validation of the results.

The F-value from the ANOVA table was used to evaluate the regression model. It tells whether or not the models relationships are due to chance or not. The models have to be significant at the 5 percent level, which means that there is 95 percent certainty any relationships found are not due to chance (Barreto and Howland, 2006).

The relevance of variables individually is also evaluated using $p$-values. If the $p$-value is less than the level of significance, the variable is considered significant. All variables will need to be significant at the 5 percent level or less in a two tailed $t$-test in order to be considered significant in this research (Barreto and Howland, 2006).

### 4.4.2 Multicollinearity

Multicollinearity is the correlation between two or more of the independent variables. If multicollinearity is present in the regression it can have impact on the results. It decreases the explanatory power of the variables to the extent that they are correlated with each other. To maximize the explanatory power of each of the independent variables, the multicollinearity has to be minimized. Normally multicollinearity is measured by the Variance Inflation Factor (VIF), and if the VIF value is under 10, multicollinearity is not an issue for the variable. If it is above that it could have a negative effect on the results (Hair et al., 2013).

### 4.4.3 Reliability, Replicability and Validity

There are three criteria that are important to asses when conducting quantitative research, the reliability, replicability, and validity of the research.

*Reliability* is about whether or not the results of research would be the same if the research is conducted again, or if it is affected by random events that change the results. This is especially important for quantitative research. It can be evaluated by checking if the results differ when conducting the research again at a different time. If the results are the same, it is good (Bryman and Bell, 2015). This research is considered to be relatively stable by the authors since it is easy to conduct the research on the same
companies and the data is publicly available. If the research is conducted during another time period the results might differ, depending on how the market is performing and if the companies change their financial structure. This however does not change over a night, which implies there should be high stability. The fact that the research collects data from a whole economic cycle also lowers the risk for time specific effects. Nonetheless the risk for different results will always be present.

*Replicability* evaluates if the research is possible to conduct again by someone else. The research must include so much detail that someone else could do it the same way again (Bryman and Bell, 2015). The authors have to the best of their ability written down every part of the research process that is of value, to ensure high replicability.

There are four different types of *validity*. One type of validity evaluates if what the variables measure actually are significant for what they are supposed to measure. If not the results of the research are not reliable. This is referred to as the measurement validity (Bryman and Bell, 2015). In an effort to ensure that all variables are relevant, only variables (or equivalents) used in prior research are included in the regression models. The other three types of validity are internal, external, and ecological validity.

*Internal validity* addresses if the conclusions about causality can be trusted (Bryman and Bell, 2015). By linking existing theories to why financial leverage affect financial performance as it does, the authors anticipates that a causal relationship between financial leverage and financial performance can be found by the thesis. These theories have been further explained in the “Theoretical Frame of Reference” chapter.

*External validity* asserts if the results are generalizable or not. In other words, if the sample is representative for the whole population (Bryman and Bell, 2015). As described in the section “Sample”, there are several measures that can be executed in order to make sure that the sample is representative. The authors have analyzed missing values, outliers, and the data in general to reach high external validity in a Swedish context.

*Ecological validity* is concerned with if the findings are applicable to the normal everyday life of people. Results can be affected by the way interviews are conducted
and even by the fact that a person is being interviewed at all (Bryman and Bell, 2015). The fact that the thesis only uses secondary data means that there is low control over this. At the same time, almost all the information needed for this research is made publicly available in the company's financial statements. And they are obligated by law to give a fair picture of the actual state of the company. With regard to this the authors believe the research to have high ecological validity.

4.5 Dummy Variables

In order to incorporate non-metric data in the model, dummy variables are used. Dummy variables can only take two values, 1 or 0. One variable then represents one category. When interpreting the results of the regression, it is possible to determine the effects that are dependent on that specific category (Hair et al., 2013). This will enable the author to include effects depending on size or industry. When accounting for size, the sample is divided into two groups. Companies with a size larger than the median value are in one group, and companies with a size smaller than the median value are in the other group.

4.6 Sample Examination

Companies that belong to the financial sector are excluded since their liabilities and capital structure differ substantially from non-financial companies (Lee and Li, 2016), which also is supported in prior research where the relation between financial performance and financial leverage is investigated (Vithessonthi and Tongurai, 2015). The classification of the different industries in the data from Thomson Reuters Eikon that are included in the financial sector according to “Industry Classification Benchmark” classifications and therefore have been excluded from the sample are Banks, Equity investments instruments and Financial services. Companies with more than one observation each year because of different stock types (for example one A and B-stock) were corrected to just one observation. This step is done to get data where each company’s numbers has equal weight in the sample for each year. Inactive companies are excluded. Companies that had not reported anything were deleted for all the years, as well as observations without any data reported.

Observations with negative values in the variables Return on Assets or Return on Equity were excluded from the sample. Negative values in other variables measuring financial
performance like \textit{Sales} and \textit{Earnings before interest, taxes, depreciation and amortization} have been excluded in prior research (Huizinga, Laeven and Nicodeme, 2008; Ghosh, 2010; Gonzalez, 2013). These research have excluded negative values with a reasoning about that companies with negative financial performance tends to suffer for financial distress (Gonzalez, 2013) and maybe will change their debt policy in a near future (Huizinga, Laeven, Nicodeme, 2008). These types of reasoning are also applicable in the thesis according to the authors of the thesis.

Observations with negative values in the either the short-term or long-term financial leverage ratios were deleted as they imply that either long-debt or short-term debt is higher than the total debt. This is not possible since total debt consist of both short-term and long-term debt, and the values reported in that observation cannot be trusted.

