Change in Capital Structure of non-listed firms in Sweden.

- A post crisis analysis

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Spring Semester 2015
Degree Project, 30hp
Abstract

In present times, the world has experienced periods permeated by financial instability and fluctuations in terms of financial health. The occurrence of the financial crisis that struck the world economy in 2007 had a severe impact on firms wishing to acquire loans, not least the non-listed firms that are known to be highly dependent on external financing. The financial crisis led to enforced and amended regulations by the banks and a stricter approach in terms of acquiring loans due to higher degrees of required capital adequacy. This gave us grounds to further investigate if the financial crisis has had an impact on the capital structure of non-listed firms.

Through previous literature, we found a profound lack of studies relating to the changes in capital structure regarding non-listed firms. This acted and constituted our research gap. In terms of exploiting our research gap, we established the research question “Has the capital structure for non-listed firms in Sweden changed post crisis?”. This in order to attempt to examine if there has been a change in the capital structure of non-listed firms during our period of research, 2007-2013.

Due to this, we conducted this study to investigate and observe if there has been a change in capital structure for non-listed firms post crisis. We utilised specific determinants of capital structure to observe any change. These determinants were acquired through literature and acted as a foundation for our study. We used Sweden as our empirical field and adopted a deductive research approach as a result of our epistemological stance constituted of a positivistic view and our ontological stance of objectivism. This in turn led to a quantitative study obtaining numeric information through the use of Swedish non-listed firms financial statements to address our main intentions of this study.

One of our main intentions implied increasing and contributing to a more in depth knowledge regarding non-listed firms in times of economic uncertainty. Moreover, we intended to seek if our chosen determinants had an affect on the capital structure of non-listed firms, and if so to what extent. Also, we intended to analyse our acquired components in the light of the pecking order theory that attempts to explain the capital structure of firms through firm performance.

Our use of statistical tests presented findings revealing a change in capital structure for non-listed firms in Sweden post crisis when we observed an overall decrease in the debt/equity ratio through our years of study. In light of the pecking order theory of capital structure, we found mainly contradicting evidence in terms of evaluating the capital structure through firm performance. In terms of the specific determinants of capital structure used to utilise the statistical tests, our findings conveyed relationships with our main determinant, the debt/equity ratio. This in its turn revealed evidence predicting that our independent variables are connected to the debt/equity ratio. Hence, plays a role in determining the capital structure of non-listed firms.

Key words
Capital Structure, Sweden, Non-listed firms, Financial Crisis, Post crisis, Banks, Regulations, Theories of capital structure, Pecking order theory, Debt/Equity ratio
Acknowledgement

The completion of our thesis would not have been viable without the help and support of our supervisor Catherine Lions. Her involvement and commitment to our work has been vital for our process and has proven to be of great help for the computation of this thesis. We are grateful for her dedication and the time she has put into our thesis and we owe her our greatest gratitude. Further we would like to thank all of our friends and family for their continuous support and the help that we have received throughout our writing process.

Sincerely,

Emma Wallvik and Louisa Turton
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1. Introduction

In this chapter we will introduce and provide an explanation towards our main intention and purpose of our study, which is to see how the firms’ capital structure during the selected research period have reacted post crisis. Our background will then lie as a basis for establishing our gap, which will lead us towards our main research question and purpose of the study. We intend to finalise the chapter by providing the reader with a further insight in terms of contributions and limitations regarding our study, grounded on the capital structure of non-listed firms in Sweden.

1.1 Problem Background

Factors addressing the capital structure of firms are an area that has attracted a vast amount of attention since the pioneering work of the famous economists Modigliani and Miller (1958, 1963). Their work has throughout the years received a lot of credibility and has led to further theories regarding capital structure of firms. Famous theories that have been developed from Modigliani and Miller’s (1958, 1963) research regarding the capital structure are the Trade-off theory initiated by Myers (1984), Pecking order theory by Donaldson (1961) and the Agency cost theory by Jensen and Meckling (1976). These famous theories attempt to describe the capital structure of firms in terms of their mix of debt and equity. These concepts combined with the change in regulations point us in the direction of addressing the issue regarding any change within the capital structure of firms.

When distinguishing between listed and non-listed firms, the access to financial instruments is proclaimed to be harder in terms of generating sufficient sources of finance for the non-listed firms. This is known due to the fact that they are believed to have a limited amount of access to the financial markets, in other words, bonds and stocks. Liu (2012, p. 421) confirms this in his work by noting that the growth of small and medium firms’ (SMEs) are constrained by a few factors, amongst them their limited access to equity markets. In our sense, the factor that we place great importance towards is the perception that non-listed firms, regardless of size, have a decreased amount of access to financial markets. In terms of our study, non-listed firms with their reduced access falls into the scope of our research. Therefore we will use some literature based on SMEs in this study since there is limited literature regarding non-listed firms when previous studies used size as a constraint. To enhance, the factor that we perceive to be of prime importance to our study is the firm’s access to financial markets. We consider both non-listed firms and SME’s to have a decreased amount of access, hence within the scope of our research. It is to assume that the non-listed firms’ access to financing, when it comes to acquiring loans through financial institutions can be seen to be of high value for their existence. We see similarities between non-listed firms and SMEs in terms of characteristics of importance for us and they are therefore used almost indifferently throughout the thesis.

The general notion is that non-listed firms have suffered post crisis due to the decreased financial health of the global economy. This may have an impact on firms’ capital structure when access to equity and debt financing has diminished. We believe this problem, aligned with the stricter enforced regulations within the financial markets, contributes to the non-listed firms to seek a broader perspective to gain access to alternative financial sources, which may affect their capital structure. Furthermore, the
European Commission (2007) enlightens the problem that SMEs have a reduced availability to financed capital. They point out that when it comes to the finance and sustainability of these firms’, they have to be able to generate sufficient funds more easily to make use of their full capacity. When speaking of financial structures, there are mainly two types, the market based structure common in countries such as the US and the UK and the bank-based structure that is apparent in countries such as Germany and Japan (Beck & Levine, 2002, p. 148). When considering Sweden, which is our main focus, the financing of firms is highly dependent on the banking industry seeming that Sweden has a bank oriented financial structure (Sjögren & Zackrisson, 2005, p. 75).

During the year 2007, the world faced a financial crisis that proved to have a tremendous economic impact on the world economy. Many firms suffered a hard time securing an effective source of funding because of the decreased liquidity that flooded the markets (King, 2013, p. 4144). FAR (2011, p. 3) stipulates the fact that due to the decreased amount of liquidity in the markets, the governments tried to stimulate and secure an increased liquidity in the economy by decreasing the interest rates. As a result, the firms now faced new challenges when multiple factors correlated generating a chain reaction.

Other factors that ultimately have an effect in terms of determining the amount of leverage of a firm, is the financial health of the banking sector. During recent periods of financial uncertainty, a number of regulations have been enforced and amended to create a soundness and stability within the financial sector to generate a more stable playing ground amongst banks to make sure banks obtain enough capital in line with the risks they take and make the probability of default smaller (Hull, 2012, p. 257). The capital requirements within the banking sector played a prominent role when the requirements of Basel II became stricter and was implemented together with the settlement of the governmental stimulation that helped the banks through the crisis and towards a smoother recovery. Recent years have distressed the interactions between firms and institutions and lessons have been learned, which have led to further strengthened regulations in form of the Basel accords (Ramona, 2014, p. 463). Due to previous events and the questionable strength of the major banks, lending standards have been tightened affecting both individuals and financial institutions’ generation of capital (Ramona, 2014, p. 463).

This formulates the background to our topic regarding the capital structure for Swedish non-listed firms during the past few years. Grounded on the stressed conditions that have shown to have a major impact on the world economy. This aligned with the implementations and further tightening of lending standards and the regulations that has come with the Basel accords that has sent a clear message towards the major financial institutions. A message that banks need to obtain a sufficient buffer in line with the risks it takes, which has been known to affect the amount of lending, not least for the non-listed firms.

1.2 Gap
When acknowledging the importance of our intended work, it brings us towards finding a gap worthy of pursuing in terms of value and contribution.

Throughout previous studies, many authors and researchers have primarily placed their main focus on directing their conducted research towards the banking sector in terms of
the impact of regulations and the monetary well being of the monetary markets since past historical events and fluctuations. For instance, Bruns and Fletcher (2008) investigate the decision making of the bank personnel when considering lending to SMEs in Sweden. Further, Cem et al. (2012) direct their main focus on evaluating if changes have occurred in terms of the bank lending standards. This in comparison to the availability of bank lines of credit for both credit and public firms. Other authors such as Lee et al. (2013) place their prime focus on innovative SMEs and the access to finance since the credit crisis discussing the tightening of the credit conditions and the diminishing number of bank loans provided to small firms. Ivashina and Scharfstein (2010) aim their study towards the overall perception of the effect of the bank lending during the actual financial crisis in relation to the financial institutions.

In consideration to our focus on the capital structure of firms, we noticed a profound lack of studies conducted in terms of any changes in capital structure in accordance with monetary policies, regulations etc. The studies we came across mainly addressed different determinants of capital structures of listed firms as Nguyen et al. (2014) emphasises in the case of Vietnam. Also, other studies placed their main attention addressing overall determinants aligned with choices of capital structure (Chang et al., 2014; Danis et al., 2014).

Theoretically, this prevails the fact that an amount of previous studies have primarily had their focus towards the banking sector in terms of changes in loan structures and do not pay that much attention to the overall impact on the effect of the firms. Not least, the non-listed firms. Beside from this, many studies approach changes in capital structure only considering different components and determinants of capital structure and do not direct much attention towards how past economic fluctuations have impacted their structure as a whole. In this case, there also exists a lack of studies aimed towards non-listed and smaller firms.

In terms of a practical perspective, we have found literature strengthening the fact that Swedish firms, in relation to the rest of Europe, find it easier to obtain loans (SBA, 2012, p. 9). These findings contradict the overall perception we obtain, seeming that both FAR (2011) and King (2013) argue for the decreased liquidity on the financial market. Therefore we find it of great importance to develop a deeper understanding of the capital structure for Swedish unlisted firms to see if there are any observable change in their capital structure during the recent years.

1.3 Research Question
After establishing gaps within our field of studies, this leaves us with the task of exploiting them to generate a thorough and greater reinforcement within our topic, which will contribute to the field of business administration in a profound way.

Our gap leads us further on to our established research question that can be stated as:

*Has the capital structure for non-listed firms in Sweden changed post crisis?*

1.4 Purpose
In terms of more integrated financial markets, enforced regulations due to past events, a reduced amount of access to capital for non-listed firms and the recent questionable strength of the banks. This brings us towards our main purpose to observe and explain
through our chosen variables, size, growth, asset structure and profitability, if there has been a change in capital structure post crisis.

We intend to seek if our composition of independent variables has an affect on our main indicator of capital structure, the debt/equity ratio. It is also of value to see to what extent our variables of choice impact the capital structure of non-listed firms. In that way, we would be able to increase the non-listed firms knowledge concerning variables of impact, hence observe the severity of the variables in terms of their affect on the capital structure and to what extent they have changed during our research years.

We also perceive it to be of value to evaluate if our chosen theory, the pecking order theory, is applicable to our obtained data in terms of comparing the notions in line with the theory with our data sample retrieved for our chosen years of interest. The pecking order theory that attempts to explain capital structure through firm performance.

1.5 Target Audience and Contributions
Our main intention with this study is to attract attention of non-listed firms and guide them towards a greater interpretation of financial impacts and their effect on the firm’s capital structure. Further we intend to address the lenders, the banking sector, to help them deepen their knowledge regarding the non-listed firms need for financing and their importance for the economy. Also, banks could generate a greater understanding when it comes to the eventual monetary impacts in times of uncertainty. Another audience that can gain sufficient knowledge from our conducted study is society as a whole. This due to the fact that events of economic distress can play an important role in people’s economic stability, which can result in changes concerning economic choices that may affect their everyday life. Additionally, governments can also gain insight into the effects of financial uncertainty on the capital structure when they constantly react and operate in adjusting and modifying standards and regulations to decrease the overall impact, hence, diminishing the negative impact on firms.

When considering eminent contributions, we perceive our study to be able to further increase the knowledge regarding the Swedish capital structure for non-listed firms post crisis. According to SBA (2012) Sweden finds it easier in relation to the rest of Europe to obtain loans. Seeming that the overall notion is that the lending standards have tightened we find it of importance to contribute to a thorough examination of this issue to observe the actual effect. We also believe that we can contribute to a greater understanding in terms of if the availability of financed capital can determine and explain the capital structure of firms by looking at certain determinants that can influence the composition of the financial structure. This period of study is known for its financial instability in terms of a credit crisis, enforced regulations as Basel and also an overall uncertainty in the markets. It gives us a good position to draw eventual conclusions in the future when this period of financial uncertainty is characterised by a vast number of different factors that can impact financial decisions. We later believe that we can contribute in such a way that we can increase the knowledge and enhance the possibility of understanding changes in the capital structure during periods of stressed times and give the firms a good ground to base future economic decisions on in case of an appearance of a similar financial crisis. Primarily, we base this view on how firms during our research period have “reacted” and if their capital structure has changed during the recent years. This way, the firms can take advantage of our study and learn to adapt their capital structure in case of anticipating times of financial
distress to handle and be better equipped, hence, improve their competitive advantage in times of financial instability.

1.6 Limitations
In terms of our study, it is of high importance to emphasise the limitations aligned with the population of firms’. Within our research, we have drawn the conclusion that since our population constitutes of unlisted firms that has a reduced access to financial markets, they have characteristics compatible to SMEs when they also are known to have a harder time securing capital in financial markets. This is the main factors that we base our study upon.

We want to justify that due to the fact that we found a limited amount of research available on non-listed firms, we therefore use studies and literature based on listed firms as a benchmark to conduct our research and contribute to our empirical field of study, the Swedish market. We have chosen to place our main focus on Sweden due to geographical and time constraints but we perceive our choice of empirical field to justify similar reactions of capital structure in other countries monetarily similar to Sweden. It is of value to highlight that our intention is to observe any changes regarding the capital structure of firms in Sweden, post crisis. In that sense, it is not in our interest to determine or explain eventual alterations within the firms’ structure. Primarily, we wish to see if there exists any correlation between certain prominent factors that may have an impact on the capital structure of the firms’ and not attempt to explain any deviations but merely state their existence. Due to this, we wish to acquire knowledge surrounding a clarification if the firms’ capital structure has changed during the research period and cannot in that sense, justify why these changes have occurred.

1.7 Disposition

Chapter 1: Introduction
In this chapter we have introduced and provided an explanation of our main intention and purpose of our study, which is to see how the firms’ capital structure during the selected research period have reacted post crisis. Our background lies as a basis for establishing our gap, which lead us towards our main research question and purpose of the study. We finalise the chapter by providing the reader with a further insight in terms of contributions and limitations regarding our study, grounded on the capital structure of non-listed firms in Sweden.

Chapter 2: Methodology
This chapter will contribute to a thorough understanding of our composition of research and will guide you through our theoretical view of our research process. We clarify our methodological considerations and elaborate by interacting our methodological stance of epistemology and ontology with our positivistic and objectivistic point of view, which our research stems upon. Further, we also reveal underpinnings relevant to our overall research structure in form of our research design and strategy, which are well defined and discussed.

Chapter 3: Theoretical Framework
Within our theoretical framework, we attempt to evaluate and prevail theories and concepts of relevance for our conducted research. Our theoretical approach will be primarily based on two main pillars; these reflect the capital structure side of firms and
the banking industry. In terms of the capital structure, we analyse and discuss issues and theories regarding debt and equity for non-listed firms whilst the banking sector describes regulations and financial events that ultimately have had an impact on the financial health and the capital structures of firms. The Swedish market for non-listed firms acts as our main empirical field of study.

Chapter 4: Practical Methodology
The section concerning practical method will provide a thorough insight in our practical aspect of the report including factors associated with the data sample, decomposition of statistical tests aligned with an evaluation of different components of capital structure that lies as a foundation for our customised hypotheses deduced from previous studies. You will also be guided through our chosen statistical measures used to analyse our data.

Chapter 5: Empirical Findings
In this section, we intend to present and summarise our findings as a result of our statistically used tools. We will give you a thorough insight in our empirical findings by utilising descriptive statistics and multiple regression models on our computed data, the data of all non-listed firms in Sweden during the period 2007-2013. This section will act as a foundation in regard to thoroughly analysing our data to answer our stated research question in the following chapter.

Chapter 6: Data Analysis
The section concerning the analysis of the data will provide a clarified analysis of our empirical findings, which will in its turn help us answer the research question that lies as an underlying foundation for this study. The theoretical framework will be used as a reference in regard to our analysis to facilitate the results of our findings. All this is in line with our chosen theory, the pecking order theory of capital structure.

Chapter 7: Conclusion
This section reveals the conclusion of our presented results and analysis in terms of our findings in line with the change in capital structure of non-listed firms in Sweden post crisis. We intend to answer the stated research question by utilising descriptive statistics and graphs that we summarised above for our intended research period, 2007-2013. This will be done to clearly reveal the dispersion of values between the years to enhance the understanding concerning the observed changes in capital structure of firm’s in Sweden. Further we will conclude the quality and reliability of our findings and provide the readers with suggestions for future research.
2. Methodology

This chapter will contribute to a thorough understanding of our composition of research and will guide you through our theoretical view of our research process. We clarify our methodological considerations and elaborate by interacting our methodological stance of epistemology and ontology with our positivistic and objectivistic point of view, which our research stems upon. Further, we also reveal underpinnings relevant to our overall research structure in form of our research design and strategy, which are well defined and discussed.

2.1 Pre-knowledge and choice of subject

Our main intention surrounding the notion of this field of research can be regarded as an interaction between substantial interests within the empirical area along with obtained knowledge relevant in line with business administration. This primarily stems from our interest in economic happenings and the impact they have on firms operations. Also the changes that appear post events and their eventual impact on external parties.

We, the authors of this paper, are students at the International Business Program at Umeå School of Business and Economics. Interestingly, we obtain specialisations within different fields of business administration, in financing and accounting. We perceive this to be strengthening in terms of knowledge and contributions towards the study. This is due to the fact that we possess knowledge of risk managerial interactions, financial events and theories connected merely towards the financing aspect of business administration. We also acquire knowledge considering determinants and analysis of ratios and a thorough understanding of financial statements highly associated with the accounting side of business administration. This combined with an equal interest and ambition in creating a greater understanding of the economic environment that we live in gives us the tools of necessity to compute a good paper in terms of an increased knowledge base and contributions towards our main target audience, non-listed firms.

We also possess different attributes in terms of experience when one of us already has written a bachelor thesis, hence, obtains a pre-knowledge within computations of theses writing which smoothens the process slightly in terms of structure and content. Worth mentioning is that one of us authors is born and raised in the United Kingdom and has an advantage in terms of language whilst the other author is Swedish. In combination, these factors united motivated and led us towards our specific research topic for computing research and gaining a greater knowledge base concerning the affect of capital structures of non-listed firm post crisis.

2.2 Perspective

In accordance to our main purpose of the study, to contribute to an increased understanding for non-listed firms in terms of the economic impact post crisis, we will mainly aim our research towards non-listed firms attempting to create an enhanced understanding for their managers of the impact and eventual change of capital structures post crisis. We attempt to view this topic through an internal perspective in terms of the firm itself when ultimately, their overall perceptions and pursuance acts as a foundation for their adjustments concerning equity and capital decisions. This in its turn can have an affect on the capital structure of firms.
2.3 Research Philosophy
When conducting a study it is important to consider the philosophical stance that lies as a foundation for the research. The reason is that the philosophy is the base for how we view the world and it makes an impact on both what we do and how we understand our findings (Saunders et al., p. 128). Flowers (2009, p. 1) argue for the importance of understanding the philosophical view due to that models inconsistent with the researchers stance might jeopardize the results of the study. There are two different approaches that we must consider and take a stance upon, ontology and epistemology.

2.3.1 Ontology
Ontology is a philosophical view defined as the “nature of social entities” (Bryman & Bell, 2011, p. 20). It is further explained by Grix (2002, p. 175) as “what is out there to know about”. It is the study of everything and anything that exists (Lawson, 2004, p. 1). When speaking of ontology, questions that frequently arise concern the thoughts researchers have about the way the world functions and also issues regarding dedication towards views and aspects (Saunders et al., 2012, p. 130). According to Lawson (2004, p. 2) ontology can be narrowed down to social ontology that considers the phenomenon whose existence is dependent on social actors. There are two different approaches within ontology; objectivism and constructivism. Objectivism implies that social phenomenon is independent on the existence of social actors (Grix, 2002, p. 177). According to Bryman and Bell (2011, p. 21) the objectivistic view sees organisations as social phenomenon’s independent of our influence and tangible in their nature with own rules and regulations. In other words they are actors of their own, unaffected by the human behaviour. The organisations can therefore be viewed to have an objective reality (Bryman & Bell, 2011, p. 21). The objectivistic view sees the employees as a part of the constructed organisation all with their own set of responsibilities involved in the organisational structure (Saunders et al., 2012, p. 131).