4.7 Missing Values

The authors have conducted an analysis of missing values in the data. This is done to avoid getting an unrepresentative sample. It is important to do this step if there are missing values in the sample, as it can affect the validity of the thesis (Hair et al., 2013). The analysis showed that out of the six variables with missing data, only two had more than 10 percent missing values, and none more than 20 percent. These are relatively low levels of missing data, but still enough to warrant a check for randomness of the missing values (Hair et al., 2013).

To check if a specific industry were more prone to have missing data, the sample was compared to the same sample but with all missing value companies deleted. The results showed that no major difference was present, that cannot be due to chance (see Appendix A).

To check if size was affecting the missing values, the authors compared how many of the companies with missing values in the sample that could be considered as small and large. Companies with total assets below the median value were considered as small, and companies with total assets above the median value were considered as large. By comparing the median value in total assets between when missing value companies were included and excluded, the authors could conclude that small companies tends to have more missing values, (see Appendix A).
When running the regression the missing value observations have been deleted pairwise, giving a bigger sample. This means that the missing values has not been used in the regression, but it allows for the other variables in the same observation to be used. This method is called the “All available approach” and is best used when there are moderate relationships between the variables, and relatively little missing values. It maximizes the use of all available data and gives the largest sample possible without imputing and replacing the missing values (Hair et al., 2013).

4.8 Outliers

Outliers have been analyzed to better understand the sample. These are observations that are uniquely and distinctly different from the other observations. Typically, outliers are recognized as an unusually low or high values that makes the observation stand out from the others. An outlier should not immediately be removed from the sample, but reviewed. It must be evaluated if the outlier does in fact represent a part of the sample or if it is affecting the results in a misleading way (Hair et al., 2013). When the evaluation was done, the authors found out that the data in the absolute top and bottom of the variables was multiple times higher or lower than data within the 25th and 75th percentiles. This problem was dealt with by winsorizing. This was done at the 90 percent level. This means that values above the 95th percentile were replaced by the value in the 95th percentile, and values lower than the 5th percentile were replaced by the values in the 5th percentile. This reduces the effect of the outliers, while still including them in the sample, to avoid a reduction in sample size (Shorack, 1996).

The total sample after the data was examined and processed are 1285 observations and represented 404 Swedish companies from the Stockholm stock exchange. According to Hair et al., (2013) is there a rule of thumb that the observations should be more than 15 times more observations that variables in the model. This rule of thumb is met in the thesis.

<table>
<thead>
<tr>
<th>N</th>
<th>Valid</th>
<th>ROA</th>
<th>ROE</th>
<th>TTD</th>
<th>STD</th>
<th>LTD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1096</td>
<td>1078</td>
<td>1284</td>
<td>1260</td>
<td>1260</td>
</tr>
<tr>
<td>Missing</td>
<td>189</td>
<td>207</td>
<td>1</td>
<td>25</td>
<td>25</td>
<td></td>
</tr>
</tbody>
</table>

Table 4.1 Frequency table for dependent and independent variables
4.9 Examination of Assumptions

The assumptions are not necessarily tested in every research, as they simply are assumptions. The authors decided to investigate the normality and homoscedasticity of the variables.

None of the variables had either kurtosis or skewness over 2 or below -2 (see chapter “Results”). Neither were any of the standard errors of kurtosis or skewness bigger than the mean which is good. This indicates that normality is not a problem for these variables.

Homoscedasticity was tested for using Glejser tests. The Glejser test regresses the residuals of the independent variables and if the coefficients are significant, heteroscedasticity is a problem. Only one of the relationships was found to not suffer from heteroscedasticity on the 5 percent level. It was between Return on Equity and short-term leverage. In all the other cases heteroscedasticity was present. This is a problem as it might make the results from the regression biased. The authors tried to remedy the problem by inverting the independent variables and by transforming them with the natural logarithm. Neither of the methods showed an improvement. The problem could possibly be due to long time series panel data. If this is the case it could possibly be solved by dividing the data into shorter time periods. This is not done since it requires more time when analyzing the results, and it is not clear that this is the cause of the problem. If it is not due to this problem, it could possibly be solved by replacing the predictors or transforming them in other ways, but due to the timeframe of the thesis, that cannot be done.

4.10 Data Collection and References

In order to investigate the research questions, secondary data is used. That means the authors are not the original producers of the data. It is also possible to use primary data, which refers to when the authors collect all data by themselves (Sekaran, 2003). To find the secondary data, Thomson Reuters Eikon’s database is used. Thomson Reuters Eikon is a recognized data supplier. Since 1941 they have been enforcing strict principles to secure their preservation of integrity and reliability from news, to ensure that they safeguard their independence and unbiasedness (Thomson Reuters Eikon, 2017). In this case the reliability and relevance of primary and secondary data is exactly the same, as
it is collected from the company's financial statements. By using data already collected by Thomson Reuters Eikon, there is a reduction of time consuming work collecting the data, and it will not affect the results. This is the reason the thesis used secondary data in the research. All of the variables are available through Thomson Reuters Eikon except Gross domestic product growth, which is collected from Statistiska Centralbyrán (SCB, 2017), a reliable data source.

This research is based on prior research in the field of finance and focuses on financial leverage and financial performance. To find relevant articles, the authors have used the library at Linnaeus University. At the library, both the database OneSearch and books have been used to collect information.

The database OneSearch is free to use for students at Linnaeus University and provides this research with reliable articles and the database is updated regularly. In OneSearch, the keywords of the thesis are used to find a majority of all articles. From the first search result, the authors have excluded articles with a function that allows the user to focus in a specific topic. In this research, the main focus has been on finance, but also accounting to get the most relevant and useful articles. As long as the search results have provided the thesis with relevant articles, the articles have been read. Before an article has been used as a reference, the authors have reviewed if the time since publication of the article decreases the relevance or reliability. The journal the article is published in is also relevant to evaluate if the article is suitable to use, and if the authors of the article have an expertise within finance. Journals in the area of finance and accounting have been preferred.

To find relevant books at Linnaeus University’s library, the authors have used prior research to find which type of books that could be useful and within which topics it is relevant to use books instead of scientific articles.
4.11 Regression Models

4.11.1 Models

The regression models that are used is an adaption from prior research. A few adjustments are made to better test the research questions in the thesis.

4.11.1.1 Dependent Variables

To get a broad perspective and determine if there is any difference between measurements used, the thesis use two accounting-based measurements as dependent variable, Return on Assets and Return on Equity. These two measurements are widely used in prior research (Ebaid, 2009; Vithessonthi and Tongurai, 2015; Yazdanfar and Öhman, 2015) and therefore the authors claim that it is relevant to use these accounting-based measurements in the thesis. The fact that these measurements only reflect the financial performance that already happened and exclude predictions of financial performance in the future (Masa’deh et al., 2015) is in line with the thesis research philosophy. If the measure includes predictions of future financial performance, like stock price and market-to-book ratio, it would include subjective expectations (Masa’deh et al., 2015). Because of these factors all market-based measurements are excluded from the thesis.

*Return on Assets:* is used as a dependent variable to measure the company’s financial performance and ignore the company’s financial leverage. The measurement is used in prior research (Vithessonthi and Tongurai, 2015; Yazdanfar and Öhman, 2015) to illustrate how the company’s financial performance is compared to the total assets and is calculated by the formula Net income divided by Total assets (Encyclopedia of small business, 2007; Brealey, Myers and Allen, 2017). When measuring financial performance as Return on Assets is a normative approach used, like in prior research (Ebaid, 2009).

*Return on Equity:* is used as a dependent variable to measure the company’s financial performance. Return on Equity is calculated by the formula Net income divided by Shareholders’ equity, and can therefore be seen as the return per shareholders’ invested monetary unit (Brealey, Myers and Allen, 2017). Return on Equity is also used in prior research (Abor, 2005). When measuring financial performance as Return on Equity a normative approach is used like in prior research (Abor, 2005; Ebaid, 2009).
Since both these measurements are used in prior research with significant relation to the independent variables (Abor, 2005; Ebaid, 2009), the authors of the thesis expect the relation to be significant in the thesis as well.

4.11.1.2 Independent Variables to Measure Financial Leverage

To get results that are more descriptive, the measurement of financial leverage is separated into three measurements, \textit{Total debt divided by Total assets}, \textit{Short-term debt divided by Total assets} and \textit{Long-term debt divided by Total assets}. The previously contradictory results supports testing all these measurements separately, as in prior research (Ebaid, 2009).

\textit{Total Debt divided by Total Assets}: measures how the capital structure is in a company. This means how much of all the company’s assets that are financed and owned by the stakeholders and how much of the assets that are financed by creditors and other external actors. Total debt divided by total assets is also a financial ratio used in prior research (Ebaid 2009). Total debt contains short-term debt and long-term debt, which show the aggregated debt situation of the company.

\textit{Short-term Debt divided by Total Assets}: measures the short-term debt’s proportion of total assets. Short-term debt means the debts a company has with a maturity date within one year and include debt associated with for example Accounts Payable and Tax Payable. In prior research like Abor (2005) and Ebaid (2009) are short-term debt included because of the fact that short-term debt is not used to finance big investments in a long-term perspective. It is common that short-term debt is connected to short-term assets and therefore seen as temporary (Brealey, Myers and Allen, 2017). In a research made by Rajan and Zingales (1995), they claim that the short-term debt can influenced by which industry the company belongs to and therefore not a direct choice of financing. Therefore the authors of the thesis claim that it is good to have short-term debt divided by total assets as an own variable, to determine if there is any relation between financial performance and this type of financial leverage.

\textit{Long-term Debt divided by Total Assets}: measures the long-term debt’s proportion of total assets. Long-term debt mean the debt a company has with a maturity date later than
one year from now. Examples of long-term debt are loans from a bank or bonds (Brealey, Myers and Allen, 2017). In prior research (Abor 2005; Ebaid; 2009) long-term debt divided by total assets has been used to determine the financial leverage used by companies in a long perspective.

4.11.1.3 Control Variables

*Size*: is included as a control variable in prior research (Abor 2005; Ebaid 2009; Vithessonthi and Tongurai, 2015) and are measured as total assets. The use of size as a control variable is supported from the trade-off theory which suggests that larger companies use more financial leverage than small companies (Brealey, Myers and Allen, 2017). Total assets is an accounting-based measurement for size, which is in line with the delimitation of the thesis. The authors of the thesis expect it to be a difference between small and large companies, since both prior research (Tsuruta, 2015) and the trade-off theory mention that company size influence the relation between financial leverage and financial performance.

By letting size be represented by a dummy variable, the regressions for hypothesis 2 and 4 can be run using only either the big or the small companies. By comparing the results from running the regression with the two groups, possible differences can be identified.

*Industry*: is used in prior research to show which industry a company belongs to. Industry is used as a dummy variable to account for differences in financial performance between industries (Vithessonthi and Tongurai, 2015), as different industries might have differences in both how good their financial performance is and how high their financial leverage is.

*Gross Domestic Product Growth*: is a measurement of the value of all produced goods and services within a country in a specific time period compared to the previous time period (Carlgren, 2016). This measurement is used in prior research as an indicator for if there is a recession or if the economy is strong (Vithessonthi and Tongurai, 2015).

*Year*: is used as a dummy variable to account for the differences between years in the regression models.
The measurement for financial performance is divided into two different regression models depending on if Return on Assets or Return on Equity is tested. These regression models are then divided into two different ones to better describe the relation between financial performance and different types of financial leverage.