Contrary to objectivism there is constructivism, that argues that social phenomena is dependent and constantly affected by social actors (Grix, 2002, p. 177). Constructivism is also known as subjectivism that argues for the fact that social phenomena are created through perceptions and actions of social actors (Saunders et al., 2012, p. 132). This implies that it is the social actors that create an organisation with their own beliefs and executions in relation to their view of the world. It is apparent that objectivism and constructivism are two distinct but different views of social actors. The objectivist considers the organisation to have an objective world whilst the constructivist thinks reality is dependent upon the characteristics of the members within the organisation (Bryman & Bell, 2011, p. 21).

The aim of this thesis is to enhance the understanding of the capital structure for non-listed firms post crisis. To be able to contribute to our purpose we will observe ratios obtained from financial statements. Further we will create hypotheses and conduct statistical analysis to be able to answer our research question. With this in mind it is clear that we will take the objectivist stance to analyse our findings since the view of constructivism is not in line with what we intend to do. The reason is that we have to trust the financial statements as objectively existing without the impact of social human beings and their perceptions. If we were to analyse each ratio and include our own perceptions the result would not be fair, hence, it would not give a clear and true picture of the capital structure. With this in mind we will conduct our research with an objectivistic view of the world.
2.3.2 Epistemology
According to Saunders et al. (2012, p. 132) “Epistemology concerns what constitutes acceptable knowledge in a field of study”. Epistemology is a process of gathering knowledge to improve and develop theories to meet the requirements due to the constant change in knowledge over time (Grix, 2002, p. 177). One aspect to reflect upon is the relation between social science research and natural science. Bryman and Bell (2011, p. 15) mention that it is a big issue whether the world of social science can and should be evaluated after the same standards as natural science research. When the researcher intends to analyse and use hard data, i.e. data based upon facts, the research is objective and in line with the view of a natural scientist whilst when data is based upon feelings and attitudes social science research diverge. Just as with ontology there are two contrasting views of epistemology, positivism and interpretivism. Positivism is often associated with hard data and natural science and it is the researchers belief that only data that is observable can create trustworthy results (Saunders et al., 2012, p. 134). The positivist view of the world is that it exists independent of social actors and therefore we can trust what we observe as true and objective knowledge (Flowers, 2009, p. 3). Bryman and Bell (2011, p. 15) argue that positivism is natural science methods applied in the context of social science. Moreover they explain important aspects of positivism as, knowledge is not confirmed until it is observed, hypotheses are used from obtained facts and research must be free from judgement. Grix (2002, p.184) explains that positivism is associated with quantitative data and multiple cases, and the source of data is often surveys or hard data.

The second approach is interpretivism, this approach is the opposite of positivism and points out the importance of subjectivity and that social actors are different from the view of natural scientists (Bryman & Bell, 2011, p. 16). Saund er et al. (2012, p. 137) further strengthens this with the importance of realising that human beings are different and this must be considered in research. This statement emphasises the interpretivist view that there is a difference when conducting research amongst social actors and objective things. Flowers (2009, p. 3) explains that social actors understand their life through interpretations of their senses, resulting in a diversity of views and constant changes with time as people develop and learn. According to Grix (2002, p. 184) an interpretivist can use both quantitative and qualitative data and the data is often extracted through more concentrated studies.

Our study will be conducted of Swedish non-listed firms and their capital structure pre and post crisis. The research question that we intend to answer is “ Has the capital structure for non-listed firms in Sweden changed post crisis?” For us it is therefore clear that we will take the epistemological stance of positivism. We will collect hard data, study historical figures and ratios from financial statements to explain the capital structure in line with the view of positivism. Moreover it is of great importance for us to be objective and free from judgements, therefore we intend to trust our data that we obtain from the financial statements. Further we will conduct hypotheses from previous literature to test a theory and we intend to only trust the findings that we reveal from our empirical study.

2.3.3 Paradigms
There are four paradigms in order to understand a researchers epistemological and ontological standpoint (Bryman & Bell, p. 24). The sociological paradigms established by Burrell and Morgan (1979) explains the social theory through assumptions regarding
the nature of social science and the nature of society. The paradigms can take form of four main assumptions; first there is the choice of subjectivist (an organisation is constructed by social actors, understood by the people within) and objectivist (the organisation is externally overlooked). Second there are two assumptions regarding the purpose of the research, regulatory (considering what is happening in the organisations, with the intention not to judge) and radical (make judgements and suggest improvements). Burrell and Morgan (1979, p. 22) put these assumptions into a model that explain four paradigms.

<table>
<thead>
<tr>
<th>The Sociology of Radical Change</th>
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<tbody>
<tr>
<td>Subjective</td>
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<tr>
<td>Radical Humanist</td>
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<tr>
<td>Interpretive</td>
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**Figure 1 – Four Paradigms**
Source: Burrell and Morgan, 1979, p. 22

Bryman and Bell, (2011, p. 24) explain these four paradigms, First there is the radical humanist with the subjective and radical stance that consider the organisation to be constructed by social actors and believe that research should be conducted when there is a cry for change. Second they explain the radical Structuralist view of an organisation as grounded in a conflict sprung from power relationships. Third they emphasise the view of the interpretive researcher, that has a questioning mind regarding the existence of the organisations and consider understanding of the organisation to be gained through experience of the workers within. Finally they consider the functionalist standpoint that gains a rational explanation through problem solving.

In terms of our research we take the functionalist standpoint due to our intention to objectively study the capital structure to understand if there has been a change post crisis. As the model above displays, the functionalist stance is both regulatory (try to gain an insight of events in the organisation without judgment) and objectivist (viewed from an external perspective). This clearly shows that this view is in line with our research since we intent to objectively view financial statements to understand if there is a change in the capital structure of organisations.

2.4 Research Approach
After determining our chosen stance in terms of research philosophy, this leads us to clarify our research approach that is necessary to ascertain when it explicates how we conduct our research. In terms of different research approaches, there are two main approaches, the deduction and induction. These aligned with a third that is a mere combination of the two main approaches, which constitutes the abductive approach.

The deductive approach is explained by Bryman and Bell (2011, p. 11) as the most frequently used theory when considering the relationship amongst theory and research and is abbreviated by Saunders et al. (2012, p. 144) as the most reasonable approach if your research primarily stems from theory obtained by literature by which you attract and design a suitable research approach to test your observed theories against. Saunders
et al. (2012, p. 145) elaborate by stating that the theory of deduction possesses a vast amount of important characteristics, amongst them the process of seeking and investigating eventual explanations and relationships between different concepts and variables. Bryman and Bell (2011, p. 11) explains the concept of deduction by stating that the researcher generates hypotheses from previously studied literature that later on must be compared and interacted to empirical scrutiny. The notion surrounding hypotheses is elaborated by Saunders et al. (2012, p. 145) by them contemplating that one of your generated hypotheses must have an antithesis that is to be to tested against and obtained proposition and quantitative data must be sustained. Though, a deductive approach in terms of qualitative data is not excluded. It is also of importance for the researcher to obtain enough data to be able to determine and generalise findings which leads us to the main purpose of the deductive approach, to make use of existing theories to expand and establish new areas of research within the scope of existing theories (Bryman & Bell, p. 11).

Alternatively, the inductive approach exists, which is when your primary research is first based on the collection of data and you then on proceed by investigating a phenomenon which you base your theory on (Saunders et al., 2012, p. 145). In that way, theory is created as a product of the conducted research, which differs substantially from the deductive approach of research. Saunders et al. (2912, p. 146) states that you as a researcher are more likely to use an inductive approach if you are substantially concerned with the circumstances of where the research is conducted. With that said, they advocate smaller studies in line with the inductive theory. The abductive approach is considered as a mix between the deductive approach that proceeds from theory towards data and the inductive approach that moves from data to theory, hence a mix of them both (Suddaby 2006, p. 639). Saunders et al. (2012, p. 147) elaborates by explaining that when making use of the abductive approach, researchers begin with their prime observations and try to establish a possible theory to attempt explain the observations.

Adhering to our purpose and main intention concerning our approach to conducting our implied study, our research stems from the deductive view when we primarily intend to explore a relationship between theory and research, hence the relationship between the pecking order theory and the capital structure. We will generate hypotheses based on well looked upon literature and theories to be able to achieve a result that justifies and is in line with our main purpose, to achieve an increased knowledge regarding impacts towards capital structures of non-listed firms, post crisis. We will shape hypotheses under the pretention of previously predicted relationships based on earlier studies, hence adopt a deductive approach.

2.5 Research Method

It is of relevance to choose an appropriate research method when our study will dictate the types of methodologies that we choose to use ourselves of, not least in terms of data collection. According to Saunders et al. (2012, p. 161) there are three main approaches that are mainly used by researchers; these are the quantitative method, the qualitative method or the use of multiple methods. The main factor that distinguishes the qualitative and quantitative approach is the type of data collection when quantitative research stems from use of numeric data and qualitative based on non-numeric, in other words non-numeric data as words, images, interviews etc. Lee (1992, p. 88) explains the distinction between the two main concepts in a way by elaborating that the quantitative
approach is seen to be more objective to its nature and places greater emphasis on statistics and numeric data whilst the qualitative approach is seen to be more subjective and makes greater use of factors aligned with language, interpretation and descriptive measures. When it comes to the multiple method approach, Creswell (2009, p. 16) describes this approach as a perspective that includes both a quantitative and qualitative view and the obtained data can be assembled sequentially with one dwelling on the other.

The purpose of our study is to increase the knowledge regarding the capital structure of non-listed firms post crisis. In that sense our study intends to reveal if there has been a change or not. To be able to distinguish and to investigate if there has been a change in the capital structure of non-listed firms post crisis, we perceived the value of the study to lie within the components of the firm’s capital structure that mainly constitutes of numeric values, this through the debt/equity ratio. In that sense, we can observe an eventual change and impact in the firms capital structure by placing emphasis on the different obtained values throughout our research period. Due to this, we primarily adopt a quantitative method to answer our underlying research question, Has the capital structure for non-listed firms in Sweden changed post crisis? As a consequence we will collect and analyse numerical data to answer our research question. An alternative approach would be to adopt a qualitative research approach, which in our case would merely stem upon the apprehension of conducting interviews with managers of non-listed firms in Sweden. Though, since our intention is to observe and describe an eventual change in Sweden, we believe we can reach a substantially larger scope of information by conducting a quantitative study. We can make use of a vast amount of firms and their included financial values compared to the qualitative approach, which would imply a reduced amount of information, which would narrow our research. We obtained data through the data source Retriever Business that implies collecting data from non-listed firms financial statements, hence numeric data in form of ratios. This choice of data collection is also in line with our positivistic view, objective stance and deductive approach. This is clear due to the fact that we intend to obtain data to test our hypothesis and contribute to the already existing theory. Moreover we will have an objective view, free from judgement. Saunders et al., (2012, p. 163) further strengthen our choice of research method, which states that the quantitative approach can be seen to examine and explore relationships between different factors and variables. This can be investigated and measured by the use of statistical methods, which is highly in line with our intended course of action. We primarily attempt to use statistical variables achieved through previous studies aligned with the collection of data through our main source. Then on we will incorporate the obtained figures into STATA 12 to compute statistical models and evaluate any eventual impact and changes, this in its turn attempts to justify a change in capital structure in the eyes of non-listed firms.

2.6 Research Strategy
One vital aspect to consider when conducting a study is the plan of how the research will be conducted (Saunders et al., 2012, p. 173). In our study we intend to look at certain variables extracted from financial statements to investigate if there has been a change in capital structure post crisis. In that sense we are using documents off existence primarily for other purposes than ours. There are several research strategies to go ahead with. One example is to conduct a case study, which is most often used to generate a deeper understanding of a specific phenomenon another strategy is action research, where the researcher participates within an organisation to create a solution to
their problem (Saunders et al., 2012, p. 183). Seeming that we obtain publically available data, this is not a direction we consider to be appropriate in terms of our study. Further, we attempt to discuss and analyse our data in light of an already existing theory, the pecking order theory to examine the capital structure in terms of firm performance. We can therefore also exclude the approach of grounded theory when that research strategy considers the development of a theory from the data collected and is also merely connected with an inductive approach (Saunders et al., 2012, p. 185). Another example alternative is narrative inquiry that is the process of repeating an experience significant for the study object (Saunders et al., 2012, p. 187). This is also not relevant in our case since we intend to look at financial statements, we will therefore not come in contact with other humans, hence a third external party.

When considering thoughts permeating the choice of research strategy, we can conclude that there are two different strategies that would best suit us with our main methodological stances in mind, experimental and archival research. The experimental approaches focus upon testing the possible relationships between an independent and dependent variable. Though, since our intention is not to test if two variables correlate but rather understand if they have an effect on the capital structure, this is not our choice of strategy. Second there is the archival research that is highly correlated with our field and choice of conducting our research. We make use of the old financial statements to observe and calculate ratios to explain the capital structure. Further archival research is a strategy that permits research question that places emphasis on explaining changes over time (Saunders et al., 2012, p. 179). This is also in line with our research because we intend to look at the change of capital structure post crisis. So, with the exclusion of previously mentioned research strategies, this strengthens our choice to adopt an archival research approach when our main intention surrounds the apprehension of extracting numeric values from Retriever Business which are primarily intended for other purposes than in the context of our study.

2.7 Time Horizon

Another factor that is of importance to bear in mind when conducting a study is the issue regarding the time horizon of the work. It is of value to determine if you wish to compute research at a specific time to examine the happenings of that specified period or to take a broader perspective to be able to conclude findings eligible to represent an enlarged time frame. According to Saunders et al. (2012, p. 190) the concept of studying events at a specific time period is considered as a cross-sectional approach whilst the enlarged time frame with a broader time horizon is referred to as the longitudinal approach, which main value lies in its capacity to observe changes and developments over time. They further state that most academic writing for courses can be considered cross-sectional when mostly, researchers have a time-constraint and therefore observe a particular phenomena at a precise time period. Saunders et al. (2012, p. 191) still does not exclude longitudinal studies though there can be time-constraints, when it is still achievable to represent a greater time-horizon, hence generate a broader perspective.

In terms of our study, we compute our research in a longitudinal way when we acquire data from a representative subset to examine and explore the change during the years, 2007-2013. Our broader time frame gives us the opportunity to observe developments over time, in our case 2007-2013, which stipulates our choice of time horizon. Even though cross-sectional data is most applicable to academic writing, we perceive this
approach not to be compatible with our intentions when we wish to achieve an explanation and investigate if there is a change in capital structure.

2.8 Research Design

Bryman and Bell (2011, p. 40) explains the concept of research design as the framework that incorporates decisions aligned with the collection and analysis of data, this along with matters considering an arrangement of dimensions in terms of the research process. Saunders et al. (2012, p. 159) elaborates by stating that the research design of a study can be seen as a universal plan of how the researcher will go about addressing the study’s research question. There are a few different approaches to determining the study's research design and the purpose can either be exploratory, explanatory or descriptive.

Stebbins (2001, p. viii) explains the concept of exploratory research and his perception of the concept surrounds the notion that exploratory research is seen as something beyond a special scientific process and choice of method. He also emphasises the value of exploratory research and that it is described as the preliminary start in the process that evolves and lies as a foundation for the “real thing”. Saunders et al. (2012, p. 171) explains the approach by highlighting its value in terms of asking open questions to create a greater understanding of the problem to obtain a thorough insight in the chosen topic, they also state its advantages in terms of its flexibility and ability to adapt to different circumstances. Starts broad and becomes narrower as the research process proceeds. Exploratory studies are in other words studies which main purpose includes an exploration and clarification of insights within areas that can be obtained by evaluating literature, conducting interviews etc.

Saunders et al. (2012, p. 172) explains explanatory research as the approach that generates a relationship amongst variables. It is the study of observing a situation to be able to interpret a relationship between variables. Hedström (2004, p. 16) explains the process of conducting explanatory research as “a conceptualization of what goes into a social process.” and continues to conclude, “adequate explanations require that we specify plausible processes through which outcomes are brought.” He also emphasises that the relationships amongst variables are not only concluded due to the retrieved information of the analysed data but also in consideration with the amount of sources of knowledge obtained and relevant theories connected to the area of choice.

Sreejesh et al. (2014, p. 33) explains the descriptive design approach to be an approach used to convey a description of an assemblage of people or objects, it should explain certain fundamentals and characteristics of the observed assemblage to determine specific behaviours in order to be able to interpret differences amongst them. Saunders et al. (2012, p. 171) emphasises the main purpose of the descriptive approach to be aligned with the gathering of accurate delineation of specific events, entities or people. It can be seen as an extension of the exploratory approach and a relation is also stated to exist between the descriptive approach and the explanatory approach.

Due to this, we can conclude that our research design is highly connected with the explanatory view of research. This in terms of the fact that we place emphasis on the value of the impact amongst variables of our choice and the process of determining eventual distortions of interest for the purpose of our topic, to attempt to observe a change in capital structure of non-listed firms post crisis. Also, this research design is appropriate to our project when we focus on a specific situation/problem to be able to
conduct research to attempt to seek any observable impact amongst our chosen variables.

2.9 Literature and Data Sources
When obtaining the literature for our given topic regarding the capital structure of non-listed firms post crisis, we utilised secondary sources, which our theoretical framework is stipulated upon. In its turn, this literature was used as a base to adopt and fit relevant theories of issue for investigating changes aligned with the theory of capital structure. When acquiring the literature of relevance for our study, we chose to constitute our search primarily based upon two main pillars, the capital structure and the banking industry considering regulations and economic happenings of importance, hence the financial crisis. Lastly, literature consisting of information of value linked towards the Swedish market and non-listed firms was obtained and clarified to be of use in terms of our empirical field of study. Therefore, the keywords of choice utilised to collect relevant information was: Sweden, Capital structure, Non-listed firms, Financial Crisis, Post crisis, Banks, Regulations, capital structure, Theories of capital structure, Pecking order theory, Debt/Equity ratio

The literature consisted to a great extent of material accumulated from Emerald and Business Source Premier (EBSCO), this collected data is peer reviewed which enhances the validity and objectivity of our study. This database was of value for us when the articles incorporated within the database consist of business and economics scholarly journals, which fit our preferences in terms of computing a paper associated with the interest in business administration. Also, in terms of expanding our research field, we have acquired other sources of literature through primary articles by seeing which articles they used themselves of.

In terms of data sources and collection of data, we used ourselves of the source Retriever Business, which is an enterprise database, which includes accounting figures for a vast amount of years for firms in Sweden. This database was available through the library of Umeå University. This source was used to obtain archival data through financial statements of all non-listed firms in Sweden that were registered 2002 and are still active today. This data was then customised to fit our needs and exported to an Excel file, which was directly viable through Retriever Business.
2.10 Summary of Theoretical Methodology

![Diagram of Theoretical Methodology]

2.11 Ethical and Social Considerations

When conducting research, it is important to think about the ethical and social considerations. Diener and Crandall (1978) discuss four main aspects to look deeper into when conducting research in an ethical manner, these aspects are; *harm to participants, lack of informed consent, invasion of privacy* and *deception*. It is important to emphasise that these aspects are most often associated with qualitative research and since we have a quantitative study they are not an issue for our specific study. According to Diener and Crandall (1978, p. 39) when studies are conducted from public records, informed consent is both unnecessary and time-consuming. These aspects consider the relationship with social actors within the study and since we do not obtain any information from social actors but only from publicly available data, we exclude this ethical risk.
Saunders et al. (2012, p. 226) concludes that we as researchers should act ethically when it primarily refers to the behaviour associated with our main computation of information in line with rights of those who stipulate and have an influence on the foundation of our work. According to Bryman and Bell (2012, p. 139) there are additional ethical principles other than the four main ones that are highlighted and that they place great emphasis on. These consist of the impact of data protection, reciprocity and trust and issues regarding conflicts of interest.

Considering the composition and management of data, we address confidential and ethical issues when we constitute and stipulate our data on a foundation of publicly available data, which is obtained through the database *Retriever Business*, through Umeå University. This enhances the value of our research when the data we base our research on is indeed, obtainable for any person. To that extent, all people are entitled to use and take part of our data. Using publicly available data also maximises the usage and increases the chance of gaining an increased amount of knowledge when fully taking advantage of the available information, which is not limited in any way.

Bryman and Bell, (2011, p. 141) speak of reciprocity and trust in terms of communicating the emphasis and importance, thus increasing the honesty and openness towards all actors associated with the study. This ethical code is merely implemented to decrease any inequalities that may appear between researchers and participants and increase the benefits for both parties. This is of high value for us when the main participants in our study, the non-listed firms in Sweden, give us our foundation that we base our research on and in exchange, we attempt to generate and communicate a greater understanding and knowledge considering any eventual change in capital structure for non-listed firms, post crisis.

When considering the social impact of our conducted study, it is of value for us to highlight the fact that our main intention surrounds the notion of creating a more in depth knowledge regarding eventual impacts of financial events post crisis. In that sense, we attempt to increase the transparency and understanding of the effects post crisis in the eyes of a vast amount of actors within society, not least governments, firms, investors and students that withhold economic knowledge. With that said, it is in our interest to enhance the knowledge considering the impact of financial events and increase the precautions in times of uncertainty to reduce negative effects. As well, in terms of the social impact of our research, we attempt to prevail a fair representation of any observable changes post crisis and not in any way angle our study. This will be done through our regression analysis and our intention to only trust the results from the data. We believe this will generate an accurate perception of any changes during our chosen time period, 2007-2013, and in that sense lead to an enhanced understanding and creation of knowledge and reach a greater range of actors, not just the non-listed firms in Sweden, which is the empirical research section of our study.