Equations testing hypothesis 1 and 2:
\[
\text{ROA}_{i,t} = \beta_0 + \beta_1 \text{TDD}_{i,t} + \beta_2 \text{Size}_{i,t} + \beta_3 \text{Ind}_{i,t} + \beta_4 \text{GDPG}_{i,t} + \beta_5 \text{Year}_{i,t} + \epsilon
\]
\[
\text{ROA}_{i,t} = \beta_0 + \beta_1 \text{STD}_{i,t} + \beta_2 \text{LTD}_{i,t} + \beta_3 \text{Size}_{i,t} + \beta_4 \text{Ind}_{i,t} + \beta_5 \text{GDPG}_{i,t} + \beta_5 \text{Year}_{i,t} + \epsilon
\]

Equations testing hypothesis 3 and 4:
\[
\text{ROE}_{i,t} = \beta_0 + \beta_1 \text{TDD}_{i,t} + \beta_2 \text{Size}_{i,t} + \beta_3 \text{Ind}_{i,t} + \beta_4 \text{GDPG}_{i,t} + \beta_5 \text{Year}_{i,t} + \epsilon
\]
\[
\text{ROE}_{i,t} = \beta_0 + \beta_1 \text{STD}_{i,t} + \beta_1 \text{LTD}_{i,t} + \beta_2 \text{Size}_{i,t} + \beta_3 \text{Ind}_{i,t} + \beta_4 \text{GDPG}_{i,t} + \beta_5 \text{Year}_{i,t} + \epsilon
\]

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Variable</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROA</td>
<td>Return on Assets</td>
<td>Net income / Total assets</td>
</tr>
<tr>
<td>ROE</td>
<td>Return on Equity</td>
<td>Net income / Shareholders Equity</td>
</tr>
<tr>
<td>TTD</td>
<td>Total financial leverage</td>
<td>Total debt / Total assets</td>
</tr>
<tr>
<td>STD</td>
<td>Short-term financial leverage</td>
<td>Short-term debt / Total assets</td>
</tr>
<tr>
<td>LTD</td>
<td>Long-term financial leverage</td>
<td>Long-term debt / Total assets</td>
</tr>
<tr>
<td>Size</td>
<td>Size</td>
<td>A dummy variable for total assets</td>
</tr>
<tr>
<td>GDPG</td>
<td>Gross Domestic Product Growth</td>
<td>((\text{GDP}<em>t - \text{GDP}</em>{t-1}) / \text{GDP}_{t-1})</td>
</tr>
</tbody>
</table>

Fixed effects:
- **Ind**: Industry of activity – A dummy variable for each industry
- **Year**: Year – A dummy for each year
- **ε**: Error term – Error term

Table 4.2 Variables
5 Results

*In this chapter, the results from the regression models are presented. This chapter is divided into three different sections, on where general comments about the regression models are presented, one with focus on Return on Assets and at the end one section with focus on Return on Equity.*

The significance level of the models are all significant at the 5 percent level according to the F-value in the ANOVA table. This means that the explanatory power found in the regressions is with 95 percent certainty not due to chance.

None of the independent variables suffer from multicollinearity in any of the models. All of their Variance inflation factor (VIF) values are below 10, as seen in table 5.1 – 5.8 later in this chapter.

The Significance column in the following tables describes the p-value using a two-tailed t-test in the following tables. Contrary to the independent variables, most of the control variables were insignificant at the 5 percent level throughout all of the regressions. The total SPSS outputs are available from the authors upon request.

<table>
<thead>
<tr>
<th></th>
<th>ROA</th>
<th>ROE</th>
<th>TTD</th>
<th>STD</th>
<th>LTD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>0.0921</td>
<td>0.1888</td>
<td>0.5304</td>
<td>0.2975</td>
<td>0.2235</td>
</tr>
<tr>
<td>Median</td>
<td>0.0743</td>
<td>0.1542</td>
<td>0.5456</td>
<td>0.2899</td>
<td>0.1777</td>
</tr>
<tr>
<td>Minimum</td>
<td>0.0201</td>
<td>0.0272</td>
<td>0.1709</td>
<td>0.0000</td>
<td>0.0000</td>
</tr>
<tr>
<td>Maximum</td>
<td>0.2567</td>
<td>0.5611</td>
<td>0.8280</td>
<td>0.6532</td>
<td>0.6628</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>0.0627</td>
<td>0.1362</td>
<td>0.1747</td>
<td>0.1780</td>
<td>0.2005</td>
</tr>
<tr>
<td>Skewness</td>
<td>1.3110</td>
<td>1.2850</td>
<td>-0.3130</td>
<td>0.1720</td>
<td>0.8100</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>1.0010</td>
<td>1.1600</td>
<td>-0.6100</td>
<td>-0.5840</td>
<td>-0.3960</td>
</tr>
</tbody>
</table>

Table 5.1 Descriptive Statistics Variables
5.1 Relation between Return on Assets and Financial leverage

The regression model, which describes the relation between Return on Assets and TTD, has 0.119 as adjusted R². The beta coefficient for TTD is negative and is significant at the 0.1 percent level.

<table>
<thead>
<tr>
<th>Model</th>
<th>Coefficient</th>
<th>t</th>
<th>Significance</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>19.118</td>
<td>8.499</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>TTD</td>
<td>-9.239</td>
<td>-8.361</td>
<td>0.000</td>
<td>1.176</td>
</tr>
<tr>
<td>Fixed effects</td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
</tr>
</tbody>
</table>

Table 5.2 Return on Assets in relation to TTD

When rerunning the to test the relation between Return on Assets and TTD, and account for different sizes, the results do not differ a lot. The significance level is at 0.1 percent for both small and large companies, like when measuring all companies together. Even the relation between Return on Assets and TTD is the same, a negative relation. The adjusted R² for the regression model that only include small companies is 0.069 and for the regression model with only large companies is the adjusted R² 0.073.