One social aspect to consider is the factor concerning the use of our findings. Our intention is that our results will be used to help the non-listed firms increase their knowledge surrounding their capital structure in times of financial uncertainty. Ramona (2014, p. 463) speaks of the tightening of lending standards that has affected both individuals and financial institutions in terms of their generation of capital. In this sense the actions taken by banks can have an affect on the capital structure for non-listed firms. In that extent it would be devastating if the banks with their already strong influence misuses our findings to increase their knowledge regarding how the non-listed
firms are dependent on financed capital. In that sense the banks could further tighten the lending agreements since they are aware of the non-listed firms cry for capital, hence, misuse our findings.

Other issues that is of importance for us concern factors associated with the honesty and accuracy of our research. Diener and Crandall, (1978, p. 151) speak of the importance regarding this issue by enhancing that the backbone of knowledge gained scientifically relies not only on opinions but also on observations. This to be able to convey and find truths that contributes to a greater knowledge in the natural world. Diener and Crandall, (1978, p. 151) continues by stating that falsification and non ethical actions can diminish people's faith in the obtained findings, hence, researchers should place great value in conveying and acquiring the world with honest results. We place value regarding this issue when we are well aware of the fact that it takes a vast amount of researchers and overall contributions to scientific knowledge to acquire a thorough foundation and framework within a given subject. In that sense, we perceive our research to play a part in the accumulation of knowledge generated to observe and acquire an increased understanding of changes in capital structures for non-listed firms, post crisis. This in terms of the fact that we are aware that their is a lack of existing data within our empirical field of study and an increased accuracy and honesty conveyed by us can ultimately pave the way for other researchers, hence, the greater chance of attracting and obtaining more research which can contribute to a broader scientific knowledge in our area of research in the future.

This leads us into the area considering distorted reporting of findings. Diener and Crandall, (1978, p. 160) state that social scientists have been known to place great value in terms of an objectivity of a study but might miscommunicate their findings. This can surround actions when researchers alter their data to better fit their expectations and also factors associated with deliberate errors that may have negative impacts on the researchers overall expectations, such as depriving studies that do not substantiate in line with the stated hypotheses. We perceive biasing and falsification of this grade to be useless in terms of conducting our study. This when we ultimately strive towards generating valuable knowledge within our empirical field so distortion would only lead to less credible results and may mislead future researchers, hence, negatively affect our line of research.
3. Theoretical Framework
Within our theoretical framework, we attempt to evaluate and prevail theories and concepts of relevance for our conducted research. Our theoretical approach will be primarily based on two main pillars; these reflect the capital structure side of firms and the banking industry. In terms of the capital structure, we analyse and discuss issues and theories regarding debt and equity for non-listed firms whilst the banking sector describes regulations and financial events that ultimately have had an impact on the financial health and the capital structures of firms. The Swedish market for non-listed firms acts as our main empirical field of study. We will first present the theories of capital structure relevant for this study, than enhance our field of investigation, which stipulates Sweden, non-listed firms and the financial crisis. Finally we will reveal regulations in accordance to the banking sector that acts as an outcome of the financial crisis.

3.1 Structure of the Theoretical Framework
In accordance to our chosen pillars, we intend to base our theoretical foundation mostly towards the value and importance of the capital structure side of our empirical field in relation to non-listed firms in Sweden post crisis. This choice is based on the notion that we intend to place our main emphasise on the observation of a change in the capital structure of non-listed firms post crisis and intend to highlight this factor by merely basing our theoretical foundation on this main area of choice. Though, to clarify, the sector regarding banks and enforced regulations is also of high value. This in terms of our study by stipulating any amendments and alterations concerning the financial health of the financial markets that inevitably may have an affect on the amount of available and obtainable capital for non-listed firms for the given period. With this said, it is of importance for us to emphasise that we intend to place our main focus on the capital structure of non-listed firms in Sweden post crisis. In that sense, not place a considerable amount of attention towards the banking sector, which may explain a rather unbalanced structure of our theoretical framework.

Therefore, the first section of our theoretical framework will constitute of theories relating to the capital structure of firms. Firstly, Modigliani and Milller’s (1958) work will be presented seeming that their research acts as a sound foundation for other evolving theories regarding capital structure. Thereafter, the pecking order will be explained and also it’s importance towards our study. This due to that we wish to advocate a theory that attempts to explain the capital structure in terms of firm performance. Finally, other theories of capital structure will be reviewed to enhance other possible angles and alternatives.

3.2 Capital Structure
When addressing the factors associated with the capital structure of the firm, Modigliani and Miller’s (1958) pioneering work has been thought to have provided the world with a firm basis surrounding the idea of capital structure which has been continuously developed in terms of theories and thoughts. Their main idea was the fact that in a world stimulated by perfect market conditions, capital structure proved to be irrelevant to the valuation of the firm. Though, relating to the economic world we live in and are constantly influenced and surrounded by, market imperfections cannot be eliminated and excluded when they pose as important factors that affect economic choices.
constantly. Due to this, different theories have arisen to try to explain the managerial choice of capital structure aligned with different economic forces.

The capital structure of a firm has proven to be an important decision and a vital determinant of the overall value of the firm in terms of debt and equity. Rocca and Rocca (2007, p.1) emphasise that the capital structure is seen as a value creation process and is known to be influenced by a number of different factors, amongst others the interaction and relation between managers and different types of stakeholders. They further explain that the theory has been, during the previous decade, a discussed topic in terms of finding an optimal capital structure suitable for the firm. Also they state that it could in its turn serve as a competitive advantage and act primarily as a good indicator and integration between strategy and different financial decisions.

The overall notion behind the theory of capital structure relates to the firms decision regarding its mix of debt and equity, hence its financial liabilities (Rocca & Rocca., 2007, p. 1), and is perceived to be of importance to maximise the value of the firm. Rashaiza and Nur Azura (2014, p. 108) also attempt to provide an extensive review of different theories of capital structure and emphasise that the determination of capital structure is one of the most important tasks for financial managers and asks the question if there in fact does exist an optimal capital structure. They speak of the debt/equity ratio and that this specific ratio acts as a good indicator when attempting to minimise the cost of financing and maximise the overall value. Berger and Bonaccorsi di Patti (2006) also discuss throughout their paper the choice of capital structure aligned with the overall performance of the firm and that in fact, the more efficient the firm presents itself to be, the higher chance of earning a greater return for a given capital structure. This excess return can in that case be seen as a kind of safety cushion to reduce the overall risk, thus place the firm in a better position for customising its capital structure by substituting equity for debt.

Overall, Characlambakis and Psychoyios (2012, p. 1727) emphasises that within the area of corporate finance, discussions surround the composition of capital structure in terms of determining the influential factors and how compatible they are in accordance to existing theories that seek to explain the choice of structure. They state that though this is an area broadly researched, there still does not exist any profound conclusions to if the mix of financial liabilities is compatible and derives from already existing theories aligned with the composition of capital structure. Titman and Wessels (1988, p. 1) explain that a number of theories have been constituted to try to determine the mix of debt ratios within a firm. They also state that firms choose their ultimate structure due to different attributes, amongst others the firms’ total amount of assets, earnings and profitability that can have an affect towards their variation of debt and equity.

Bruce, C. et al. (2001, p. 6) speaks of the “Internal finance theory of growth” which is applicable to smaller firms. They stress that 90% of the total investment for smaller firms during the 1990’s is internally financed and that recent empirical evidence reveals that the gap between the costs of internally and externally financed capital is substantially broader for smaller firms. This research can be seen in their manner to be comparable to research in relation with the fact that firm’s access to finance is vital for the firm’s survival and the composition of capital structure. In line with the topic of generating sources of finance for small firms, Butters and Lintner (1945, p. 3) also studied this subject and stated within their written studies that “(m)any small
companies - even companies with promising growth opportunities - find it extremely difficult or impossible to raise outside capital on reasonably favourable terms,” and additionally emphasise the fact that small firms mainly used their generated retained earnings to finance their growth.

Due to recent findings, we plan to present, evaluate and thoroughly explain relevant theories aligned with the composition of capital structure and seek and argument for variables that we perceive to be of importance when observing any change in capital structure during our years of interest, 2007-2013.

3.2.1 MM Propositions
The theory of capital structure has been well discussed and focused on, mainly since the publication of the Nobel prise winners Modigliani and Miller (1958, 1963). Their literature constituted in a way, the beginning of the concept of capital structure and marked the start of the evolution regarding research. This to further explain and modify theories compatible with the thoughts corresponding to the theories of value-maximisation within a firm.

The discussion aligned with the theories constituted by Modigliani and Miller (1958, 1963) have been widely discussed in terms of determining an optimal capital structure for firms and the different factors that may influence a firm’s choice. Bhaduri (2002, p. 655) emphasises the fact that the available empirical research has placed high value on factors such as size, growth rates, profitability, volatility of income, taxes, capital intensity and the firm’s tangible assets as factors used to explain a firm’s choice of capital structure. Other authors have also spoken of factors that influence the determination of capital structure and amongst them Titman and Wessels (1988, p. 1) that states that different theories of capital structures are chosen dependent on specific attributes associated with the financing of debt and equity.

The overall perception of Modigliani and Miller’s (1963) propositions speaks of the optimal financing policy where no taxes and bankruptcy costs are taken into consideration and in that sense, the value of the firm is not affected by how it is financed. The theorem is considered to be applicable in terms of a few circumstances (Modigliani & Miller 1958, 1963), these are:

1. A world free of transaction costs
2. No taxes
3. No costs associated with bankruptcy
4. No effect of debt concerning EBIT

Proposition 1
In a world free of taxes, the valuation of the firm is not affected by the capital structure. Hence, increasing the leverage does not generate an increased market value (Modigliani & Miller, 1963, p 268).

\[ VL = VU \]

Proposition 2
The second proposition speaks of the fact that an increase in leverage should result in a greater risk taken by the shareholders of the firm so, the equity shareholder should
receive compensation for an increased risk in form of an increased expected return. Hence, the expected return should increase in relation to the debt to equity ratio (Modigliani & Miller, 1963, p. 271).

\[ rE = rD(r0 - rd)(D/E) \]

Though the pioneering work of Modigliani and Miller is well known and prone to be one the most commonly spoken of theory in terms of the capital structure of firms, a vast amount of critique has been directed towards their notions surrounding the composition of their theory. Authors such as Vatavu (2012, p. 286) speak of the unrealistic determinants that lie as a foundation for the MM propositions. Further, Vatavu (2012, p. 286) clarifies that market imperfections cannot be excluded in the economic environment in terms of attempting to explain and evaluate the firms value.

### 3.2.2 Pecking order theory

The pecking order theory initiated by Donaldson (1961) and further developed by Myers and Majluf (1984, p. 576) takes an alternative approach in accordance with other theories when attempting to determine an optimal capital structure. It takes the stand that firms prefer the use of internal financing over external financing and in the event that the internal finances do not cover the financing of activities, firms will decide to acquire the use of external financing or not. Allen (1987, p. 101) explains the theory in a way that firms generate a hierarchy of preference when evaluating sources of funding, which is an outcome from the existence of asymmetric information. Asymmetric information stems from the fact that management is thought to possess a greater amount of knowledge surrounding the firm, hence the manager’s actions initiate’s signals that are profound to be of the best interest for the firm which inevitably can affect the manoeuvres of investors. In that extent, the pecking order theory can in one way be seen as the analysis of the effect of asymmetric information when considering financial and investment decisions. Myers and Majluf (1984), who further developed the suggested notions of the pecking order theory by Donaldson (1961), provide a rationale in terms of the firm’s choice of finance by describing the hierarchy of preference in a 4-step model (Myers 1984, p. 581)
In other words, equity is seen as the final resort.

In spite of this, Allen (1993, p. 101) implies that Donaldson’s (1961) thoughts surrounding the pecking order theory provide a better explanation of firm practices. Donaldson’s (1961) theory is based mainly on the fact that firms try to acquire excess debt capacity and act in respect to which funding sources the firms have access too. Further more, Myers and Lakshmi (1999) interpret the model in a way that firms do not aim to reach a predetermined debt ratio but instead see the debt ratio as a result of the financing in terms of the hierarchy. Myers and Lakshmi (1999, p. 223) also continues to contemplate that firms that acquire a financial deficit will first turn towards funding through debt and will later on in time obtain a higher debt ratio and the fact that this relation in its turn could explain the negative correlation concerning profitability and debt ratios.

Brealey et al. (2014, p. 471) also stress the value of financial slack. Brealey et al. (2014, p. 471) clearly highlight that it is much more preferable to be situated at the top of the pecking order than at the bottom and clarifies that firms that are situated at the rear end may have to continue their on-going existence with excessive debt and even have to reject investment opportunities because they have to sell their shares below market value. This leads to the overall assessment that financial slack is of high value when it is important to obtain a buffer of financial slack to quickly be able to finance good

Figure 3 – Pecking order
Source: Myers 1984, p. 581

- Firms prefer internal Finance
- They adapt their target dividend pay out ratios to their investment opportunities, though dividends are sticky, and the pay out’s are gradually adjusted to shifts in available investment opportunities.
- Sticky dividend policies plus unpredictable fluctuations in profitability and investment opportunities mean that internally generated cash flows may be inadequate. In this case the firm draws down on its cash and marketable securities.
- If external finance is required, firms issue the safest security first. They start with debt, then hybrids and finally equity as a last resort.
investment opportunities that may appear. Brealey et al. (2014, p. 472) does in fact also reveal several severe downsides with financial slack as well, them being that too much financial slack can relax managers and reduce their incentives. It may also lead to managers to expand their perks generating multiple options for appearance of agency problems.

To conclude, Brealey et al. (2014, p. 469) states that the overall perception of the pecking order theory lies in its notion to explain why profitable firms are more reluctant in borrowing externally, not because of the fact that they have low target ratios but more in terms with the fact that they are in no need of external financing. A part from this, the pecking order also evaluates why less profitable firms seek external financing and explains this due to that they do not obtain enough internal finance to support their investment programs etc. In other words, the firms that are most unprofitable should in fact have less internal funds, hence, will borrow more.

### 3.2.3 Trade-Off Theory

The trade-off theory according to Myers (1984, p. 577) refers to the thought that a firm chooses its mix of capital structure by balancing the costs and the benefits. The theory states that an optimum is reached at a point where the present value of the tax shields are offset by the loss in value generated by the agency costs of debt and the costs associated with financial distress. The trade-off theory prevails that excess profits should imply a decreased amount of debt but literally shows that excess profit means that there is more cash available to service the firms debt. In that extent, the more profitable a firm poses to be, the higher debt ratio the firm should have. Myers (1984, p. 577) also highlights the fact that firms are assumed to constantly replace debt for equity, or vice versa until value maximisation of the firm is reached.

Fama and French (2002, p. 6) state that in terms of bankruptcy costs, the costs rise when the overall profitability of the firm declines. In the event of these costs, they can steer the firms that are less profitable towards obtaining reduced leverage targets. As in the case for less profitable firms, the same holds for firms with a higher degree of profitability. In other words, expected bankruptcy costs increase with the level of volatility, which should result in lower target debt levels. In terms of taxes, Fama and French (2002, p. 6) emphasise that taxes have different effects on the firm’s capital structure. The reduced amount of corporate interest payments motivates firms towards more target leverage and personal tax rates on debt in accordance to equity forces them towards a decreased amount of leverage. This implies, as previously stated, that the firms that are more profitable obtain capacity for a higher debt level and can benefit and take advantage of the tax shields. In that extent, the trade-off theory predicts a positive relationship between profitability and the firm’s debt levels.

Brealey et al. (2014, p. 465) discuss the value of the tax shield that is connected to the interest payments of the firm. They speak of the fact that target debt ratios can differ substantially from firm to firm and that firms with a lot of tangible assets that are safe in terms of liquidity and collateral should have higher debt target ratios. They further explain that firms’ that can be considered unprofitable that have intangible assets should place their main focus towards equity financing.

Another discussed factor in connection with the trade-off theory surrounds the costs associated with adjusting and reaching an optimal capital structure. These costs do not come free of charge and Brealey et al. (2014, p. 466) highlight that in a world free of
costs aligned with adjusting alternative structures, every firm should always be at its optimal debt level. Though, in a realistic world these factors do indeed exist and to that extent we should see clear differences in debt ratios, even amongst the ones with the same target ratios.

Brealey et al. (2014, p. 466) also conclude and attempt to answer the question: “Can the trade-off theory of capital structure explain how companies actually behave?” The answer they provide is both yes and no. When regarding the answer “yes” Brealey et al. (2014) states that the theory favourably explains differences within different industries when considering the firms capital structure. Furthermore they have identified that high-tech growth firms that withhold risky and intangible assets are more reluctant in issuing debt.

When asserting the “no-side” of the question, Brealey et al. (2014, p. 466) states that the trade-off theory cannot be proven to be able to explain all factors associated with the choice of structure. For instance, it can be seen to have a hard time giving reasons to why a few of the most successful and thriving firms can advance and blossom with little debt. This is due to the fact that the trade-off theory’s main ground lies in predicting that the more profitable you are, the higher target debt level. This comes from the notion that greater profitability implies more taxable income to shield and benefit from, hence a greater capacity to service the debt and an overall decreased probability of financial distress and default. All of these factors should lead to a higher level of debt.

3.2.4 Pecking order Theory VS. Trade-Off Theory
Rajan and Zingales (1995, p. 1248) determined in their study that in line with individual firms, the debt ratios seemed to depend on four initial factors:
Further, Rajan and Zingales (1995, pp. 1248-1250) conclude that these previously stated factors convey good news for the pecking order and trade-off theories to some extent. In terms of the trade-off theory, followers react to the fact that large firms with mostly tangible assets are considerably less exposed to financial distress, thus costs associated with a bankruptcy. To that extent, these firms are, according to Rajan and Zingales (1995, pp. 1248-1250) expected to borrow more when the tangible assets act as solid collateral and can be relatively easy liquidated. Also, the enthusiasts of the trade-off theory see the market-to-book ratio as a good indicator of growth and argue that growth firms might be thought of to borrow less when they ultimately have a greater chance of being exposed to financial distress.

When it comes to the pecking order theory, enthusiasts highlight the value of profitability stating that because of the fact that profitable firms can rely more on internal financing, they should borrow less and in accordance to the market-to-book ratio, they see that measure as any other profitability indicator. In terms of this, Brealey et al. (2014, pp. 470-471) draw the conclusion that both of these theories are correct though they counteract each other in many ways. This cannot be regarded as a satisfying answer. Because of this, researchers have attempted to stress these theories against each other to determine which one best suits the theory of capital structure and the conclusion that has been drawn is the fact that the pecking order theory is best suited for
larger and more mature firms with an increased access to public bond markets. This can be concluded when these firms seldom issue equity and merely prefer internal financing to plough back internally generated profits. Though, they do turn to debt markets if financing is needed. When it comes to smaller and younger growth firms, they are perceived to be more dependent on equity issues if external financing is necessary.

3.2.5 Agency Cost
Margaritas and Psillaki (2007, p. 1066) argue for the relevance of the agency cost and the capital structure in the banking industry due to the banks importance when providing nonfinancial firms with capital. When there is a conflict of interest between the shareholders and managers in a company, agency costs occur (Margaritis & Psillaki, 2007, p. 1449). Jensen and Meckling (1976) identify the agency cost as “a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf”. This relationship acts as a base for conflicts to arise between the manager and the owner. One source can be that the manager makes decisions that will benefit s/he the most instead of what is best for the business (Berger & Bonaccorsi di Patti, 2006, p. 1066).

Berger and Bonaccorsi di Patti (2006, p. 1066), states that agency costs can be reduced by the choice of capital structure. Further they argue that high leverage or low equity/asset ratio can reduce the agency cost and increase firm value by encouraging or constraining managers to act on the behalf of their shareholders. Agency costs can also occur between the equity and debt holders in a business when there is a risk of default (Margaritis & Psillaki, 2010, p. 622). In a study by Margaritis and Psillaki (2007, pp. 1461-1462) on SME’s in New Zealand the authors found support for that higher leverage is associated with improved efficiency. These findings are in line with the core of their agency cost hypothesis that states “higher leverage is expected to lower agency costs, reduce inefficiency and thereby lead to an improvement in firm performance” (Margaritis & Psillaki, 2007, p. 1450).

3.2.6 Efficiency hypothesis, Franchise value hypothesis
Studies connecting agency costs to the capital structure emphasises the importance of using efficiency as a measure of firm performance (Berger & Bonaccorsi di Patti, 2006; Margaritis & Psillaki, 2007). The authors argue for their choice of measure due to their belief that ratios extracted from the financial statements do not capture the specific performance of each individual firm. Instead they look at the inverse relationship where firm performance explains the capital structure. Berger & Bonaccorsi di Patti (2006, p. 1068) developed two competing hypothesis to analyse the effects of efficiency on the capital structure.