<table>
<thead>
<tr>
<th>Model</th>
<th>Coefficient small companies</th>
<th>Significance small companies</th>
<th>Coefficient large companies</th>
<th>Significance large companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>21.296</td>
<td>0.000</td>
<td>17.740</td>
<td>0.000</td>
</tr>
<tr>
<td>TTD</td>
<td>-8.866</td>
<td>0.000</td>
<td>-9.611</td>
<td>0.000</td>
</tr>
<tr>
<td>Fixed effects</td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
</tr>
</tbody>
</table>

Table 5.3 Return on Assets in Relation to TTD with Different Company Size

When dividing the financial leverage into two different parts, STD and LTD, the adjusted R² was 0.103. The beta coefficient for STD is negative and significant at the 1 percent level. The beta coefficient for LTD is also negative, but significant at the 0.1 percent level. The negative coefficient for STD and LTD differ, and show a more
negative relation between LTD and Return on Assets than between STD and Return on Assets.

<table>
<thead>
<tr>
<th>Model</th>
<th>Coefficient</th>
<th>t</th>
<th>Significance</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>18.087</td>
<td>7.883</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>STD</td>
<td>-4.550</td>
<td>-3.433</td>
<td>0.001</td>
<td>1.694</td>
</tr>
<tr>
<td>LTD</td>
<td>-8.971</td>
<td>-7.009</td>
<td>0.000</td>
<td>2.004</td>
</tr>
<tr>
<td>Fixed effects</td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
</tr>
</tbody>
</table>

Table 5.4 Return on Assets in relation to STD and LTD

There are no major differences between small and large companies when the financial leverage is divided into two different groups. The small differences that are present are not enough to draw a conclusion about it. These results are hence considered equal.

<table>
<thead>
<tr>
<th>Model</th>
<th>Coefficient small companies</th>
<th>Significance small companies</th>
<th>Coefficient large companies</th>
<th>Significance large companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>21.604</td>
<td>0.000</td>
<td>16.552</td>
<td>0.000</td>
</tr>
<tr>
<td>STD</td>
<td>-4.740</td>
<td>0.022</td>
<td>-5.050</td>
<td>0.008</td>
</tr>
<tr>
<td>LTD</td>
<td>-10.428</td>
<td>0.000</td>
<td>-8.595</td>
<td>0.000</td>
</tr>
<tr>
<td>Fixed effects</td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
</tr>
</tbody>
</table>

Table 5.5 Return on Assets in Relation to STD and LTD with Different Company Size

5.2 Relation between Return on Equity and Financial leverage

The regression model for the relation between Return on Equity and TTD showed a positive relation at the significance level of 1 percent. The adjusted R² for the model is 0.054.

<table>
<thead>
<tr>
<th>Model</th>
<th>Coefficient</th>
<th>t</th>
<th>Significance</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>24.890</td>
<td>4.880</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>TTD</td>
<td>7.270</td>
<td>2.901</td>
<td>0.004</td>
<td>1.176</td>
</tr>
<tr>
<td>Fixed effect</td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
<td>Included</td>
</tr>
</tbody>
</table>

Table 5.6 Return on Equity in Relation to TTD
The regression models which investigate the relation between *Return on Equity* and *TTD*, and account for different company size, show some differences. The relation between *Return on Equity* and *TTD* is positive in both the regressions, but with a bigger difference in the relation than the other regression models that account for the size difference. In this case has the coefficient for small companies have a value of 10.974, which is around the double compared to the coefficient for large companies (5.416). Also the significance level differ, for small companies the level of significance is at 1 percent. For large companies the relation is insignificant, as it is above the 5 percent level. The adjusted R² is 0.027 for the regression including small companies, compared to adjusted R² for the regression model including large companies which is 0.032.

<table>
<thead>
<tr>
<th>Model</th>
<th>Coefficient small companies</th>
<th>Significance small companies</th>
<th>Coefficient large companies</th>
<th>Significance large companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>25.946</td>
<td>0.004</td>
<td>22.162</td>
<td>0.002</td>
</tr>
<tr>
<td>TTD</td>
<td>10.974</td>
<td>0.005</td>
<td>5.416</td>
<td>0.132</td>
</tr>
<tr>
<td>Fixed effect</td>
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</table>

Table 5.7 Return on Equity in Relation to TTD with Different Company Size

In the regression model describing the relation between *Return on Equity* and the financial leverage divided into two different variables, the coefficients showed different directions. *Return on Equity* and *STD* had a positive relation at the significance level of 0.1 percent, as a contrast to *Return on Equity* and *LTD* which had a negative relation at a significance level of 5 percent. The regression model’s adjusted R² is 0.092.

<table>
<thead>
<tr>
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<th>t</th>
<th>Significance</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>24.007</td>
<td>4.751</td>
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<td></td>
</tr>
<tr>
<td>STD</td>
<td>17.303</td>
<td>5.929</td>
<td>0.000</td>
<td>1.694</td>
</tr>
<tr>
<td>LTD</td>
<td>-5.616</td>
<td>-1.993</td>
<td>0.047</td>
<td>2.004</td>
</tr>
<tr>
<td>Fixed effects</td>
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<td>Included</td>
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</tbody>
</table>

Table 5.8 Return on Equity in Relation to STD and LTD
When comparing the regression models with different companies excluded, there are some differences compared to when all companies are included. When investigating the influence of company’s size, the relation between Return on Equity and LTD has changed from negative to positive for small companies. The relation is not significant for either small or large companies, since the significance level is above 5 percent. The relation between Return on Equity and STD is still positive with a significance level at 0.1 percent for both small and large companies. The adjusted R² for the regression model including small companies is 0.042, while the adjusted R² for the regression including large companies is 0.107.