Efficiency Hypothesis
The Efficiency hypothesis state that; More efficient firms tend to choose relatively low equity ratios, as higher expected returns from the greater profit efficiency substitutes to some degree for equity capital in protecting the firm against distress, bankruptcy or liquidation (Berger and Bonaccorsi di Patti, 2006, p. 1068). Berger and Bonaccorsi di Patti (2006, p. 1073) explain this hypothesis by emphasising that an efficient firm chooses lower levels of equity and the increase in efficiency will reduce the cost of financial distress. Further they argue that an increase in profit efficiency will increase the expected return. Berger and Bonaccorsi di Patti (2006, p. 1073) consider their hypothesis to be constituted of two sub hypothesis; (i) profit efficiency is strongly
positively associated with expected returns and (ii) the higher expected returns from high efficiency are substituted for equity capital to manage risks.

**Franchise value hypothesis**

The franchise value hypothesis states: more efficient firms tend to choose relatively high equity ratios to protect the future income derived from high profit efficiency (Berger and Bonaccorsi di Patti, 2006, p. 1068). The hypothesis can be explained as firms choose high equity due to that they can protect the franchise value in terms of financial distress. When firms have high profit efficiency that is expected to continue in the future, their shareholders hold equity to protect the economic rents, that in the case of a liquidation would be lost (Berger and Bonaccorsi di Patti, 2006, p. 1073).

To sum it up, the two hypotheses have two different views, the efficiency-risk hypothesis swaps equity for expected earnings in regard of protecting the business from costs associated with bankruptcy while the franchise-value hypothesis addresses this issue by defending the choice of additional equity (Berger and Bonaccorsi di Patti, 2006, p. 1074). Berger and Bonaccorsi di Patti’s (2006, p. 1074) franchise-value hypothesis include two parts; (i) profit efficiency is a source of rents, (ii) banks hold additional capital to prevent the loss of these rents in the event of liquidation.

**3.2.7 Determinants of Capital Structure**

In terms of our line of research, it is important to evaluate and obtain factors and variables through previous research that are of necessity to us and can act as determinants of capital structure that we can base our study on.

When acknowledging Rajan and Zingales study (1995, pp. 1427-1429), their main aim of their study is to distinguish prime determinants of capital structure by analysing a vast amount of firms. They highlight that the main indicators they use themselves of are their total amount of assets, the stock of debt relative to the value of the firm, the ratio of total liabilities to total assets. They also use a more suitable ratio to cover the financial leverage, the ratio of debt to total assets and discuss the measure of earnings before interest and tax (EBIT) that can be seen as a measure of risk, the risk of not being able to meet their fixed payments. Though, this measure is also regarded to be a measure of profitability, the difference between operating expenses and revenues. Rajan and Zingales (1995, p. 1429) clarifies the choice of EBIT to be of use if they think “investments equal in magnitude to depreciation are needed to keep the firm a going concern.” If this is not the case, the measurement EBITDA could be considered to be a better choice. This measure corresponds to the ability of the firm to service its debt. To conclude, Rajan and Zingales (1995, p. 1728) study primarily bases its research around four factors that they consider to be related with leverage, which are, tangibility of assets, profitability, size of the firms and opportunities to growth.

In accordance Charalambakis and Psychoyios (2012, p. 1729) investigate determinants of UK firms in terms of size, profitability and opportunities of growth in relation to debt ratios. Their findings reveal that the size and tangibility of the firms were positively correlated with the amount of leverage whilst profitability and growth showed a negative relation in terms of leverage. Worth mentioning is that they state that these measures cannot lie primarily as an explanation to their choice of capital structure. Psillaki and Daskalakis’s (2009) study backs this up by explaining that leverage is positively correlated with tangible assets and the size of the firm and that the more
profitable the firms are, the more the firms can plough back internally generated profit which is in order with the first step in the pecking order theory.

Charalambakis and Psychoyios (2012, p. 1728) argument for their choice of size as a measure by stating that larger firms are supposed to be more diversified, hence obtain a smaller chance of ending up in financial distress compared to smaller sized firms. They chose profitability measures in terms of the trade-off theory when stating that the trade-off theory anticipates a relationship between leverage and the level of profitability. An extensive explanation to this in line with the theory is due to the fact that profitability is supposed to lower the chance of bankruptcy, which results in firms using more debt to benefit from the interest tax shield. This is also strengthened by, Titman and Wessels (1988), Rajan and Zingales (1995) and Fama and French, (2002).

When looking at the measure of tangible assets, Charalambakis and Psychoyios (2012, p. 1729) emphasises that the greater amount of fixed assets a firm has, the more assets can be provided as collateral to serve the debt holders, hence, the increased amount of assets, the smaller chance of suffering costs initiated by financial distress. And finally, in the matters associated with growth opportunities, Myers (1977) has created a model that assumes a negative correlation in terms of leverage and opportunities to growth. He bases this model on the assumption that firms with debt of higher risk tend to underinvest in positive NPV projects. He continues to stress this by stating that the better opportunity to growth, the greater incentive to finance their activities using equity over debt, which is in line with the trade-off theory.

Other economists have also skewed into the same direction observing similar factors, amongst these Myers (1984), who in his paper also highlights the value of growth opportunities, assets, profitability measures etc. Myers (1984, p. 589) for instance also concludes that highly profitable firms that have a slower growth compared to other firms will end up having low debt ratios whilst an unprofitable firm will most probably have a high debt ratio. Though, Myers (1984, p. 590) also summarised by saying that if his theories prove to be correct, the average level of debt ratios will differ over all industries. This due to the fact that all firms obtain different risks aligned with their assets, have assets of different kind, and also have substantially different requirements for external funds. Also, studies from Aggarwal (1981), Naidu (1986), Rajan and Zingales (1995), Bevan and Danbolt (2002) and Graham (1999) observe similar determinants of importance for a manager’s choice of capital structure. Their research showed that there are multiple factors that influence the choice e.g. different industries, sizes, countries and the issue regarding the importance of tax.

Harris and Ravis (1991, p. 303) has also computed pioneering work within the field of capital structure and their main model attempts to explain and evaluate the fact that firms with a greater amount of tangible assets are posed to obtain a greater amount of debt and will be more exposed to default though they will achieve and have a higher market value than smaller firms. Their main intuition surrounding high debt values is through the notion that larger values of liquidation increases the possibility for concluding that liquidation is perceived as the best possible strategy. Thus, the firm’s assets have a greater liquidation value. In accordance, the factors such as size, industry, asset structure, profitability and growth measures, that are posed to be the underlying areas that influence the choice of capital structure, occur frequently through a vast amount of studies. These studies bear the pretension that they are highly compatible with the pecking order theory. To further elaborate on their impact, studies from Mazur
have been computed to identify and evaluate variables of choice to establish if they are strongly supported by the pecking order theory. In this case, Mazur (2007, p. 505) computed a regression test and uncovered that all tested variables fitted the preference aligned with internally generated financing, which is strongly correlated with the pecking order theory.

Mazur (2007, p. 509) divulges that the test inferred that more profitable firms with greater liquidity ratios are more anxious to make use of internally generated funds to finance their operations. As well as, he predicts a negative relation between size, their debt ratio and the firm’s structure of their assets, which may be explained due to a reduced source of asymmetric information for larger firms with a vast amount of fixed assets compared to smaller firms. All these facts are, according to Mazur (2007, p. 509) in line with the pecking order theory. Due to these factors, we have primarily decided to place our main focus on variables that can be backed up through previously stated research. These variables surround factors regarding the size of firms, the industries they operate in, profitability measures and measures connected with amount of assets and growth. Within our study, the variables surrounding the measure of industry and size are considered to be control variables whilst the other variables are determined as independent variables.

3.3 Theory of Choice
When evaluating our theories of choice, it is clear that there are two different approaches when addressing the issue regarding the capital structure of firms. Either the theories determine the capital structure through firm performance, through ratios from financial statements or attempt to explain the performance of the firm through the capital structure. In other words, either the capital structure drives firm performance or firm performance drives the capital structure. The pecking order theory attempts to explain the capital structure through the firm’s performance, which is highly compatible with our main intentions and in that sense, serves as our main theorem.

When attempting to summarise and apply relevant theories that are highly compatible and in line with our study, we have chosen to place our main focus on addressing theories that intentionally attempt to explain the effect of firm performance in terms of the composition of capital structure. This due to the fact that our attempt to answer our determined research question lies on the basis of empirically testing the capital structure as our dependent variable, in form of the debt/equity ratio. The theory of our choice is therefore the pecking order theory. When it comes to the pecking order theory, which is based on the thoughts of Donaldson (1961) and further developed by Myers and Majluf (1984), the underlying assumption is, as previously mentioned, aligned with the preferences of the firm in terms of choosing to finance themselves internally or seeking external funding sources. Firstly, they can choose to plough back generated earnings, or if the earnings are depleted they can issue debt and thereafter issue equity that is regarded as a last resort. The pecking order theory is also seen to be one of the theories that have had the greatest impact in the area of corporate finance.

The pecking order theory relies, in that sense, substantially on information asymmetry and is compatible with the thought that different actions of the firm send certain signals to outstanding and external parties (Brealey et al., 2012 p. 468). Debt signals can for instance in our meaning convey a positive notion to outside investors when they might perceive the issuance of debt as positive. Management can service the debt whilst
issuance of equity can send signals of overvaluation of the firm and trigger a change in the firm's stock price towards the negative. Donaldson (1961) and Myers and Majluf (1984) have found evidence concerning the ability of the pecking order theory to explain how firms determine and evaluate different financing decisions. This has without doubt helped us understand different factors and variables that affect and influence the capital structure mix. Another factor that ultimately affected our choice of theory had to do with the fact that it is proven that studies, that have been conducted in recent times (Quan, 2002 & Mazur 2007), shows a transfer away from the trade-off theory and towards the pecking order theory.

In recent times, authors such as Serrasqueiro and Caetano (2015, p. 446) attempt to distinguish whether capital structural decisions linked towards SMEs are more related to the assumptions surrounding the trade-off theory or the pecking order theory. Serrasqueiro and Caetano (2015, p. 461) contemplate that their results indicate that the theories are not mutually exclusive in terms of explaining the capital structure of SMEs. They therefore conclude that capital structure decisions towards SMEs can be evaluated in terms of both the trade-off theory and the pecking order theory.

In that sense, this triggers a greater ambition to distinguish if the pecking order theory of capital structure poses to act as a prominent and good indicator towards evaluating the capital structure of non-listed firms post crisis.

3.4 Non-Listed Firms
Andani and Al-hassan (2012, p. 753) state that non-listed firms are very reliant on trade credit and that is considered to be vital for their existence when it constitutes the most important source of financing. They also emphasise the weight of internally generated profits in the eyes of non-listed firms and that they rely more on their internally generate profits than listed firms and stress the importance for them to plough back their retained earnings. Further they explain that non-listed firms behaviour regarding the reliance on retained earnings stems from the fact that non-listed firms are known to be smaller than listed firms and the chance of them being owner-managed is higher than larger listed firms. This results in the conclusion regarding profits to be vital for the non-listed firms as it can be seen as a significant key to their business growth.

Andani and Al-hassan (2012, p. 754) also state the difference between non-listed firms and listed firms in terms of the contribution towards the banking sector. They conclude that listed firms obtain higher shares of debt financing from banks and the fact that both non-listed and listed firms rely tremendously on trade credit to fund the activities, this along with their reliance on short-term financing. He also emphasises that there is no pronounced difference in short-term debt ratios for both non-listed and listed firms. MacCahery and Vermeulen (2008, p. 8) speaks of the economic structure of non-listed firms and enhances that shareholders within non-listed firms have fewer options in terms of market mechanisms which inevitably reduces expedient behaviour. He abbreviates by stating that non-listed firms rely highly on retained earnings, thus, internal financing and also sources of private equity to amplify their chances for expansion and growth.

3.5 Financial Crisis
During the year 2007, the world faced a financial crisis that would be proven to have a tremendous economic impact on the world economy. Many firms suffered a hard time
securing an effective source of funding because of the decreased liquidity that flooded the markets (King, 2013, p. 4144). The crisis quickly expanded and affected other countries and many financial institutions over the world deteriorated and other institutions had to be bailed out by governments to withhold their existence (Hull, 2012 p. 121).

The financial crisis had its main starting point in the U.S. housing market where house prices started to increase and grow at a more rapid rate than previous (Poole, 2010, p. 425-426). Poole (2010, p. 424) argues that part of the reason for the housing markets behaviour could be stemmed from the low interest rates at the time and also from relaxed lending practices. According to them, subprime mortgages started to emerge and increase and where evaluated to be of a more risky kind than others. This led to a vicious cycle that eminently increased the rate of lending. The U.S. government campaign to increase the amount of homeowners resulted in the creation of the bubble (Poole, 2010, p. 425). This along with the fact that mortgage lenders relaxed their standards in the beginning of 2000. This increased the possibility for many American families to purchase real estate, not least for the families that had proven to not be previously eligible due to a lack of creditworthiness (Hull, 2012, p. 121). The ability to obtain mortgages paved the way for an increased demand and an increase in real estate prices.

Homeowners without secured income were granted loans at low rates and when the interest increased they could not afford the loans and they had to foreclose on them (Poole, 2010, pp. 424, 426). This ultimately increased the supply of houses and a spiral of foreclosure disrupted along with the lack of transparency and the complexity of the asset backed securities that were established through the subprime mortgages, which lead to the burst of the bubble and the creation of the crisis (Arentsen et al., 2015, p. 689). Due to the burst of the bubble, investors who purchased tranches aligned with the asset backed securities lost money and investors became reluctant to obtain risks connected with credit what so ever and instead chose to settle for more safe alternatives, amongst them treasury instruments (Hull, 2012, p. 131). Be side from this, the credit spread that implies the extra return investors receive to taking risks, increased rapidly and the asset-backed securities became illiquid.

The consequences of the financial crisis were severe when the world economy took a tremendous toll and unemployment rates rose (Hull, 2012, p. 131). Banks became reluctant to lend amongst each other and the lending rates spiralled. Also, non-financial firms had a hard time obtaining loans as a result of the crisis and banks were now obliged to acquire a greater amount of capital (Hull, 2012, p. 131). Along with the direct effects of the crisis, legislations were incorporated to review financial institutions and restrict part of their operations that could be proven fatal for the state of the economy (Hull, 2012, p. 131). The financial crisis resulted in a period permeated by financial instability and a decreased soundness in the economic health of the world economy.

3.5.1 Impact of the Financial Crisis
Empirical evidence suggests that the financial crisis that took place during 2007-2009 has had a negative impact on the firms when the amount of available funding ultimately decreased due to a tightening of the banking sectors lending standards. This inevitably means a reduced amount of access to financed capital for the firms that can have an
effect on the composition of the firm’s capital structure. Longstaff (2010, p. 436) states that the financial markets have during the past few years suffered tremendous losses that were triggered by threats concerning defaults on subprime loans in the mortgage markets when homeowners foreclosed on their loans. This led to the crisis of 2007, which resulted in a rapid decline in market values of portfolios including asset-backed securities. Longstaff, (2010, p. 436) also highlights that the crisis brought along a near complete halt to the credit market, a severe credit crunch that affected individuals, firms and financial institutions. This inevitably resulted in a serious decline in terms of liquidity of debt in every market and the amount of funding available for firms.

As Gambacorta et al. (2011) emphasises in their paper, the crisis as a whole peaked the important role of financial intermediaries stability in supporting an intermittent transmission of credit to their borrowers. They explain that the results that can be seen from the crisis can question the actual strength of the banking sector. They argue for the fact that recent happenings can reveal that changes within the banks business models and their market funding patterns have come to modify the transmission of monetary instruments in US and Europe after the crisis. They also highlight the fact that banks with a less strong capital position that placed a greater reliance on market funding restricted their loan supply drastically. Van den Heuvel (2002, p. 260) confirms that a tightening of the banks monetary policy reduces the banks profits and that the banks are thereafter forced to reduce their amount of lending in able to meet the capital requirements.

Greenlaw et al. (2008, p. 15) writes that, as the problem within the securitised markets increased and developed, the funding rates increased likewise and financial institutions moved towards a tightening of credit standards surrounding a vast amount of loans. They further explain that the tightening of standards included a whole variety of loans including credit cards, institutional and commercial loans for businesses and mortgage loans affecting all players in the market.

3.5.2 The Financial Crisis Impact on Sweden

When primarily researching our intended topic surrounding the matter of capital structure of unlisted firms in Sweden, it is of importance to address the overall impression of the Swedish economy during this period and what consequences and impact global events have had on the Swedish economy in this stage of time. One event of significance is the financial crisis and its influence on Sweden. Öberg (2009, p. 6) speaks mainly of Sweden’s dependence on outside events and the fact that Sweden is perceived to be a small open-economy that consists of a highly integrated financial market and a comprehensive foreign trade. Sweden is a small country dependent on its export, and due to the global crisis the demand will decrease, in turn lower the GDP growth (Österholm, 2010, p. 272). In that extent, the financial crisis united with a crucial global economic downturn had a harsh clash on the Swedish economy. Öberg (2009, p. 6) explains the impact on Sweden due to the fact of an increased reliance and creation of financial links between vast amounts of countries that grew stronger, thus, placing large confidence on the external world, which ultimately acts as a downfall in severe times. Öberg (2009, pp. 6-7) also emphasises the fact that Sweden as a whole handled the crisis in a good manner and stresses that Swedish banks are considered to be profitable and obtain buffers as a consequence of previous good years. He also poses a positivity aligned with the fact that Swedish banks did not grant loans as impulsively as the US limiting their exposure. Though, Sweden did not manage to entirely avoid
problems associated with funding. This has enforced the Swedish authorities to undergo measures to ward the financial stability and diminish any negative effects as a result of the crisis.

According to Östrerholm (2010, p. 265) the Swedish market was affected by the financial crisis. One apparent effect was the fall of the stock market of 40% during 2008. The Swedish banks experienced credit losses in the Baltic States though despite that they still managed to walk out of the crisis without any major harm. Though the financial crisis forced many changes in the Swedish financial sector, one major change was the transition from leveraging towards a great capital adequacy (Nilsson et al., 2014, p. 24). Nilsson et al. (2014, p. 23) argues that Swedish banks have changed their capital structure, to meet and exceed the requirements of the new financial regulations.

3.6 Regulations in Banks

When discussing and placing some thought around the topic concerning the factors influencing the choice of the firm’s compositions of capital structure, it is known that since recent financial happenings, the banking sector has decreased the total amount of lending which has inevitably affected the access to finance for firms. According to Ramona (2013, p. 464), the economic crisis that took place seized an opportunity to restructure the financial sector regarding risk and regulations. This happened through the implementations of the Basel accord that was stipulated by the Basel Committee on Banking Supervision (BCBS). The committee came to terms with the fact that a further strengthening of capital and liquidity rules was of importance with the aim of establishing a more resilient banking system.

The first Basel accord was established in 1988 and had its main focus on capital requirements for banks and to create specific criteria’s underlying thoughts surrounding the optimal amount of bank capital (Ramona 2013, p. 465). The committee determined the banks capital to be consisted of Tier 1 and Tier II capital where the Tier I capital served as core capital and Tier II complementary. Basel I’s main focus lied on credit risk and market risk. In 2004, Basel I was amended and the result was Basel II where the committee now had placed more focus on how much capital banks needed to set aside to act as a buffer that could be run down if operational and other types of financial risks posed as a threat. Basel II was primarily based upon three factors, (Ramona, 2014, p. 466)

1. Minimum capital requirements
2. Supervisory review that implied a greater amount of control
3. Market discipline that surrounded thoughts in line with transparency. That banks should publish information and disclosures about their risks and how they allocate capital

Basel II now addressed credit risk, market risk and operational risk.

In recent years, a third Basel accord has been established as a result of the financial crisis from 2007-2009 (King, 2013, p. 4145). The third accord attempts to include and impose regulations surrounding the liquidity risk and bank leverage (King, 2013, p. 4146). This enhances the banking sector’s ability to absorb adverse market events that pose as a large overall stress to the economy. When evaluating the effects of the stricter enforced regulations, Auer et al. (2011, p. 1) explain that the latest implementation of Basel will ultimately have a strong effect on the banking sector through tougher
regulations in form of capital requirements, different target ratios and an enlarged focus surrounding the ability for banks to absorb economic events created through stressed market conditions. (Auer et al., 2011, p. 3) highlights that inevitably, the regulations have affected some banks more than others but one of the main results lies within the toughening of capital adequacy that lowers banks total amount of available capital. Auer et al. (2011, p. 6) continues to emphasise that the stricter requirements will make the banking sector place more thought on their liquidity position and that banks will observe enhanced weight on their return on equity (RoE) measure.

The regulations has ultimately led to an increased understanding and has made the banks thoroughly evaluate their line of business and (Auer et al., 2011, p. 7) reveals a list of methods and strategies that banks might use to respond to the enforced regulations. Amongst these, (Auer et al., 2011, p. 7) states that a tactical view for the banks might be to adjust their lending rates to meet their capital requirements affecting their amount of loans. In our meaning, this inevitably can have an effect on the lending rates towards counterparties which in its turn affects the lending parties access to capital, hence, can affect their capital structure. This is something we plan to place further thought and consideration on.