<table>
<thead>
<tr>
<th>Model</th>
<th>Coefficient</th>
<th>Significance</th>
<th>Coefficient</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>small companies</strong></td>
<td><strong>large companies</strong></td>
<td><strong>small companies</strong></td>
<td><strong>large companies</strong></td>
</tr>
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<td>20.121</td>
<td>0.005</td>
</tr>
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<td>STD</td>
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<td>0.000</td>
</tr>
<tr>
<td>LTD</td>
<td>4.750</td>
<td>0.329</td>
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<td>0.167</td>
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<tr>
<td>Fixed effects</td>
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</tr>
</tbody>
</table>

Table 5.9 Return on Equity in Relation to STD and LTD with Different Company Size
6 Analysis

In this chapter are different analyzes from the results presented. First, an analysis is presented about the quality of the research. Then is it followed by an analysis of the results from hypothesis 1 and 2, and in the end, an analysis from the results of hypothesis 3 and 4.

6.1 Research Quality Analysis

The relatively low adjusted $R^2$ showed that the regression models had little explanatory power of the independent variables when including the whole sample, and even less when only running the regression for the small or large companies. The big number of observations is what enable this small relationship to still be significant (Hair et al., 2013). The results was expected by the authors as the models are not built up by that many variables, and it would be hard to include all possible variables that affect a company’s financial performance. The adjusted $R^2$ implies that the models, basically consisting of only financial leverage and size, explain around 10 percent of the company’s financial performance. It indicates that financial leverage barely have any effect at all. It is just one of many variables that explain a company’s financial performance. Even if the authors of the thesis mean that financial leverage has a bigger effect on a company’s financial performance than the adjusted $R^2$ indicates, it could not be proved by the results from the regression models. If the measurement for financial performance instead had been Sales, the results could have a more explanatory power. This reasoning is based on the fact that Return on Assets and Return on Equity are relative measurements for financial performance. This means that they do not necessarily have to increase even if the company’s sales increases. This because Assets or Shareholders’ Equity can increase with the same amount as the sales.

The fact that heteroscedasticity was found to be present in the data is needed to be considered according to the authors. The authors did not succeed in mitigating the heteroscedasticity, which means that the results could be biased. The extent of how much it has affected the data is unknown. The OLS estimators are unbiased but no longer considered BLUE (Hair et al., 2013).
The standard errors are directly affected by heteroscedasticity and thus the tests conducted using these standard errors are also affected, and possibly wrong. This means that the results and interpretations of the thesis cannot be completely trusted. To mitigate this problem, the authors would need to understand what causes it. This could not be done within the current timeframe hence the authors have to draw conclusions from the results available. One should remember that this affects the reliability and validity of the research in a negative way when interpreting the results.

The fact that the sample consist of more large than small companies could have an effect on the results. Why there are more large companies with data available than small companies can depend on different reasons. One possible reason could be that large companies measured by total assets tends to have a higher market capitalization value. Assuming that large companies have more shareholders, with more influence and requirements of transparency, the large companies maybe produce more specific financial statements. This biased sample when it comes to the size difference could have decreased the reliability of the results.

6.2 Relation between Return on Assets and Financial leverage

The first hypothesis, stated that financial leverage had a negative relation to Return on Assets, could be supported at a significance level of 1 percent. Both TTD and LTD had a significance level of 0.1 percent, and STD had a significance level of 1 percent. As the hypothesis is stated with all three measurements for financial leverage evaluated together, the whole assessment is done at the 1 percent significance level. The results from the thesis support prior research like Ebaid (2009), and Yazdanfar and Öhman (2014).

The thesis’ results support the reasoning from the pecking order theory, companies that has high financial performance seems to have less financial leverage. The companies with low financial performance are then the ones that have to use financial leverage, therefore should a negative relation between these two variables occur. This is supported from the thesis’ results. Both when financial leverage is measured as TTD and when divided into two parts (STD and LTD), are the relations negative to financial performance measured as Return on Assets. According to the pecking order theory,
financial leverage is not the source of low financial performance, but the product of it, meaning that financial performance is the causal variable.

The agency theory’s reasoning about how financial leverage can affect the company’s financial performance could be an explanation to the negative relation between financial leverage and Return on Assets. The agency theory claim that high financial leverage is associated to financial distress. The financial distress could make a company less efficient and therefore decreases the financial performance when financial leverage increases. The agency theory also claim that there could be an interest conflict between different parts of a company as well, which could make the company less efficient since the shareholders and management do not want the same thing.

The second hypothesis, stating that the company’s size influence the relation between financial leverage and financial performance measured as Return on Assets, is rejected by the results. This conclusion is made since the relation between Return on Assets and all different measurements for financial leverage still has a negative direction for both small and large companies. Even the difference between STD and LTD influence on Return on Assets is approximately the same. All the regression models testing size’ influence have a level of significance at 0.1 or 1 percent.

The results from the regression models that only included small or large companies contradicts the prior research made by Vithessonthi and Tongurai (2015). In the research, Vithessonthi and Tongurai (2015) have a reasoning about how companies with business in more than one country could be considered as large companies. The authors claim that these large companies could take a bigger advantage of financial leverage than small companies, which is in line with the agency theory. The results from the thesis show the different relation. Small companies have the same, or possibly a less negative relation between financial leverage and Return on Assets than large companies, except for the relation between Return on Assets and LTD. Why this is the case could have a lot of reasons. One of them is the different sample. The thesis use a sample consisting of Swedish companies, while the research done by Vithessonthi and Tongurai (2015) use a sample from Thailand. Another reason could be from which time period the data is collected, since the data from Thailand is from the timespan 2007 to 2009. During these years Thailand suffered, like the rest of the world, from a recession.
in the economy. This could be compared to the thesis’ timespan, 2012 to 2016, which had a growth in the GDP in four out of five years (see Appendix B). Another interpretation could be taken with inspiration from the research done by Abor (2005). In this research, Abor (2005) claims that STD is preferable for companies compared to LTD since the expenses could differ between the different types of debt, which is supported from the results in the thesis.

The results from the thesis cannot support the trade-off theory. According to the trade-off theory, there should be a difference between small and large companies, and their influence on the relation between financial leverage and financial performance. There seems not to be a difference worth to mention between large and small companies when it comes to the relation between financial leverage and financial performance measured as Return on Assets.

6.3 Relation between Return on Equity and Financial leverage

The third hypothesis, stating that financial leverage have a positive relation to Return on Equity, is only partially supported. The results for TTD and STD support the hypothesis, while LTD reject the hypothesis. The hypothesis is stated so that all measurements for financial leverage are evaluated together, meaning that the hypothesis has to be rejected. The relation between TTD and STD, and Return on Equity have a positive relation at a significance level of 1 percent and 0.1 percent. The relation between LTD and Return on Equity have a negative relation with a significance level of 5 percent. Even if the positive relations between TTD and STD, and Return on Equity have a stronger significance level, the hypothesis is rejected since not all of the different relations are positive. The positive relation between TTD and STD, and Return on Equity support the trade-off theory, which claim that a company’s financial performance should increases when the financial leverage increases. This reasoning is contradicted though, since LTD and Return on Equity have a negative relation. This contradiction make the results interesting and open up for further research within the topic. One reason why LTD has a negative relation to Return on Equity could be explained by the pecking order theory, which claim that companies with low financial performance need financial leverage to run their business. This reasoning is recurrent from the analysis of Return on Assets’ relation to financial leverage. The reasoning is based on the argument that STD can improve a company’s financial performance in a short-term perspective, but that the
company need to develop their business in order to be successful in a long-term perspective. This reasoning is inspired by both the trade-off theory and the pecking order theory, which both claim that more capital and increasing cash flows can improve the business opportunities and investment possibilities.

The results in the thesis could also be interpreted with support from the agency theory, which have an explanation for both a positive and negative relation between financial leverage and financial performance. With the positive relation between STD and TTD, and Return on Equity, the agency theory claim that companies tends to be more efficient when they use financial leverage. On the other hand, the negative relation between LTD and Return on Equity could be explained by a reasoning where the company suffer for financial distress due to the financial leverage, and therefore is less efficient. The financial distress may not affect the company in a short-term perspective, but the effects are visible in a long-term perspective.

Previous research such as Abor (2005) have showed the same results as in the thesis. The research from Ghana (Abor, 2005) showed a negative relation between LTD and Return on Equity, but a positive relation to TTD and STD. This could according to the authors be interpreted as that the country from where the sample is collected does not affect the results, but need to be investigated further before a conclusion can be made.

The fourth hypothesis, stating that the company’s size influence the relation between financial leverage and financial performance measured as Return on Equity, could be supported. This since there is a difference between small companies and large companies, when it comes to the relation between LTD and Return on Equity. When not splitting the sample by company size, LTD showed a negative relation to Return on Equity. This has been changed to a positive relation between LTD and Return on Equity when only small companies are included, while there was still a negative coefficient for the large companies. It is important to mention that neither the small or the large companies had a relation that was significant, when they were tested independently. The fact that LTD not only changes sign, but also loses significance when split up in groups by size, suggests that size has some influence on the relationship.

The result which show a positive relation between financial leverage measured as all variables (TTD, STD and LTD) and Return on Equity support prior research (Tsuruta,
2015). In the analysis from Tsuruta (2015), the author claim that small companies can take advantage of financial leverage. Tsuruta (2015) reasoning about how small companies can get help to manage their business from the lenders. With help like monitoring the business, small companies can be more efficient and do more appropriate business decisions. This indirect effect from financial leverage can be supported by the pecking order theory, which claim that there is no direct relation between financial leverage and financial performance, but there can be consequences from use financial leverage that can either give a company an advantage or disadvantage. The result from the thesis contradict the trade-off theory, since the trade-off theory claim that large companies can handle financial leverage better than small companies. Only one relation, the relation between STD and Return on Equity, has a more positive relation for large companies than small companies. This could possibly be explained by the reasoning about how expensive the different types of debt are. Since large companies may be seen as more reliable than small companies, the large companies could get better terms when it comes to Accounts payable. Even if only one test showed a negative relation between LTD and Return on Equity for large companies, there is not a consistently positive relation and therefore could the results from the thesis not support the trade-off theory. The evidences from Tsuruta (2015) and this thesis contradicts the agency theory, since the agency theory claim that large companies should have a better relation between financial leverage and financial performance than small companies (Yazdanfar and Öhman 2014).

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesis 1: Negative relation between ROA and Financial leverage</td>
<td>Supported at 1 percent-level</td>
</tr>
<tr>
<td>Hypothesis 2: The relation between ROA and Financial leverage is influenced by size</td>
<td>Rejected</td>
</tr>
<tr>
<td>Hypothesis 3: Positive relation between ROE and Financial leverage</td>
<td>Rejected at 5 percent level</td>
</tr>
<tr>
<td>Hypothesis 4: The relation between ROE and Financial leverage is influenced by size</td>
<td>Supported</td>
</tr>
</tbody>
</table>

Table 6.1 Summary Hypotheses and Results
7 Conclusion

In this chapter the authors’ of the thesis conclusions are presented. This chapter also contains implications of this research and suggestions for further research.