3.7 Summary
In terms of our theoretical framework and our primary field of study regarding the capital structure of non-listed firms, this led us to build a foundation based upon two main pillars. The pillars constitutes the capital structure side concerning the compositions of non-listed firms in terms of their debt/equity ratio and the other pillar is merely linked towards the banking sector of the thesis concerning matters in regard to bank regulations and financial happenings in the last couple of years, thus the financial crisis. In relation to the chosen theory, the pecking order theory of capital structure, this leads us to constitute a model that enhances and clarifies our primary intention in terms of establishing if their has been any change in capital structure of non-listed firms in Sweden post crisis.
Figure 5 – Theoretical Framework
Source: By the Authors
4. Practical Method

The section concerning practical method will provide a thorough insight in our practical aspect of the report including factors associated with the data sample, decomposition of statistical tests aligned with an evaluation of different components of capital structure that lies as a foundation for our customised hypotheses deduced from previous studies. You will also be guided through our chosen statistical measures used to analyse our data.

4.1 Data Collection

After establishing our choice of topic and empirical field of study, we then obtained the data that would lead us towards the computation of our research to acquire results aligned with our main objective, to observe any changes in capital structure of non-listed firms during the period 2007-2013. When computing research within our area of interest, we quickly gained the impression that due to the lack of research and data within our field, we would have to be thorough in terms of attaining data of necessity for computing tests. This when no previous studies in line with our empirical field have been done before.

It was challenging to attain relevant and important data to achieve valuable results aligned with our study. To do this, we had to distinguish and identify our main interest and firstly secure the data needed to pursue our research. This was of high importance when the availability of data stipulates our field of study and is vital to pursue and conduct our research. Since our main interest surrounds non-listed firms in Sweden and the observation of capital structures, we had to obtain access to non-listed firms financial statements. We did this through the enterprise database Retriever Business that acquires a vast amount of annual reports for firms for an extensive number of years. This database was available through Umeå University and is a database that holds financial statements for all Swedish firms including sole proprietorships from 2000/2001. Through Retriever Business, we were able to export variables and ratios of our choice for all firms of interest to an excel file that we later modified and customised to better fit our intentions. The excel file was later incorporated into a STATA 12 where different tests were utilised to achieve valuable results in line with the purpose of our study.

4.2 Census

We placed great emphasis in obtaining a dataset of a large sample to enhance the validity of the test to be better able to achieve a bigger picture of an eventual change in capital structure for non-listed firms in Sweden, which could act as a proxy for other firms. Saunders et al. (2012, p. 265) enhances the importance of a larger sample size and stresses the fact that the larger sample, the greater the opportunity in generalising the entire population and the less likely you are in acquiring data that could negatively affect a generalisation which could be the case with smaller sizes of data. Saunders et al. (2012, p. 265) also evaluates different determinants of sample size and speaks of the importance of having confidence in your data to distinguish characteristics that will represent the total population. Other factors that may influence is the margin of error, hence the accuracy that is required and subdivisions of categories and the total size of the population which the sample has been drawn from.

Though, it is of importance for us to emphasise that we have obtained the data from the entire population of interest that fits our profile though we have customised our
population by excluding firms that do not obtain all relevant data for all given years. In that sense, we obtain data from the entire population but adjust for these inequalities. The reason for the exclusion is that firms with missing values will not contribute to our findings when we cannot analyse changes from non-existing data.

The characteristics of our data are therefore in line with the census procedure that is a mixture in between a population and a sample. Blumberg et al. (2011, p. 167) explain a census as a procedure when the entire population is used in a study though the population could be viewed as a part of an entire population. In our case we strived to obtain the data available for all Swedish non-listed firms during the period of 2007-2013. We will therefore use the entire population from these years but it is not the entire population of non-listed firms in Sweden, hence it is therefore a census. We managed to acquire our intended data through the source Retriever Business and we were also able to customise and modify our dataset by appointing variables of choice that were extracted from the financial statements into a personal excel file.

Blumberg et al. (2011, p. 171) argue that in some situations sampling is necessary such as when the population is of great size and when it is not possible to thoroughly examine the entire population. Though in our study we have a census of a size that we can dissect and evaluate, hence we see no advantage of utilising a sampling procedure.

To increase the credibility of our population, we decided to eliminate all start-up firms and only include firms that have posed to exist five years prior to our research period, 2007-2013, and that are still of existence today. In that sense we collected our data from firms that registered between 1992-2002 and is still up and running 2013. In line with the fact that we wish to investigate more mature firms and exclude start-ups, we chose to use ourselves of firms with a turnover of at least 500 000 SEK (TKR) and eliminate inactive firms. According to Brealey (2014, pp. 470-471) researchers have proven that the Pecking order theory is best suited for larger and more mature firms. This strengthens our choice of the use of the Pecking order theory when we also attempt to explain capital structure through firm performance. Quan (2002) and Mazur (2007) prove that during recent times there has been a transfer away from the Trade-off theory towards the Pecking order theory. This left us with a population of 545 non-listed Swedish firms. Further reductions were made due to the fact that some firms were missing relevant data of necessity for our computation of our analysis. Due to these restrictions our census was further reduced to 490 firms.

Another factor we addressed was the issue regarding different industries and sizes of the firms of interest. Previous studies have concluded that different ratios and financial structures can differ between industries so to increase the validity we chose to divide our population into ten different segments that Nasdaq OMX applies. These segments are Consumer goods, Consumer services, Healthcare, Financials, Utilities, Industrials, Basic materials, Oil and gas, Technology and Telecommunication. When obtaining the data from the source Retriever Business it is possible to divide the data into 27 different industries/segments. We further regrouped these 27 segments into the ten industries applied by Nasdaq OMX. In our case, we found no non-listed firms associated with the oil and gas industry in Sweden so our industry division consists of nine prime segments.

When subdividing our obtained dataset into industries, we decided to further group certain industries to increase the amount of firms’ in each classification to strengthen our results when analysing larger groups. Also, a greater group of firms’ would enhance
the chance of a normal distribution, thus the greater chance of a robust sample to reduce the risk of analysing groups that are unduly influenced by outliers. This leaves us with a division of six industries.

Table 1 – Sample, 
Source: By the Authors

<table>
<thead>
<tr>
<th>Industry</th>
<th>Original Population</th>
<th>Adjusted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumer Goods</td>
<td>134</td>
<td>130</td>
</tr>
<tr>
<td>Customer Service</td>
<td>148</td>
<td>137</td>
</tr>
<tr>
<td>Healthcare</td>
<td>17</td>
<td>10</td>
</tr>
<tr>
<td>Financials</td>
<td>94</td>
<td>72</td>
</tr>
<tr>
<td>Utilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industrials</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basic materials</td>
<td>100</td>
<td>90</td>
</tr>
<tr>
<td>Technology</td>
<td>52</td>
<td>51</td>
</tr>
<tr>
<td>Telecommunication</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>545</strong></td>
<td><strong>490</strong></td>
</tr>
</tbody>
</table>

4.3 Computation of variables
Retriever Business provided us with the data necessary to conduct an analysis on the capital structure of non-listed firms in Sweden, 2007-2013. From Retriever Business we modified the extracted data to better fit our purpose and incorporated the variables of our choice that we perceived to be of importance in terms of obtaining results in line with our stated hypotheses. We chose to focus upon data that provided us with four different prime angles that are aligned with and have been known to be determinants that constitutes the capital structure of firms. Previous researchers that have placed great emphasis in this given area are Mazur (2007), Psillaki and Daskalakis (2009), Charalambakis and Psychoyios (2012, p.1729) amongst others. These researchers speak mainly of a few main determinants that constitute the composition of firms capital structure, amongst them factors associated with profitability, growth, asset structure, industry and size. These are also the main factors that lie as a foundation for our intended research.

Our foundation will be based on both independent and dependent variables that have been chosen in line with our main intention to observe any change in capital structure and our main statistical approach, to conduct a regression analysis.

**Debt/Equity**
The ratio that we have chosen to represent the composition of firms’ capital structure and will act as our main dependent variable is the debt/equity ratio. This ratio is known to identify the proportion of leverage and equity that firms consist of that is used to finance the firms’ assets. According to Penman (2013, p. 373) the debt/equity ratio is a measure of financial leverage that is frequently used. This measure is calculated as total debt including both long-term and short-term through equity.

\[
\frac{D}{E} = \frac{\text{Total Debt}}{\text{Equity}}
\]
Asset structure
Charalambakis and Psychoyios (2012, p.1729) speak highly of the importance of the asset structure of firms in terms of the capital structure decisions facing management. They emphasise that the greater amount of fixed assets a firm possesses, the more assets they withhold that can serve as collateral, which ultimately can be highly valid and of use in times of financial distress. Myers (1984) also contemplates the importance of the assessment and types of assets applicable to the firms when the type of assets a firm obtains is an important factor that is a factor used to established the amount of borrowing firms can attract. In that sense, when it comes to addressing the composition of different types of assets incorporated within the firms, we decided to utilise the measure of asset structure and use that specific measure as an indicator when observing any eventual changes in capital structure for non-listed firms.

To determine the asset structure of firms, we used the fixed asset to total asset ratio by dividing the fixed amount of assets within the firm with the total amount of assets.

\[
\text{Asset Structure} = \frac{\text{Fixed Assets}}{\text{Total Assets}}
\]

Profitability
To be able to measure the interaction and correlation of profitability in terms of the firms’ capital structure, we had to choose an applicable ratio that best fit our intentions and since we place great emphasis on the asset structure we chose the return-on-assets ratio (ROA). The ROA is primarily seen and used as a measure of a firm’s profitability of operations (Penman, 2013, p. 371). An alternative approach would be to use the EBIT that takes risks into consideration but seeming that we want a pure measure of profitability ROA is more appropriate for us.

\[
\text{ROA} = \frac{\text{Net Income} + \text{Interest Expense}}{\text{Total Assets}}
\]

Growth
In terms of growth, previous studies have indicated that profits interact with growth and can in that sense affect the composition of capital structure. Authors of these studies include Ang and Mcdonnel (1982), Psillaki and Daskalakis (2009) and Myers (1977) amongst others. We have chosen to measure growth in terms of the percentage change of net income based on the previous study by Psillaki and Daskalakis (2009, p. 327) when they base the variable of growth in terms of the percentage change in earnings.

\[
\text{Net Income} = \frac{\text{Net Income}_{t-1}}{\text{Net Income}}
\]

Size
Previous studies by Charalambakis and Psychoyios (2012), Mazur (2007), and Psillaki and Daskalakis (2009) state that different sizes of firms play a role in determining the amount of leverage a firm takes on, hence affecting its capital structure. Further, the authors imply that small firms tend to borrow when the need arises unlike larger firms who tend to borrow to reach and attain pre-set debt levels. Along with this, Charalambakis and Psychoyios (2012, p. 1728) imply that larger firms tend to be more diversified than smaller firms, which would enhance their chances to spread risks
throughout their operations, which ultimately would decrease their chance of having to account for costs associated with financial distress. In terms of size, we therefore utilise the measure of total assets to account for the interaction between these different components. The amount of total assets would justify for the size of the firms, hence, the greater amount of total assets; the greater chance of more diversified operations that inevitably would affect the amount of leverage firms would take on when they are in that sense less exposed to costs associated with financial distress. The utilisation of the amount of total assets in terms of size can be backed up by studies of Sheikh and Qureshi (2014) and Erickson and Trevino (1994).

\[
Net\ Income = \frac{Net\ Income_{t-1}}{Net\ Income}
\]

\[
Asset\ Structure = \frac{Fixed\ Assets}{Total\ Assets}
\]

**Control Variable Size**

The variable size is also applied as a control variable within our study to distinguish any impact concerning the size of our incorporated firms in relation to the debt/equity ratio post crisis. As previously mentioned, studies imply that different sized firms has an affect when considering and determining the amount of leverage a firm can withhold. This along with further studies concluding that larger firms most often are considerably more diversified than smaller firms enhancing their ability to spread any risks through alternative operations decreasing the risk for costs aligned with financial distress. The measure of total assets is also used to justify for the size of the firms within our collected data as a control variable, this in line with studies from Sheikh and Qureshi (2014) and Erickson and Trevino (1994).

**Control Variable Industry**

In terms of determining any changes in capital structure for non-listed firms in Sweden post crisis, we intend to also examine and control for factors aligned with the different industries that are included within our conducted data. This is justified by the thought that different industries have different affects to the capital structure when considering the computation of the debt/equity ratio. Studies by Mackay and Phillips (2005) speak of the differences concerning industries and the amount of leverage in terms of the atmosphere regarding different degrees of competitiveness. Mackay and Phillips (2005) conclude that firms in more compleitive industries depend on diversification to a greater extent.

When regarding these issues, the notion to control for industrial factors seemed of high value for us. We intend to differentiate and segment each industry per se when conducting multiple regressions and also incorporate and control for industrials circumstances within our main model to evaluate if their exists any differences
regarding the debt/equity ratio in terms of the different industries that we utilise ourselves of.

4.4 Statistical Tools

4.4.1 Descriptive Statistics
To explain the main features of our data, we used descriptive statistics. It is a prominent tool when it comes to describing and summarising the data to make it convenient to analyse and observe different dispersions and characteristics by comparing values numerically. Saunders et al. (2012, p. 502) emphasise this by clarifying that it is a useful approach when conducting a study with an exploratory angle when the use of diagrams can more easily enhance the understanding of your data. Saunders et al. (2012, p. 504) elaborates by contemplating that one useful feature of descriptive statistics is the representation of the median value of the distribution and the most frequent measure used to evaluate the central tendency is the mean value. In our case, the mean value can be used to analyse any differences throughout the years of study when the average value is observable through one specific variable. This is highly in line with our main intention and purpose of our study, to observe any eventual changes in capital structure of non-listed firms’ in Sweden, post crisis.

When it comes to statistical inference, the assessment in terms of the normality of data is an important factor to take into consideration. According to Moore et al. (2011, p. 55) normal distribution of data generates useful models for your acquired data and some data collection sets are skewed and therefore are considered to be non-normal and less representative. Moore et al. (2011, p. 60) further explains that the normality of the distribution is described by a bell-shaped curve and that the distribution is described with a mean $\mu$, and standard deviation $\sigma$.

4.4.2 Log Transformation
Before assessing the data to compute our intended regression, an examination of the data is to be conducted to investigate if our data is valid. If the data is proportioned into skewed clusters, the data lacks normality, hence is skewed and not normally distributed. In that case, log transformations can be utilised and applied. Moore et al. (2011, p. 86) states that skewed sets of data appear quite frequently in business applications of statistics and explain the process of transformation as an act that exchanges the original values with the newly transformed values that will be used for the analysis. Moore et al. (2011, p. 89) describes the process of log transformation as a tool used to make distributions that are skewed more symmetric. This process will enhance the use of the numeric values in terms of describing the relationship amongst them and is, as mentioned, used to make your data more symmetric before doing inference.

4.4.3 Statistical Tests
To be able to determine that our data is applicable and valid for the computation of a regression, certain assumptions and factors need to be clarified to be able to pursue tests of relevance. If certain factors are not met, the results cannot be seen as valid and multiple regressions cannot be utilised (Laerd Statistics). Factors that can be of importance to take into consideration when computing statistical tests include multicollinearity, homoskedasticity, outliers and issues related with omitted variables.
When considering our multiple choices for conducting and obtaining results in line with our empirical study, the statistical approach of applying panel data was thought of and thoroughly evaluated. Seeming that panel data also runs by the name longitudinal data, this caught our attention when we conduct a longitudinal study, but after some further evaluation, is came to our knowledge that the approach of panel data was not that applicable for our line of research partly due to the fact that panel data is data for multiple entities observed over more than one time period (Stock & Watson, 2015, p. 57). Panel data also evaluates and observes trends and comparisons for numerous amounts of entities over given time periods (Stock & Watson, 2015, p. 400) so when considering our study, we can conclude that the method of applying panel data is not of value for us when we observe data from one time period alone. Beside from this, we do not intend to place any attention in observing any patterns or trends within our data but merely focus on an observation of any eventual change that appear post crisis. This therefore strengthens and steers us into the direction of the use of statistical regression analysis.

**Multicollinearity**

Multicollinearity is a phenomenon within statistics where two or more regressors within a model are highly correlated which would imply a negative effect towards the test when a linear prediction amongst them can be seen which would decrease the validity of the model. In other words, collinearity appears when a regression model consists of different regressors that interact closely to one another (Moore et al., 2015, p. 610). Saunders et al. (2012, p. 524) highlights the negative aspects aligned with multicollinearity as an issue regarding the difficulty in explaining and determining different effects of the individual variables if they interact with each other. Multicollinearity does not bias any estimates of the dependent variable, the debt to equity ratio, but instead, can have an effect on the inference regarding the significance of the correlated variables.

Perfect multicollinearity appears when one of the regressors in the test is perfectly correlated with any other regressor and there are also cases of imperfect multicollinearity that is described by Stock and Watson (2015, p. 248) as a happening when regressors have a quite high degree of correlation but they are not perfectly correlated with other variables. Perfect multicollinearity tends to prevent applicable estimations in line with regressions but Stock and Watson (2015, p. 248) explains that this is not the case with imperfect multicollinearity and that there also is an absence of any logical problems in line with the choice of variables.

A measure used within statistics to detect any correlation amongst variables is the variance inflation factor (VIF) and a value above 10 indicates a high degree of collinearity (Saunders et al., 2015, p. 525).

**Homoskedasticity**

Homoskedasticity is an assumption that is used to distinguish if the variance around the regression line of the variables is the same for all of them and heteroskedasticity is in its turn when the variance of the regression term is not constant (Stock & Watson, 2015, p. 820). Saunders et al. (2011, p. 524) emphasise that though there may be an existence of heteroskedasticity that may invalidate significance tests, the analysis can still be carried out. To test if our test data set has an existence of heteroskedasticity, we computed Cameron and Trivedi’s decomposition of IM test which determines if the
variance of the variables is constant or not, hence if heteroskedasticity exists and to what extent.

**Omitted variables**

Omitted variable bias can occur if the regressor has a correlation with another variable that is used within the test that helps explain the dependent variable, if that scenario appears, omitted variable bias exists (Stock and Watson, 2015, p. 229). In other words, omitted variable bias occurs if the regression model is computed and leaves out other factors that may have a causal effect, the actual event of leaving out important variables. To help detect if there is an existence of any omitted variables, the RAMSEY test was computed and utilised.

**Outliers**

We do not actively intend to adjust for outliers by removing them from our sample when we believe it is important to include all values. The reason is that each value represents an existing company and is therefore of equal importance for our results.

**4.4.4 Multiple-regression**

Regression analysis is a common tool used in business research and examines the relationship between variables. It is a tool that helps the researcher to determine the strength of the relationship between a dependent (response variable) and one or several independent (explanatory) variables (Saunders et al., 2012, p. 523). When more than one variable is applied, the statistical tool used is a multiple regression model that seeks the relationship between a response variable and multiple explanatory variables (Stock & Watson, 2015, p. 235). The advantage with this model is that it includes several explanatory variables, hence avoids bias that could occur due to omitted variables (Stock & Watson, 2015, p. 228).

In our study we use a multiple regression analysis since we have multiple independent variables explaining the capital structure and our intention is to see if there is any change through our the years and if there is any impact amongst them. To understand if there is a change in the capital structure it is therefore important to examine if there is a relationship between our dependent variable and our independent variables that can be used to explain the change. The reason for this is that the dependent variable lies as a foundation for determining an eventual change in the capital structure.

The equation used to compute multiple regression analysis is:

\[ Y_t = \beta_0 + \beta_1 X_{1t} + \beta_2 X_{2t} + u_t \]

To further extend this equation, we have added two dummy variables to control for industry and size. A dummy (indicator) variable is a variable that can either take the value of 0 or 1 (Stock & Watson, p.201). In our case, our dummy variables are to be used to detect any specific effect on the capital structure of non-listed firms in accordance to size and segmentation of industries. Seeming that we have through previous studies evaluated an eventual impact of size and industry concerning determinants of capital structure, it seemed of high importance for us to take an eventual impact of that kind into consideration when computing and assessing our regression model. In that extent, we have controlled for any changes regarding our six recognised industries and our three samples in terms of size when it comes to evaluating any eventual change in capital structure of non-listed firms in Sweden.
Further, we have computed several regression models differentiated by inputs and control variables. Firstly, a model was generated to include all industries and to control for both size and industrials factors, this to see an overall effect on the entire data set, which includes all non-listed firms from the period 2007-2013. Secondly, we segmented the different industries and chose to control for size, this to separate them individually to be able to see each industry’s impact on the capital structure of non-listed firms in Sweden. Also, to reduce any influential factors from the other industries that may have an impact when regressed together.

General Model: The relationship between debt to equity and our independent variables return on assets, asset structure, growth and size.

$$\frac{D}{E} = \beta_0 + \beta_1 \text{ROA} + \beta_2 \text{AST} + \beta_3 \text{GROW} + \beta_4 \text{SIZE} + u_{ind} + u_{size}$$

**Segmented into industries**

**Model 2:** The relationship between debt to equity and our independent variables within the industry consumer goods.

$$\frac{D}{E_{\text{Consumer Goods}}} = \beta_0 + \beta_1 \text{ROA} + \beta_2 \text{AST} + \beta_3 \text{GROW} + \beta_4 \text{SIZE} + u_{size}$$

**Model 3:** The relationship between debt to equity and our independent variables within the industry financials.

$$\frac{D}{E_{\text{Financials}}} = \beta_0 + \beta_1 \text{ROA} + \beta_2 \text{AST} + \beta_3 \text{GROW} + \beta_4 \text{SIZE} + u_{size}$$

**Model 4:** The relationship between debt to equity and our independent variables within the industry consumer services.

$$\frac{D}{E_{\text{Consumer Services}}} = \beta_0 + \beta_1 \text{ROA} + \beta_2 \text{AST} + \beta_3 \text{GROW} + \beta_4 \text{SIZE} + u_{size}$$

**Model 5:** The relationship between debt to equity and our independent variables within the industry Technology.

$$\frac{D}{E_{\text{Technology}}} = \beta_0 + \beta_1 \text{ROA} + \beta_2 \text{AST} + \beta_3 \text{GROW} + \beta_4 \text{SIZE} + u_{size}$$

**Model 6:** The relationship between debt to equity and our independent variables within the industry health care.

$$\frac{D}{E_{\text{Health Care}}} = \beta_0 + \beta_1 \text{ROA} + \beta_2 \text{AST} + \beta_3 \text{GROW} + \beta_4 \text{SIZE} + u_{size}$$

**Model 7:** The relationship between debt to equity and our independent variables within the industry industrials.

$$\frac{D}{E_{\text{Industrials}}} = \beta_0 + \beta_1 \text{ROA} + \beta_2 \text{AST} + \beta_3 \text{GROW} + \beta_4 \text{SIZE} + u_{size}$$
4.5 Variables and hypotheses
When considering the composition of a suitable capital structure, the managerial process includes evaluating different factors that influence and have an effect on the choice. This to generate the most applicable structure that inevitably will serve as a competitive advantage towards the firm and merely influence the firms capability to make use of its full capacity to hopefully increase the firms efficiency. As previously mentioned, the variables we base our study on are in our belief, the variables that are most important in terms of the composition of capital structure, this backed up by previous revealed studies. This includes the variables in accordance to size, type of industry, asset structure, profitability and growth measures.

These are now to be further explained and evaluated in terms of contribution to our study in line with our choice of theory, the pecking order theory.

4.5.1 Asset Structure
The asset structure, thus mix between tangible and intangible assets is important factor to take into consideration when evaluating your capital structure. As Charalambakis and Psychoyios (2012, p.1729) highlights, the greater amount of fixed assets a firm has, the greater amount of collateral can be used to service debt holder and provided as a security in times of financial distress and economic uncertainty. This implies reduced costs if a negative economic event were to arise. Myers (1984, p. 586) also emphasises the value of assets and concludes that firms that obtain a greater amount of intangible assets tend to borrow less than firms with a considerable amount of tangible, hence, that serve as collateral. Myers (1984, p. 586) further explains that there exists a vast amount of research and evidence concluding the value of the firms assets in terms of capital structure and evidence relating to the subject indicating that the firms amount of borrowing is not only justified by the risk and value of the underlying assets but also the type of assets a firm obtains.

In line with pecking order, Allen (1987) amongst others stress the value of asymmetric information and that asymmetric information is of high importance when firms that obtain more tangible assets are less inclined to the process of asymmetric information, hence, are less exposed to costs aligned with agency problems. This leads to the notion that there is a positive correlation between the firm’s capital structure and the assets structure.

**Hypothesis 1**

*H0: There is no relationship between asset structure and the firm’s debt/equity ratio*

*Ha: There is a relationship between asset structure and the firm’s debt/equity ratio*

4.5.2 Profitability
Measures of profitability are frequently observed when considering the set-up of a firm’s capital structure and highly correlated with discussions surrounding possible determinants of capital structure frameworks.

Enthusiasts of the pecking order theory, according to the study from Rajan and Zingales (1995, pp. 1248-1250), emphasise the importance of profitability concluding that the more profitable a firm poses to be, the more the firm can rely on internal financing
when they can constantly plough back generated profits to use as further investments. In that sense, they should inevitably borrow less when they merely obtain a sufficient amount of finance to make use of. Also, Myers (1984, p. 589) has throughout his work attempted to explain a relationship between profitability measures and issues aligned with the capital structure of firms and concludes that highly profitable firms that have a slower growth will have lower debt ratios. On the other hand, firms that are seen as less profitable will end up with substantially higher debt ratios. Mazur (2007, p. 509) also connected profitability measures in accordance to the pecking order theory by stating that more profitable firms with higher liquidity ratios are more tempted to make use of their internally generated funds. Mazur (2007) predicts through his studies that there is a negative relationship between measures aligned with profitability and debt financing.

The profitability measure that is to be used in this conducted study is the return on asset.

**Hypothesis 2**

*H0: There is no relationship between profitability and the debt/equity ratio*

*Ha: There is a relationship between profitability and the debt/equity ratio*

4.5.3 Growth

In terms of addressing measures of growth aligned with the frame of capital structure, the more the firm grows, the more finance the firm is perceived to need to expand in an efficient and effective way. In that sense, financing of growth opportunities depends highly on their base of internal finance and if firms are dependent on their internal funds to expand their operations, their growth can be restricted. This may lead to managers having to postpone and surrender positive net present value (NPV) projects, which affects the firms in a negative way. In accordance to this, firms that are more enthusiastic towards external financing have a greater chance of expanding. In Myers (1977) study, he created a model that suggested an identification of a negative correlation in terms of leverage and growth opportunities. He stems this on the fact that firms that obtain debt with a greater amount of risk tend to underinvest in NPV projects of positive nature and backs this up by saying that the greater opportunities to expand, the greater incentive to make use of external financing to finance their operations. Hence, opportunities to growth can give incentives to firms to take more risk.

Furthermore, Jensen and Meckling (1976) and Myers (1977), formulate an understanding merely based on an inverse relationship between leverage and growth opportunities. This stems from the fact that firms with greater opportunities to growth are perceived to have an increased incentive to engage in risky projects at the expense of the firms debt holders. Also aligned with the fact that firms with enlarged growth, in accordance to the pecking order, have greater needs for funds, which inevitably will lead them to borrow more. Titman and Wessels (1988) and Rajan and Zingales (1995) also strengthen this assumption. Growth is also, according to Psillaki and Daskalakis (2009, p. 319), interesting in other matters. For instance, they have observed a growing interest surrounding the focus on SME’s mainly based on the fact that SME’s are considered to be highly important components when speaking of economic growth.

The measure of growth in this study constitutes of the percentage change of net income.
Hypothesis 3

\( H_0: \) There is no relationship between the percentage change in net income and the debt/equity ratio

\( H_a: \) There is a relationship between the percentage change in net income and the debt/equity ratio

4.5.4 Size

When considering the different sizes of firms, it is prone to conclude that larger firms obtain greater opportunities to finance their operations, which inevitably would result in an increased amount of external financing.

Charalambakis and Psychoyios (2012, p. 1728) argue for the fact that larger firms tend to be diversified to a greater extent, hence, less exposed to costs associated with financial distress when they have a greater capacity to spread their risks and eliminate the risk of suffering costs aligned with economic distress. This ultimately may lead to more profitable firms to take on more leverage when they are, as previously stated, less exposed to costs as a result of financial distress. Psillaki and Daskalakis (2009) also discusses the value of size within their study by concluding that leverage is positively correlated with the amount of tangible assets and the size of the firm. They also state that their overall conclusion aligned with the size of the firms is highly applicable to the pecking order theory, mostly in terms of small firms, when smaller firms tend to borrow when the need for financing arises rather than borrowing just in terms of achieving a determined leverage ratio.

In Mazurs (2007, p. 509) computed study, he revealed a negative relationship between the size of firms and their asset structure along with results indicating that when it comes to larger firms, there is a negative effect on the leverage in terms of liquidity, profitability and asset structure. He attempts to explain this relationship by the assumption that larger firms with a great amount of fixed assets possess a smaller amount of asymmetric information, this in comparison to smaller firms. Mazur (2007, p. 509) emphasises that these notions are highly in line with the pecking order theory.

Hypothesis 4

\( H_0: \) There is no relationship between the size of the firm and the debt/equity ratio

\( H_a: \) There is a relationship between the size of the firm and the debt/equity ratio

4.6 Control Variables

4.6.1 Industry Division

When looking at specific factors that are considered to be determinants that can have an effect and influence the capital structure of the firm, the industries that the firms operate in can ultimately have an effect when evaluating different compositions. Mackay and Phillips (2005, p. 1433) attempt to evaluate and interpret the importance of a firm's position within its industry and its effect on capital structure. Mackay and Phillips (2005, p. 1433) emphasises that firms within competitive industries are more dependent on diversification, how other firms within the same industry react and behave and its overall status in the given market. They also conclude that leverage within more concentrated industries tends to be higher and less scattered when the natural hedge of firms within more concentrated industries is not as pronounced. Myers (1984, p. 589)
compares profitable and unprofitable firms within the same industry and evaluates the
difference in terms of leverage when considering growth opportunities and level of
valuable assets and concludes that the debt ratios are significant towards the overall
state of the firm in terms of the previously stated variables, growth, profitability and
amount of assets.

This ultimately leads us in the direction to assume that the amount of leverage and the
mix of firm’s liabilities are also highly reliant on which industry they operate in and the
overall state of that industry in terms of concentration and diversification. In that sense,
the variable industry can act as a control variable within our study when it is highly
associated to the overall perception of other determinants correlated to the decision
surrounding the composition of firm’s financial structure.

4.6.2 Size
As previously mentioned, literature states that larger firms tend to acquire greater
opportunities when it comes to obtaining sufficient funds for financing their activities,
not least when it comes to their possibilities to achieve external financing. Charalambakis and Psychoyios (2012, p. 1728) argue for the fact that the larger the
firm, the less exposed they are to costs associated with financial distress, which can
have an impact on the amount of leverage they can acquire and not least, difference in
the amount of opportunities the firm withholds. Size ultimately has an impact when it
comes to factors associated with measures of growth, profitability, asset structure,
hence, is worth controlling for in our study when we obtain a sufficient amount of firms
with a wide span considering size.

To account for this, we decided to divide our population into three equal samples to
control for the size in our statistical analysis. The sizes constitutes of three different
ranges of total assets, 0 - 300 000, 300 001 - 600 000 & 600 001 onwards. We chose to
utilise these different ranges chosen by ourselves due to the fact that previous proxies
for small and medium non-listed firms use one entire size for all to account for their
classification and determination of what type of firm they are, which we already know.
In other words, there are no already set size categories within non-listed firms. Seeming
that we already obtain all registered and active firms in Sweden throughout the period
2007-2013 we then decided to divide our sample to account for robust errors and make
the sample as valid as possible.

4.7 Summary of Hypotheses

<table>
<thead>
<tr>
<th>Table 2 – Control Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source: By the Authors</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Factors</th>
<th>Dependent Variable</th>
<th>Independent Variables</th>
<th>Control Variables</th>
<th>Definition</th>
<th>Predicted Relation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital Structure</td>
<td>D/E</td>
<td></td>
<td></td>
<td>Return on assets</td>
<td>-</td>
</tr>
<tr>
<td>Profitability</td>
<td>ROA</td>
<td></td>
<td></td>
<td>Fixed assets/tot</td>
<td>+</td>
</tr>
<tr>
<td>Asset structure</td>
<td>AST</td>
<td></td>
<td></td>
<td>Annual percentage change of</td>
<td>+</td>
</tr>
<tr>
<td>Growth</td>
<td>GROW</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Size</td>
<td>SIZE</td>
<td>net income</td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------</td>
<td>------</td>
<td>------------</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industry</td>
<td>Ind</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Size</td>
<td>Size</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
5. Empirical Findings

In this section, we intend to present and summarise our findings as a result of our statistically used tools. We will give you a thorough insight in our empirical findings by utilising descriptive statistics and multiple regression models on our computed data, the data of all non-listed firms in Sweden during the period 2007-2013. This section will act as a foundation in regard to thoroughly analysing our data to answer our stated research question in the following chapter.

5.1 Descriptive Statistics

The presentation of descriptive statistics for our given years and intended measures gives us a good overview of the results in terms of dispersion and characteristics. Here, we utilised the graphs in order to observe the different values for each given year for non-listed firms post crisis. In this sense, we have obtained results of necessity and in line with our main intention, to observe any eventual changes in the capital structure for the prevailed years. The dependent variable used is the debt/equity ratio, which is used as our determinant and foundation for the capital structure. When computing descriptive statistics, we observed some extreme values within our data set that we perceived might have a great influence on the overall presentation of results. Though, seeming that we obtain all relevant values for all non-listed firms within our empirical field and time range, we did not want to exclude any outliers but merely present the whole picture, hence, include all of our acquired data to enhance the validity. In this data set, we include all industries for all researched time periods to reveal an overall picture of the entire change for our population.

Our summary of descriptive statistics revealed results for our entire data set, 494 observations. Throughout the years, we can establish that there has been a change in the firm’s mean value of the debt/equity ratio when we can see prominent changes in certain time periods. As seen, the most drastic changes have occurred between the time periods 2008-2010 when we can observe an increase until 2009, which would imply an increased amount of leverage or decreased amount of equity to then detect a decrease the following year. The extreme drop in leverage in 2010 is then followed by an increase the following year 2011, paving the way for another downturn the remaining two years. The statistics point out that despite the ups and downs throughout the years the overall assessment is that the mean has dropped revealing a decrease in leverage and a change in debt/equity post crisis. Though we can reveal these results, we can establish that the standard deviations for certain years are very large which could imply that eventual outliers have influenced our data to a certain extent. To adjust for this and to take into consideration, we decided to log transform our debt/equity ratio, which would in its turn make our data more symmetric and adjust for outliers.

Table 3 – Summary of Descriptive Statistics

<table>
<thead>
<tr>
<th>Year</th>
<th>Mean</th>
<th>Std. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>5.47</td>
<td>29.30</td>
</tr>
<tr>
<td>2012</td>
<td>6.09</td>
<td>18.68</td>
</tr>
<tr>
<td>2011</td>
<td>10.99</td>
<td>105.01</td>
</tr>
<tr>
<td>2010</td>
<td>4.93</td>
<td>21.75</td>
</tr>
<tr>
<td>2009</td>
<td>18.50</td>
<td>286.34</td>
</tr>
<tr>
<td>2008</td>
<td>12.31</td>
<td>105.24</td>
</tr>
<tr>
<td>2007</td>
<td>7.02</td>
<td>89.91</td>
</tr>
</tbody>
</table>
These tables below reveal a summary of the descriptive statistics for the given time period when amended to make more applicable in terms of symmetry. To reduce the effect of outliers, we log transformed the debt/equity ratio to reduce the skewness and present a more normal distributed sample. As seen below, the number of observations for each year has been altered and there is a more constant standard deviation between the years, hence, smaller differences surrounding the mean. Other matters worth mentioning is that the minimum and maximum values are more centred which would produce a greater central tendency, thus a more normal distributed data set.

Even here, though the numbers of observations have been adjusted to better address the symmetry of the sample, we can perceive changes in debt/equity for the firms within the time range computed by the study, 2007-2013. Seeming that we have chosen to log transform our values, this results in an alternation considering the interpretation of the data set. When the values are log transformed, the relationship is seen and referred to as elastic. Within statistics and econometrics, we interpret the elasticity differently compared to the original and most common utilisation of descriptive statistics when the interpretation consists of unit change. In the case of log transformation, you should interpret the results as a percentage relationship (Stock & Watson, 2015, p. 315). Here, we see the elasticity as the percentage change in debt/equity, which serves as our dependent variable, whilst the independent variables are altered by one percentage point. Though the interpretation is substantially different between these two graphs, we can still observe changes in the debt/equity ratio throughout the years. This summary reveals a constant decrease except between the years 2007-2008 when there was a small increase in debt/equity. It is therefore possible to point out that there has been a change in debt/equity ratio during the years 2007-2013.

Table 4 – Summary of Log Descriptive Statistics

<table>
<thead>
<tr>
<th></th>
<th>Descriptive Statistics (LOG)</th>
<th>Std. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>0.84</td>
<td>1.16</td>
</tr>
<tr>
<td>2012</td>
<td>0.97</td>
<td>1.19</td>
</tr>
<tr>
<td>2011</td>
<td>0.98</td>
<td>1.22</td>
</tr>
<tr>
<td>2010</td>
<td>0.99</td>
<td>1.16</td>
</tr>
<tr>
<td>2009</td>
<td>1.04</td>
<td>1.31</td>
</tr>
<tr>
<td>2008</td>
<td>1.09</td>
<td>1.31</td>
</tr>
<tr>
<td>2007</td>
<td>1.04</td>
<td>1.37</td>
</tr>
</tbody>
</table>
Even though both of our graphs present similar conclusions and results, it is of importance for us to thoroughly evaluate possible advantages and disadvantages with both utilised models. Our first model includes all of our acquired data, which presents a credible picture when no values have been altered; hence, no influential changes have been made. Though we have used ourselves of all data, we can observe some extreme values for certain years and we cannot determine their impact on the overall values and how much they influence a change in values of importance in line with our presented results. When it comes to the second graph, which was log transformed to make more symmetric, hence more normally distributed, we can see that a few amount of observations have been excluded. The deviations between the values are substantially narrower and would in that sense present a more accurate result when considering the entire population. A drawback is the fact that the interpretations between the models are different when the log-transformed graph addresses elasticity and a percentage change between the dependent and the independent variables.

Though not all observations are included within the log-transformed approach, we have not actively altered the data to better fit our needs. In that sense, we intend to use the second log transformed model as a foundation for our analysis when we perceive the use of a more general interpretation of the entire population as a more credible and valid path in terms of looking at the entire picture, hence looking at all of our components simultaneously. We can conclude that the substantial high values that circulate our population influence to a certain degree and a log-transformed approach would give us a more general overview of the entire population, which is our main intention when considering the computation and utilisation of these graphs. Also, seeming that we have already established that our data set becomes more reasonable in terms of symmetry and distribution when log-transformed, it also influences our choice to base our results and analysis on the foundation of the log-transformation.

5.2 Quality assessment of our data

5.2.1 Normality Testing
When computing statistical tests within our empirical field, it is of importance to establish the normality of our distribution to assess whether our data is valid or not. As previously mentioned, the normality of the data set is essential when utilising measures such as multiple regressions and is an assumption that has to be met to further proceed with the intended models. In terms of our data, we quickly observed some skewness
aligned with our values, which would conclude a possession of a non normal distribution. In that sense, we can use ourselves of the process of log transformation to normalise the distribution to make the data set more symmetric (Moore et al., 2011, p. 89).

When examining the histograms and quantile plots below, we can establish that the process of log transformation has increased the normality of our data making it more applicable and valid for use of statistical tools, in our case the use of multiple regressions. Moore et al. (2011, p. 55) confirms that deviations from normal distributions are highly frequent when it comes to real data and the fact that data sets are of use, even though they might not be optimally symmetric and lack a representation of outliers.

**Histogram, distribution of the entire data set**

![Histogram, distribution of the entire data set](image1)

Figure 8 – Distribution of data  
Figure 9 – Log distribution of data

**Quantile plot of the entire data set**

![Quantile plot of the entire data set](image2)

Figure 10 – Distribution of data  
Figure 11 – Log Distribution of data

**5.2.2 Homoskedasticity**

Stock and Watson (2015, p. 203) states that the assumption that surrounds the distribution is that it has a mean value of zero and that the variance of the distribution is not dependent on the independent values, if that is the case, homoskedasticity exists. In other words, the variance that surrounds the data is constant. We utilised the IM test to test if there exists any heteroskedasticity in our data set and the results concluded a non significant P value (0.9210) stating that we reject the null hypotheses that there exists
homoskedasticity and can instead state that there is heteroskedasticity. To adjust for this issue, you can also log transform to make your data homoscedastic.

Table 5 – IM-test

<table>
<thead>
<tr>
<th>Heteroskedasticity</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi 2</td>
<td>P</td>
</tr>
<tr>
<td>5.90</td>
<td>0.9689</td>
</tr>
</tbody>
</table>

Table 6 – Log IM-test

<table>
<thead>
<tr>
<th>Heteroskedasticity (LOG)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi 2</td>
<td>P</td>
</tr>
<tr>
<td>150.89</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

Log transformed with a P-value of 0, which concludes that we fail to reject the null hypotheses and accept that there is homoskedasticity.

5.2.3 Multicollinearity
Multicollinearity appears when there is a correlation between variables, which would in its turn decrease the validity of the model. Moore et al. (2015, p. 610) states that it is a condition that arises when different regressors interact closely to one another. As previously mentioned, a common statistical test used to determine if the independent variables in use are correlated and interact with each other is the VIF test that stands for variance inflation factor. Saunders et al. (2012, p. 525) explains how to interpret the test and elaborates by stating that a VIF value larger than 10 indicates a high degree of collinearity which would negatively affect the validity of the test.