7.1 Conclusion

The purpose of this research was to investigate the relation between financial leverage and a company’s financial performance. It was aimed to do this in a Swedish context with companies listed at the Stockholm stock exchange. In order to do it, a sample of as many companies as possible were to be analyzed in a statistical manner through multivariate regressions.

To test the research questions financial performance was used as dependent variable. Financial performance was measured as Return on Assets and Return on Equity. The independent variables, which represent financial leverage, were measured as Total debt, Short-term debt and Long-term debt as the numerator and Total assets as the denominator.

The regression models results were analyzed, and some conclusions could be made. The first is that Return on Assets seems to have a negative relation to financial leverage, with no differences depending on size. When it comes to Return on Equity, the results were inconsistent but all variables showed a significant relation. Total debt divided by Total assets and Short-term debt divided by Total assets showed a positive relation, while Long-term debt divided by Total debt showed a negative relation. The relation changed when testing small and large companies separately, and all variables were not significant anymore, which indicates a difference depending on size.

The results from the thesis could, like the study made by Yazdanfar and Öhman (2014), give support for the pecking order theory when it comes to Return on Assets. Since the thesis used a sample representing all company sizes in Sweden, while Yazdanfar and Öhman focused on small and medium-sized companies, some research gaps have been filled. Both the trade-off theory and the agency theory claim that large companies should have a better relation between financial leverage and financial performance. This
is contradicted by the evidence from testing if the company size influence the relation between financial leverage and _Return on Equity_.

Companies, investors and creditors can use the evidence in the thesis to understand how Swedish companies are affected by the financial leverage, and therefore evaluate their financial performance more accurately. Companies need to understand the impact of financial leverage to make well informed decisions. Evidence from the thesis shows that the impact of financial leverage on the company’s financial performance depends on which measurement that is used to measure the financial performance. Since there seems to be a significant relation between financial leverage and financial performance, companies should be aware of the advantage and disadvantage associated to financial leverage. From a company perspective is it negative to use financial performance, since the relation between financial leverage and _Return on Assets_ is negative. From an investor’s perspective instead, which focuses on the _Return on Equity_, the evidence in the thesis implies that it is good to use financial leverage. An investor, as a shareholder, want to maximize the return on invested capital and this is possible to do when the business opportunities increase. For creditors, it is difficult to draw any definitive conclusion. This since the creditors get their return on the interest from their outstanding debt and therefore increase their own return when financial leverage increases. At the same time, the risk of financial distress for their client increases and therefore the risk of losing their capital. As the creditor has the “total” company as their client, the creditors should focus on _Return on Assets_. Since the evidence from the thesis showed a negative relation between financial leverage and _Return on Assets_, the authors of the thesis suggest a restrictive attitude when it comes to lending but then the creditors would not get any return.

Since the relation is different if the measurement for financial performance is _Return on Assets_ or _Return on Equity_, the attitude to financial leverage may differ if there is a company, an investor or a creditor perspective. The different attitudes to financial leverage is evidence for the problem associated to interest conflicts discussed in the agency theory and confirm the importance of understanding how it could both increase and decrease a company’s financial performance.
7.2 Limitations and Suggestion for Further Research

The limitations for this research are mainly related to the quality of the data. Since the data suffered from heteroscedasticity, the results from all of the thesis’ regressions could be biased. This problem was present for all of the variables, except for Short-term debt divided by Total assets. The results are affected by the data that is available, which motivate to process the data more in order to get reliable results. During this part there was a shortcoming in the authors knowledge of data processing and transformation which mean that the heteroscedasticity could not be mitigated.

In further research, the authors of the thesis suggest to focus on a specific company size, like only large companies, or why Total debt divided by Total assets and Short-term debt divided by Total assets have a positive relation to Return on Equity, while Long-term debt divided by Total assets has a negative relation.
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Appendices

Appendix A: Industries and size______________________________ 64
Appendix B: GDP Growth____________________________________ 65
Appendix A, Industries and size

Industries with and without missing values

<table>
<thead>
<tr>
<th>Industry</th>
<th>% With missing values</th>
<th>% Without missing values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil &amp; Gas</td>
<td>1,7</td>
<td>1,4</td>
</tr>
<tr>
<td>Basic Materials</td>
<td>4,4</td>
<td>4,6</td>
</tr>
<tr>
<td>Industrials</td>
<td>28,3</td>
<td>30,6</td>
</tr>
<tr>
<td>Consumer goods</td>
<td>12,1</td>
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</tr>
<tr>
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<td>12,4</td>
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<td>13,5</td>
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<tr>
<td>Technology</td>
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<td>12,8</td>
</tr>
<tr>
<td>NA</td>
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<td>0</td>
</tr>
<tr>
<td>Total</td>
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<td>100</td>
</tr>
</tbody>
</table>

Size with and without missing values

0 = small companies
1 = large companies

Size with missing values included

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<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
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<td>49,8</td>
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<tr>
<td></td>
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<td>644</td>
<td>50,1</td>
<td>50,2</td>
</tr>
<tr>
<td>Total</td>
<td></td>
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<td>99,9</td>
<td>100,0</td>
</tr>
<tr>
<td>Missing</td>
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<td>1</td>
<td>.1</td>
<td></td>
</tr>
<tr>
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<td></td>
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<td></td>
</tr>
</tbody>
</table>

Size without missing values

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<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
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<tr>
<td></td>
<td>1</td>
<td>593</td>
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<td>56,1</td>
</tr>
<tr>
<td>Total</td>
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<td>1057</td>
<td>100,0</td>
<td>100,0</td>
</tr>
</tbody>
</table>
Appendix B, GDP Growth

Gross Domestic Product Growth in Sweden, 2012-2016

2012: -0.03 %
2013: 1.2 %
2014: 2.6 %
2015: 4.1 %
2016: 3.3 %