In our case, we obtained a VIF value of 1.01, which would imply a lack of multicollinearity. This value is good in terms of validity of our test and we can neglect any larger degree of correlation between our chosen independent variables as prevailed below.

Table 7 – VIF test

<table>
<thead>
<tr>
<th>Multicollinearity</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assets Structure</td>
<td>1.01</td>
</tr>
<tr>
<td>ROA</td>
<td>1.01</td>
</tr>
<tr>
<td>Change in NI</td>
<td>1.00</td>
</tr>
<tr>
<td>Total Assets</td>
<td>1.00</td>
</tr>
<tr>
<td><strong>Mean VIF</strong></td>
<td><strong>1.01</strong></td>
</tr>
</tbody>
</table>

5.2.4 Omitted Variables
To determine if our data suffers from omitted variables, i.e. if their is an independent variable not included in the regression model that might have a causal effect on the debt/equity ratio, the RAMSEY test was performed. Our result showed a probability > F
of 0.8323 which implies that we have a significant value and we therefore state that our model suffers from omitted variables.

This did not come as a surprise to us when we are well aware of the fact that there exist other determinants in relation to the dependent variable, in our case the debt/equity ratio. We chose to primarily place our main focus on the main determinants, which we have obtained and observed through literature. These determinants consist of measures of profitability, growth, size and asset structure of firms.

**Table 8 – Ramsey test**

<table>
<thead>
<tr>
<th>Omitted Variables</th>
<th>F</th>
<th>Prob &gt; F</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.29</td>
<td>0.8323</td>
</tr>
</tbody>
</table>

5.3 Regression Results

Our data consist of 7 different regression models as stated above, one explaining the general relationship between the capital structure and our independent variables and the remaining 6 segmented by industry to reveal if there are any differences in the importance of the variables amongst industries. Below we will present these 7 models and display the results extracted from the regressions.

**Results Regression Model 1**

<table>
<thead>
<tr>
<th>Regression 1</th>
<th>F</th>
<th>Prob&gt;F</th>
<th>R-Square</th>
<th>Adj R-square</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>11.43</td>
<td>0.00</td>
<td>0.06</td>
<td>0.06</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Debt/Equity</th>
<th>Coef.</th>
<th>Std.Err</th>
<th>t</th>
<th>P &gt;t</th>
</tr>
</thead>
<tbody>
<tr>
<td>log ROA</td>
<td>0.074</td>
<td>0.035</td>
<td>2.12</td>
<td>0.034</td>
</tr>
<tr>
<td>log Change in NI</td>
<td>0.026</td>
<td>0.020</td>
<td>1.32</td>
<td>0.187</td>
</tr>
<tr>
<td>log Total assets</td>
<td>0.213</td>
<td>0.033</td>
<td>6.54</td>
<td>0.000</td>
</tr>
<tr>
<td>log Asset structure</td>
<td>-0.055</td>
<td>0.016</td>
<td>-3.35</td>
<td>0.001</td>
</tr>
<tr>
<td>Small</td>
<td>-0.047</td>
<td>0.135</td>
<td>-0.35</td>
<td>0.728</td>
</tr>
<tr>
<td>Medium</td>
<td>-0.442</td>
<td>0.134</td>
<td>-3.30</td>
<td>0.001</td>
</tr>
<tr>
<td>Large</td>
<td>-0.285</td>
<td>0.146</td>
<td>-1.95</td>
<td>0.052</td>
</tr>
<tr>
<td>Financials</td>
<td>-0.329</td>
<td>1.143</td>
<td>-0.29</td>
<td>0.773</td>
</tr>
<tr>
<td>Consumer goods</td>
<td>-0.264</td>
<td>1.144</td>
<td>-0.23</td>
<td>0.818</td>
</tr>
<tr>
<td>Consumer services</td>
<td>0.087</td>
<td>1.143</td>
<td>0.08</td>
<td>0.939</td>
</tr>
<tr>
<td>Technology</td>
<td>-0.0189</td>
<td>1.145</td>
<td>-0.16</td>
<td>0.869</td>
</tr>
<tr>
<td>Health Care</td>
<td>-0.027</td>
<td>1.148</td>
<td>0.02</td>
<td>0.981</td>
</tr>
<tr>
<td>Industrials</td>
<td>-0.251</td>
<td>1.143</td>
<td>-0.22</td>
<td>0.826</td>
</tr>
</tbody>
</table>

This model represents the overall notion of our independent variables in relation to our dependent variable, debt/equity. At first, we can observe a R-square of 6%, which indicates how well our regression models fit our data set. It is the share of variation accounted for in terms of our model that can be explained by our independent variables, ROA, total assets, change in net income and the asset structure. Our R-square value of 6% tells us that our independent variables only explain 6% of the variability of our
dependent variable, the debt/equity ratio. Seeming that our independent variables within our model only accounts for a 6% explanation of the variability of debt/equity, it may be of interest for further tests to implement and account for other independent variables to strengthen the overall model. Seeming that we primarily intended to use few main variables and distinguished an existence of omitted variables, this result was highly in line with our expectations.

The F-ratio can also be used to test the overall model and determine its fit for our computed data. F = 11.43, p < 0.05 when we have a P = 0.00. This determines that the significance of the tests detects that our model fits our data in a good way. This further explains that our use of independent variables predicts the debt/equity ratios in a statistically significant way. Seeming that our obtained R-square value of 6%, indicates a low explanation, we can still conclude that our model fits our data well.

In terms of our model, it is also of value to test the significance of each of our independent variables to see if they are statistically different to zero. All of our independent variables, beside from change in NI are significantly different to 0 when they obtain a p < 0.05.

Examining the unstandardised coefficients helps us indicate the degree of variation between debt/equity and an independent variable when all of our other independent variables are held constant. Seeming that we have chosen to log-transform our model to increase the normality of the test, this implies an alternative interpretation when we therefore examine a percentage change in the debt/equity ratio while the independent variable is affected by 1% increase. This interpretation is of significant value in terms of evaluating our stated hypotheses.

**Hypothesis 1**

H0: There is no relationship between asset structure and the firms’ debt/equity ratio

Ha: **There is a relationship between asset structure and the firms’ debt/equity**

The p-value obtained by the independent variable asset structure is 0, which leaves us to reject the null hypothesis at the confidence level of 95% that there is no relationship between asset structure and the firms’ debt/equity ratio and instead state that there is a relationship between the asset structure and the firm’s debt/equity.

When evaluating our unstandardised coefficient for the independent variable asset structure in terms of our dependent variable, the debt/equity ratio, we can conclude that a one-percentage increase in the asset structure generates a negative relationship to the debt/equity ratio with a decrease by 5.5%.

**Hypothesis 2**

H0: There is no relationship between profitability and the debt/equity ratio

Ha: **There is a relationship between profitability and the debt/equity ratio**

When observing the independent variable ROA that represents the determinant profitability, we can detect a p-value 0.034 which is less than 0.05 at the confidence level of 95%. This leaves us to reject the null hypotheses stating that there is no
relationship between profitability and the debt/equity ratio and accept the alternative hypotheses that there is a relationship between them.

When observing the individual coefficient, a one-percentage increase in our independent variable ROA generates a 7.4% increase in the debt/equity ratio. This generates a positive relationship between the independent variable ROA and the dependent variable, the debt/equity ratio.

**Hypothesis 3**

**H0: there is no relationship between the percentage change in net income and the debt/equity ratio**

**Ha: There is a relationship between the percentage change in net income and the debt/equity ratio**

The p-value regarding the percentage change in net income in relation to our dependent variable, the debt/equity ratio reveals a p-value 0.187, hence p > 0.005 at the confidence level 95%. This result makes us reject the alternative hypothesis and therefore conclude that there is no relationship between growth and the capital structure of non-listed firms in Sweden.

**Hypothesis 4**

**H0: There is no relationship between the size of the firm and the debt/equity ratio**

**Ha: There is a relationship between the size of the firm and the debt/equity ratio**

Our regression model prevailed a p-value of 0, thus less than 0.05 at the 95% confidence level. This ultimately concludes that we can reject the null hypotheses stating that there is no relationship between the size of the firm and the debt/equity ratio and instead accept the alternative hypothesis stating that there is a relationship between the size of the firm and the debt/equity ratio.

In our regression model, the coefficient of the independent variable total assets detects that a one-percentage increase in net income generates a 21.3% increase in the debt/equity ratio. In other words, we detect a positive relationship between the size of the firm and the debt/equity ratio.

5.4 Interpretation of Incorporated Dummy Variables

When considering the interpretation of the included dummy variables that consist of our different industries and our division into three size categories, we can interpret them by observing their coefficients. The usage of dummy variables is to indicate the occurrence and control for specific factors. The dummy variables conducted for controlling for size and industry factors will affect the independent variables to obtain a position where they influence the debt/equity ratio that acts as our dependent variable. This happens when the dummy variable obtains a value of one, then their coefficients adjust the intercept. In other words, when one dummy takes on the value one, other dummies are held constant and would receive the value zero, this to determine the dummies influence on the dependent variable, the debt/equity ratio. In other words, control for one effect at the time.
In our case, we can observe influential changes of all dummy variables in accordance to the debt/equity ratio. In terms of size, our regression indicates a negative influence on the smaller firms whilst the impact on medium sized and larger sizes in terms of debt/equity is positively related. Seeming that we have controlled for the different sizes of each industry in regard to each firm’s total assets, we interpret the coefficients by considering a 1 % increase in the dummy variable and its percentage influence on the dependent variable, the debt/equity ratio. The control for smaller firms detects a negative influence of 4.7% whilst the medium sized firms indicates a negative change of 44.2 % and finally, the control for large firms generates a decrease by 28.5% in terms of the debt/equity ratio.

When considering influential impacts regarding the control for industrial matters, the regression model detects a negative impact in terms of their coefficients in regard to the debt/equity ratio for all industries. In other words, when utilising this process for all other industries, they all generate a negative coefficient value in accordance to the debt/equity ratio.

5.5 Segmented Industries
Below, these conveyed models indicate the results of a regression for the segmented industries per sig. Within these models, we utilised multiple regressions by incorporating dummy variables to control for matters aligned with the sizes of firms within each given industry. When segmenting each industry alone, we perceive that we can obtain a greater and thorough understanding of each industry's impact and influence on factors concerning the debt/equity ratio of the firm when keeping them separated. In terms of size, we intend to not only look at the different segmented industries alone, but also take into consideration the sizes of the firms incorporated within each industry to observe if that also has any influence on our determinant of capital structure, the debt/equity ratio.

### Results Regression Model 2 – Consumer Goods

<table>
<thead>
<tr>
<th>Regression 2</th>
<th>F</th>
<th>Prob&gt;F</th>
<th>R-Square</th>
<th>Adj R-square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Debt/Equity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>log ROA</td>
<td>0.420</td>
<td>0.094</td>
<td>4.49</td>
<td>0.000</td>
</tr>
<tr>
<td>log Change in NI</td>
<td>0.060</td>
<td>0.038</td>
<td>1.58</td>
<td>0.115</td>
</tr>
<tr>
<td>log Total assets</td>
<td>0.064</td>
<td>0.086</td>
<td>0.75</td>
<td>0.455</td>
</tr>
<tr>
<td>log Asset structure</td>
<td>-0.101</td>
<td>0.027</td>
<td>-3.80</td>
<td>0.000</td>
</tr>
<tr>
<td>Small</td>
<td>-0.346</td>
<td>0.208</td>
<td>-1.66</td>
<td>0.097</td>
</tr>
<tr>
<td>Medium</td>
<td>-0.307</td>
<td>0.218</td>
<td>-1.41</td>
<td>0.159</td>
</tr>
<tr>
<td>Large</td>
<td>-0.209</td>
<td>0.249</td>
<td>-0.84</td>
<td>0.402</td>
</tr>
</tbody>
</table>

Model 2 reveals the relation between the independent variables and the debt/equity ratio in the consumer goods industry. In this model we have an R-square of 9%, which implies that 9% of the variability in the dependent variable is explained by this model. We have an F-ratio of 8.57 in this model and a P = 0.00 indicating that our regression model is a good fit for our data. Further the significance of the independent variables in each model is also something that must be taken into account. As displayed in the graph
above, net income and change in net income is significantly different from zero when the other variables are also in the model compared to asset structure and ROA that are insignificant.

The coefficients in this model show that when ROA increases with 1% the debt/equity ratio increase by 42%. A 1% increase in the change in net income increases debt/equity by 6% and a 1% increase in the asset structure decreases debt/equity by 10%. Finally 1% increase in total assets increases debt/equity by 6.4%. The dummy variable in this model is size and the coefficients reveal that 1% increase in the small segment will decrease debt/equity by 35% while a 1% increase in the medium segment will decrease debt/equity by 31% and a 1% increase in the large segment will also have a negative effect on debt/equity decreasing it by 21%.

### Results Regression Model 3 – Financials

<table>
<thead>
<tr>
<th>Regression 3</th>
<th>F</th>
<th>Prob&gt;F</th>
<th>R-Square</th>
<th>Adj R-square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Debt/Equity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>log ROA</td>
<td>0.049</td>
<td>0.089</td>
<td>0.56</td>
<td>0.578</td>
</tr>
<tr>
<td>log Change in NI</td>
<td>-0.112</td>
<td>0.066</td>
<td>-1.70</td>
<td>0.091</td>
</tr>
<tr>
<td>log Total assets</td>
<td>0.273</td>
<td>0.062</td>
<td>4.43</td>
<td>0.000</td>
</tr>
<tr>
<td>log Asset structure</td>
<td>0.025</td>
<td>0.043</td>
<td>0.57</td>
<td>0.566</td>
</tr>
<tr>
<td>Small</td>
<td>-0.780</td>
<td>0.540</td>
<td>-1.44</td>
<td>0.150</td>
</tr>
<tr>
<td>Medium</td>
<td>-0.522</td>
<td>0.552</td>
<td>-0.95</td>
<td>0.345</td>
</tr>
<tr>
<td>Large</td>
<td>-0.593</td>
<td>0.537</td>
<td>-1.10</td>
<td>0.271</td>
</tr>
</tbody>
</table>

This model displays the relationship between debt/equity and our independent variables in the financials industry. The R-square is 15%, which concludes that 15% of our dependent variable can be explained by the independent variables within the model. The F-ratio of 7.61 with a p = 0.00 reveal that we have data that fits our regression model. When considering the significance of the independent variables, we can conclude that change in net income, asset structure and ROA are significant while total assets are not since they have a p<0.05.

When looking at the coefficients in this model, we first have ROA that has a positive relation with the debt/equity ratio implying that when ROA increases with 1% the debt/equity ratio increases by 5%. Second there is the total assets variable that has a positive relationship with our dependent variable. Our model reveals that when total assets increases by 1%, debt/equity increases by 27%. The model displays a negative relationship between our dependent variable and change in net income when a 1% increase in the change in net income decreases debt/equity by 11%. Finally when we consider the asset structure, 1% increase would have a positive effect on debt/equity with 2.5%.

The Dummy variables, small, medium and large are all relevant in this model. According to our obtained results a 1% change in each one of our three dummies holding the other two constant will have an effect on debt/equity. The small segment will contribute to a 78% decrease, medium will decrease debt/equity by 52% while large would make a positive impact of 59%.
Results Regression Model 4 – Consumer Services

Table 12 – Results Regression Model 4

<table>
<thead>
<tr>
<th>Regression 3</th>
<th>F</th>
<th>Prob&gt;F</th>
<th>R-Square</th>
<th>Adj R-square</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5.36</td>
<td>0.00</td>
<td>0.05</td>
<td>0.04</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Debt/Equity</th>
<th>Coef.</th>
<th>Std.Err</th>
<th>t</th>
<th>P &gt;t</th>
</tr>
</thead>
<tbody>
<tr>
<td>log ROA</td>
<td>0.105</td>
<td>0.057</td>
<td>1.84</td>
<td>0.067</td>
</tr>
<tr>
<td>log Change in NI</td>
<td>0.048</td>
<td>0.032</td>
<td>1.49</td>
<td>0.137</td>
</tr>
<tr>
<td>log Total assets</td>
<td>0.168</td>
<td>0.059</td>
<td>2.82</td>
<td>0.005</td>
</tr>
<tr>
<td>log Asset structure</td>
<td>0.039</td>
<td>0.029</td>
<td>1.31</td>
<td>0.191</td>
</tr>
<tr>
<td>Small</td>
<td>-0.070</td>
<td>0.206</td>
<td>-0.34</td>
<td>0.735</td>
</tr>
<tr>
<td>Medium</td>
<td>-0.572</td>
<td>0.205</td>
<td>-2.79</td>
<td>0.005</td>
</tr>
<tr>
<td>Large</td>
<td>-0.242</td>
<td>0.244</td>
<td>-0.99</td>
<td>0.322</td>
</tr>
</tbody>
</table>

Model 4 above shows the regression of the consumer service industry and reveals a R-square of 5% implying that the dependent variable can be explained to this degree by the included variables. The F-ratio above is 5.36 and p = 0.000 revealing a good fit of the data to the model. The significance of the independent variables are all good except for total assets that has a p<0.05 and is therefore insignificant. The data further indicates that the coefficient of ROA has a positive relationship with the debt/equity variable showing that when ROA increases by 1% the debt/equity increase by 11%. Change in Net income does also have a positive relationship with the dependent variable and 1% increase in the change in net income will increase debt/equity by 4.8%. Asset structure shares the same relationship revealing that a 1% increase will increase our dependent variable with 3.9%. Finally there are the total assets that show a positive relationship of 17% with the debt/equity ratio.

The dummy variables in model 4 all have a negative relationship to the capital structure. The findings retrieved from our model show that a 1% increase in one of our dummy variables will decrease the debt/equity ratio. The small segment will affect debt/equity by 7%, the medium segment will impact by 57% and large with 24%.

Results Regression Model 5 – Technology

Table 13 – Results Regression Model 5

<table>
<thead>
<tr>
<th>Regression 5</th>
<th>F</th>
<th>Prob&gt;F</th>
<th>R-Square</th>
<th>Adj R-square</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2.57</td>
<td>0.02</td>
<td>0.10</td>
<td>0.06</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Debt/Equity</th>
<th>Coef.</th>
<th>Std.Err</th>
<th>t</th>
<th>P &gt;t</th>
</tr>
</thead>
<tbody>
<tr>
<td>log ROA</td>
<td>-0.109</td>
<td>0.132</td>
<td>-0.82</td>
<td>0.413</td>
</tr>
<tr>
<td>log Change in NI</td>
<td>0.040</td>
<td>0.061</td>
<td>0.66</td>
<td>0.508</td>
</tr>
<tr>
<td>log Total assets</td>
<td>0.301</td>
<td>0.101</td>
<td>2.98</td>
<td>0.003</td>
</tr>
<tr>
<td>log Asset structure</td>
<td>-0.120</td>
<td>0.062</td>
<td>-1.93</td>
<td>0.056</td>
</tr>
<tr>
<td>Small</td>
<td>0.616</td>
<td>0.590</td>
<td>1.04</td>
<td>0.299</td>
</tr>
<tr>
<td>Medium</td>
<td>-0.468</td>
<td>0.613</td>
<td>0.69</td>
<td>0.490</td>
</tr>
<tr>
<td>Large</td>
<td>-3.166</td>
<td>1.491</td>
<td>-0.76</td>
<td>0.446</td>
</tr>
</tbody>
</table>

The model displays the Technology industry and this model shows an R-square of 10% indicating that 10% of the model can be explained by the variables within. The F-ratio is 2.57 with a p=0.02 that is smaller than p<0.05, we can therefore understand that our data is a good fit to our regression model. The independent variables in this model are
all insignificant except for total assets that are significant. When looking at the coefficients, total assets has a positive relationship with debt/equity indicating that 1% increase in total assets will increase debt/equity by 30%. ROA and asset structure have both a negative relationship with our dependent variable and 1% increase in ROA would decrease debt/equity by 11% whilst 1% increase in asset structure would decrease debt/equity by 12%. Finally change in net income has a positive relationship with debt/equity increasing it by 4% if the change in net income alters by 1%.

The impacts of the different dummy variables in the technology segment diverse. The small segment will have a positive impact on the capital structure if a 1% increase would occur increasing debt/equity by 62%, medium sized firms will influence our dependent variable in the same direction increasing it with 40%. Finally the large dummy has proved to have a negative relationship, decreasing our dependent variable with 47%.

### Results Regression Model 6 – Health Care

#### Table 14 – Results Regression Model 6

<table>
<thead>
<tr>
<th>Regression 6</th>
<th>F</th>
<th>Prob&gt;F</th>
<th>R-Square</th>
<th>Adj R-square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Debt/Equity</td>
<td>2.30</td>
<td>0.03</td>
<td>0.16</td>
<td>0.09</td>
</tr>
<tr>
<td>log ROA</td>
<td>-0.108</td>
<td>0.101</td>
<td>-1.07</td>
<td>0.287</td>
</tr>
<tr>
<td>log Change in NI</td>
<td>0.014</td>
<td>0.058</td>
<td>0.24</td>
<td>0.807</td>
</tr>
<tr>
<td>log Total assets</td>
<td>-0.133</td>
<td>0.108</td>
<td>-1.23</td>
<td>0.221</td>
</tr>
<tr>
<td>log Asset structure</td>
<td>-0.339</td>
<td>0.118</td>
<td>-2.88</td>
<td>0.005</td>
</tr>
<tr>
<td>Small</td>
<td>0.475</td>
<td>0.309</td>
<td>-1.53</td>
<td>0.129</td>
</tr>
<tr>
<td>Medium</td>
<td>-0.090</td>
<td>0.254</td>
<td>-0.35</td>
<td>0.725</td>
</tr>
<tr>
<td>Large</td>
<td>0.073</td>
<td>0.207</td>
<td>0.35</td>
<td>0.724</td>
</tr>
</tbody>
</table>

This model has a R-square of 16% indicating that 16% of the variables in the model explain debt/equity. The F-statistic is 2.3 and p=0.03, that is less than 0.05 indicating a good fit of the data to the regression model. The significance of the independent variables are all above 0.05 except for asset structure. Looking at the coefficients they indicate a negative correlation between debt/equity and the independent variables ROA, total assets and asset structure indicating that 1% increase in ROA will decrease debt/equity by 11%, 1% increase in total assets will decrease debt/equity by 13.3% and 1% increase in asset structure would increase debt/equity by 34%. Change in net income has the opposite effect on the capital structure revealing that 1% change in change in net income would increase debt/equity by 1.4%.

The coefficients of the dummies in this model reveal that small and medium segment have a negative relationship with the capital structure while the large segment has the opposite. A 1% increase in one of the dummy variables holding the remaining variables in the model constant will impact the capital structure, i.e. the debt/equity ratio. According to our findings in this model the small segment would decrease debt/equity by 47.5%, the medium segment would contribute to a 9% decrease and the large segment would impact the dependent variable by a 7.3% increase.
The final model looks at the industry concerning industrials. This model has a R-square of 8% and therefore 8% of the variables within the regression model can explain debt/equity. The F-ratio is 4.99 and p=0.000 revealing that the data is a good fit to the model. Change in net income and ROA are insignificant in this model while asset structure and total assets are not. The coefficients reveal that ROA, change in net income and total assets have a positive relationship with equity revealing that 1% increase in ROA will increase debt/equity by 7%, 1% increase in change in net income will increase debt/equity by 9.2% and 1% increase in total assets will increase debt/equity by 30.3%. The asset structure has the opposite relation the debt/equity and 1% increase in asset structure will decrease debt/equity by 18%.

According to our findings all firm sizes have a positive relationship with the capital structure. When there is a 1% increase in one of the three segments holding the remaining variables constant we can conclude a 39% increase on the effect of small firms on the capital structure, 8% increase for medium sized firms and a 18% increase for large firms.
6. Analysis of the results

The section concerning the analysis of the data will provide a clarified analysis of our empirical findings, which will in its turn help us answer the research question that lies as an underlying foundation for this study. The theoretical framework will be used as a reference in regard to our analysis to facilitate the results of our findings. All this is in line with our chosen theory, the pecking order theory of capital structure.

6.1 Change in the Debt/Equity ratio

When analysing our descriptive statistics, it is clear that there has been a change in the debt/equity ratio for non-listed firms in Sweden post crisis. We can reveal, based on our empirical findings, a slight increase in the mean value of debt/equity 2007-2008 and a decrease in mean value of debt/equity between the remaining years, 2008-2013. When interpreting the decrease in debt/equity ratio, we can ultimately state that the change has either been affected by a decrease in debt or by an increase in the amount of equity held by each firm. According to literature, we have grounds to believe that during this period, the effect is merely connected towards a decrease in liquidity due to decreased amount of loans as stated by authors such as King, (2013, p.4144) and FAR (2011) who argues for the fact that firms had a tough time securing effective sources of funding post crisis because of a decreased amount of liquidity in the markets.

This could be one of many possible explanations to a change in debt/equity that we have observed. In line with our obtained results, we cannot conclude that this is the main factor that has led to a change in capital structure though we have grounds to believe that it has had an impact on firms post crisis.

Seeming that we have chosen to place our main focus on Sweden as our empirical field of study, authors such as Sjögren and Zackrisson (2005, p. 75) lead us to believe that Sweden is highly dependent on the banking industry when it comes to financing of firms. With this known, authors such as Ramona (2014, p. 463) also conclude that since recent financial happenings as the financial crisis, further regulations have been incorporated and amended. She further explain that this has led to question the strengths of major banks when there has been a tightening of lending standards that has ultimately affected a vast number of actors, not least firm’s generation of capital. With this said, we may have grounds to analyse the decrease in debt/equity through these years as a result of these happenings, thus the tightening of lending standards that has restricted firms when it comes to generation of capital through increased amount of leverage. But as previously stated, we cannot conclude that these amendments can be seen as the prime factor of change but can explain an eventual impact concerning a change in the capital structure of firms post crisis.

In terms of evaluating our obtained results in line with our chosen theory, the pecking order theory, we can conclude that the overall apprehension surrounding the theory is contradicting with our results. Primarily we cannot draw any further conclusions based on what specific factors that ultimately has enforced a decrease in the Swedish non-listed firms debt/equity values during this period in time. We can instead discuss possible factors and issues permeating this period in time and factors aligned with the reluctance in acquiring external funding during this period. In that sense, the reluctance related to avoiding external funding is applicable with the last stage in the pecking order theory, the stage that discusses the acquiring of external funding as the last resort (Myers 1984). When placing thought on the hierarchy aligned with the pecking order
theory and our presented results, we may be able to explain an overall decrease in debt/equity value during this period in time due to the fact that Swedish firms may actively have chosen to exhaust their internal financing at first and adapt eventual payout ratios to avoid external funds, hence increasing their leverage which may have an impact on their debt/equity ratio. Seeming that this period is known for its financial uncertainty, the chance of firms avoiding an increased amount of loans may have had an impact on their values post crisis, this along with the possibility of the firms exhausting their available equity, which also would impact their capital structure.

In accordance, other influential factors surrounding the overall uncertainty concerning financial matters and the overall instability of the economy that permeated this period in time ultimately may have had an impact. Though, we cannot analyse the effect it has had and to what extent. With this stated, we do not acquire the foundation to know how much influence these factors have on our dependent variable other than the fact that we know that they have some impact, but not to what extent.

6.2 Analysis of tested hypotheses

Our choice of model was primarily based on the notion of us seeking influential factors that attempt to explain the capital structure through the firm’s performance. Therefore the pecking order theory serves as our main theorem. When considering our data, we perceived it to be very interesting observing our obtained empirical findings in accordance to the pecking order theory during this time frame to see how compatible the main notions are towards any changes in capital structure for firm’s. The variables chosen are factors that are known to serve as determinants of capital structure for firms.

**Hypothesis 1: Asset Structure**

H0: There is no relationship between asset structure and the firms’ debt/equity ratio

Ha: There is a relationship between asset structure and the firms’ debt/equity ratio

Due to our empirical findings aligned with our hypothesis regarding the asset structure of the firms, we have grounds to reject the null hypothesis and instead conclude that there is a relationship between the firm’s asset structure and the firm’s debt/equity ratio, which acts as our representation of capital structure. Our empirical results present that a 1% change in the asset structure will decrease debt/equity by 5%. Extending our analysis to include the industry segments we found a negative relationship for consumer goods, healthcare and industrials while we cannot conclude anything regarding the remaining models when their alpha is above 0.05 indicating that the relationship cannot be justified in our models. Looking at the models that we have evidence to draw conclusions from, it is clear that there is a negative relationship between the asset structure and the debt/equity ratio for non-listed firms in Sweden post crisis. When analysing these findings in line with our theoretical frame of reference and our chosen theory, the pecking order theory, we have found contradicting evidence. Allen (1987), amongst others, inherits the notion that there is a positive correlation between the firm’s asset structure and capital structure. Myers (1984) also stresses the fact that firms that obtain a greater amount of intangible assets tend to borrow less than firms with a greater amount of tangible assets. He further argues that the firms’ amount of borrowing is not merely justified by the risk and value of these assets but also on the type of assets.
Though we can conclude due to our findings that there is a relationship between asset structure and the firm’s debt/equity ratio, we cannot justify the results of previous mentioned studies when our model indicates a negative relationship between these variables. By looking at our standardised beta coefficients in our regression model, we conclude that our empirical findings are not in line with the theory of pecking order when it comes to analysing the results obtained for our study, 2007-2013. This analysis is based on the fact that we have evidence that predicts that a 1 % change in the firm’s asset structure leads to a decrease in the debt/equity ratio by 5.5%. In that sense, we can justify that the change in asset structure amongst firms has an impact on the capital structure though we present new contradicting evidence of a negative relationship in Sweden during the years 2007-2013.

This period in time is known for its uncertainty within the financial sector and also, a highly volatile market. According to previous literature, this period is also surrounded by thoughts and actions concerning tightening of lending standards decreasing the amount of available liquidity (King, 2013; Auer et al., 2011). One source to this particular course of action is due to the Basel accords that have been constantly amended and developed during time to increase the soundness and stability within the banking sector when one important factor concerns the amount of required capital banks should withhold in case of times of financial distress. This is strengthened by Ramona (2014) and Auer et al. (2011) state that the financial sector has been reconstructed in terms of risk. Further they argue that a relevant tactic for banks to reach the optimal amount of required capital would be to adjust their lending rates to meet their target values.

In this period of time, banks might have chosen to place greater emphasis in reaching their required amount of capital through the Basel accords, which inevitably may have led to unfavourable lending rates for firms. Firms that already acquire fixed assets may be considered to have a safe base of collateral and may therefore neglect banks unfavourable terms during this period in time. This in line with a general notion of uncertainty may have led to restricted transactions in the financial markets affecting the amount of debt and equity firms and banks obtain. Ultimately, this may have led to a negative relationship, as our results predict, when the more assets you obtain during this period, the more reluctant you might be to increase your amount of leverage in times of financial uncertainty. To further enhance, this period encircling economic downfall ultimately sent a vigorous perception of uncertainty which may have made firms with a great amount of assets, hence collateral, to wish to hold on to them. This might have been the apprehension when firms that acquire amounts of assets may instead make use of them as collateral and liquidate them to obtain equity in the event of exhausted funds. The apprehension applicable with the negative relationship in terms of collateral can be backed up by thoughts of Charalambakis and Psychoyios (2012, p. 1729) who speak of the value relating to assets and emphasise that the greater amount of fixed assets, the more assets that can be utilised as collateral to service debt holders, which would in that sense reduce firms possibility of asserting costs associated with financial distress.
Hypothesis 2: Profitability

H0: There is no relationship between profitability and the debt/equity ratio

Ha: There is a relationship between profitability and the debt/equity ratio

Due to our empirical findings surrounding this matter, we reject the null hypothesis and accept the alternative hypothesis and thereby conclude that profitability has a relationship to the debt/equity ratio in our study. The standardised coefficient regarding ROA detects a positive relationship when a 1% change in ROA increases the debt/equity ratio by 7.4%. In other words, the more profitable firms are, the higher their debt/equity ratio post crisis. Due to this, we can consequently conclude that our result drawn from this period contradicts the notion regarding matters applicable to the pecking order theory. In terms of analysing our different industry segments we can observe a positive relationship between ROA and the debt/equity ratio for the consumer goods segment and further conclude that we cannot say anything about the remaining industries when the alpha in their models is above 0.05. Even though these findings decreases the strength of the positive relationship we still believe that we have enough evidence when our model including all industries reveals a positive correlation between ROA and the debt/equity ratio, hence evidence against the pecking order theory.

Rajan and Zingales (1995, pp. 1248-1250) state in their study that enthusiasts of the pecking order theory speak of the importance of profitability and enhance that firms that are more profitable than others can rely on internal financing to a greater extent through the event of being able to plough back internally generated profits, which can be used as further investments. Due to this, Rajan and Zingales (1995) summarise by stating that profitable firms should in that case borrow less. Myers (1984) and Mazur (2007) further amends Rajan and Zingales theory by contemplating that firms with a great amount of profitability will have lower debt ratios, hence a lower debt/equity ratio. These notions are not in line with our empirical findings when we can show evidence of a positive relationship between the profitability of firms and their debt/equity ratio during this period. So, when analysing our obtained results regarding non-listed firms in Sweden during 2007-2013, we can see that our results imply that the more profitable firms are, the more they are assumed to borrow, hence obtain a higher debt/equity ratio. This is, as previously stated, not in line with the pecking order theory of capital structure, which implies that profitable firms should obtain lower debt/equity ratios and further implies that firms should evaluate the use of external financing as a last resort and first make use and exhaust their internally generated profits.

When analysing our results, which turned out not to be in line with the pecking order theory, and when applying more general thoughts and assumptions surrounding notions of financial strength during this period in time, we cannot base our results on the thought that firms have intentionally increased their amount of lending during this period due to actions surrounding uncertainties in the economy. This may have led them to abandon the underlying perception of the pecking order theory of capital structure or if they unwillingly were forced to increase their leverage in terms of lending due to financial instability to maintain a sound business structure. According to the pecking order theory, more profitable firms should prefer to plough back internally generated profits before reaching the final resort, external financing, hence a negative relationship between profitability and the debt/equity ratio. This is not in line with our empirical findings when we detect a positive relationship between profitability and the debt/equity ratio.
ratio. Though, due to our findings it is hard for us to determine the consequence of this relationship when firms during this period may have preferred higher or lower debt ratios but might have been forced to surrender to the thoughts of the pecking order theory and acquire more leverage to sustain their operations.

Also, firms might have been restricted to further lending due to tightening of lending standards but instead chose to increase their amount of equity by acting in accordance to the notions surrounding the pecking order theory when intentionally avoiding external funding, in each case resulting in an changed debt/equity ratio. Another possibility is the fact that the more profitable firms are, the more easy they find it to obtain sources of external funding when the greater the chance is to repay the debt, which may result in an increased debt/equity ratio during the period 2007-2013. This ultimately would lead to a positive relationship concerning profitability and the debt/equity ratio.

When further analysing our found results, we can establish that our results, which indicate a positive relationship between profitability and debt/equity are instead highly in line with the notions applicable to the static trade-off theory of capital structure. The theory stipulated by Myers (1984) surrounds the thought that larger firms with a vast amount of assets are eminently less exposed to costs associated with financial distress and they are, to that extent, according to Rajan and Zingales (1995) expected to make use of their amount of assets that acts as collateral and borrow more, hence have higher debt/equity ratios. In other words, Rajan and Zingales (1995) proclaim the fact that there should in that sense exist a negative relationship between profitability and the debt/equity ratio.

As previously mentioned, our results present contradicting evidence against the pecking order theory when we detect a positive relationship between profitability and the debt/equity ratio. Our results also contradicts Mazur (2007, p. 509) when he speaks of the fact that more profitable firms with higher liquidity ratios are substantially more eager to plough back their internally generated funds when it comes to financing their activities. This in its sense seems reasonable but when analysing our results in times of the financial uncertainty encircling our researched period in time, profitable firms might be more willing to obtain leverage. This to enlarge their collateral and buffer to be able to be run down when times of financial distress arises, which enhances the chance to sustain their operations and handle periods of financial uncertainty in a good way. The European Commission (2007) gives us ground to steer in this direction when they enhance that smaller firms have a reduced amount of available funds to take part of. This gives us the gap to assume that larger firms have a greater amount of access to alternative financed capital which in its turn would make it easier for them to obtain capital compared to smaller firms, even in times of financial uncertainty as the financial crisis. In terms of the institutional side of the issue, Auer et al., (2011, p. 3) contemplates that even the banks capital adequacy and amount of available capital became lower and stricter due to the enforced regulations surrounding the Basel accords. This reduced the amount of outstanding loans but in terms of granting loans, it might very well have been more preferable for banks to grant loans to more profitable parties. This when they have a greater chance of sustaining their operations during periods of economic downturn, hence acts as more reliable lenders when the chance of them acquiring more collateral and a greater amount of diversified operations is larger for smaller firms. All in all, this issues may very well have been apprehended in our researched years, 2007-2013, which inevitably would result in a positive relationship between profitability and size. This is all in line with our presented results.
In terms of the Swedish economy, Öberg (2009, pp. 6-7) contemplates that Sweden is regarded to have handled the crisis rather well and enhances that Swedish banks did not act as impulsively as the US when granting loans. He further argues that Sweden’s reluctance to grants impulsive loans limited Sweden’s exposure to the economic downturn which can be one explanation to why Sweden was not all that exposed to the financial crisis though Sweden did not avoid all issues related to funding. Seeming that Sweden placed more emphasis in evaluating borrowers they might have pursued more profitable firms as more eligible borrowers, which eminently would increase the understanding enclosing our positive relationship between profitability and the debt/equity ratio post crisis.

**Hypothesis 3: Growth**

**H0: There is no relationship between the percentage change in net income and the debt/equity ratio**

**Ha: There is a relationship between the percentage change in net income and the debt/equity ratio**

Our results regarding growth of Swedish non-listed firms during 2007-2013 lead us to believe that there is no relationship between the percentage change in net income and the debt/equity ratio during this period, hence fail to reject the null hypothesis. Seeming that we fail to reject the null hypothesis under the 95% confidence level and an alpha of 0.05, we therefore conclude that the results concerning the percentage change in net income cannot explain the debt/equity ratio in our model. When further extending our analysis looking at the specific industries we also fail to reject each specific null hypothesis, this implies that we cannot draw any conclusion based upon our industry specific models. Due to this, we do not obtain significant evidence to draw any further conclusions or analysis surrounding the issue regarding growth in terms of the firm’s debt/equity ratio during this period in time, 2007-2013.

Before hand, it seemed reasonable to assume that growth is positively related to debt/equity for Swedish firms at this point in time when authors such as Psillaki and Daskalakis (2009) speak of the value of SMEs when they are considered to be of high importance in terms of economic growth. This can also be grounded on the thoughts generated by Titman and Wessels (1998) and Rajan and Zingales (1995) when they also enhance the assumption that firms with growth potentials will have a greater incentive to increase their leverage to expand their operations. Though this perception seemed of value, our data incorporated within our model for this period in time failed to detect any kind of relationship when the test revealed a value over the 0.05 alpha levels. This concludes a lack of empirical evidence and support to draw any conclusions to further analyse the results.

It is also of value to clarify that there is an existence of authors who present contradicting perceptions surrounding the thoughts of growth in terms of debt. Authors such as Myers (1977) and Jensen and Meckling (1976) suggest an inverse relationship between these determinants based on the notion that firms with vast amount of opportunities to expand their operations might be more eager and determined to engage in more risky projects, hence generate incentives for firms to take on more risk. They perceive the enlarged amount of risk to come at the expense of debt holders. Though, to
enhance, we do not have any grounds to draw any conclusions merely based upon our empirical study when we detect an alpha level over 0.05 meaning that this hypothesis is not compatible in terms of our model. In other words, we are not eligible to present any empirical evidence to state any conclusions other than to present assumptions of the relationship between these determinants in terms of previous literature.

**Hypothesis 4: Size**

\[ H_0: \text{There is no relationship between the size of the firm and the debt/equity ratio} \]

\[ H_a: \text{There is a relationship between the size of the firm and the debt/equity ratio} \]

When looking at the impact on different sizes of firms in terms of the debt/equity structure, our results show that we should reject the null hypothesis and instead accept the alternative hypothesis and conclude that there is a relationship between the size of the firm’s and the debt/equity ratio. Our findings reveal that a 1% change in net income will generate a 21.3% increase in the debt/equity ratio, hence a positive relationship. The positive relationship revealed in our findings is consistent over the industries though we cannot draw any conclusions regarding healthcare and consumer goods when our alpha is above 0.05, hence not compatible with our model. Arguments for a positive relationship between leverage and the size of firms is related to the increased amount of diversification for greater firms when they can spread their risks to a greater extent, hence become less exposed to costs associated with financial distress. The smaller risk of facing costs of financial distress, the more safe firm’s are regarded to be, which would result in greater capacity to take on leverage as stated by Charalambakis and Psychoyios (2012).

In line with our empirical findings during the period 2007-2013, we may also be able to analyse our result in line with matters concerning diversification of operations and the risk of facing costs associated with financial distress. This due to the fact that our study presents evidence indicating that firms with a greater amount of total assets obtain higher levels of debt/equity contradicting the pecking order theory. These findings are supported by authors such as Psillaki and Daskalakis (2009), Charalambakis and Psychoyios (2012). We therefore have grounds to assume, along with previously stated literature, that the larger the firm, the greater chance of diversified operations, hence exposed to less risk aligned with concentrated activities. In our case, a greater amount of diversification may lead to a more relaxed notion regarding the amount of leverage one is willing to attract when the risk of facing costs of financial distress becomes eminently lower. This in its turn would explain the positive relationship surrounding the size of the firm and the debt/equity ratio.

Since we present evidence indicating a positive relationship between size and leverage in line with a vast amount of authors as previously stated, it is of value to emphasise that our empirical results are not compatible with our chosen theory. It is therefore of importance to analyse this relationship between these determinants during this tough financial period in the sense of the pecking order theory that eminently attempts to explain a negative relationship between size and leverage. Mazur (2007, p. 509) explains this relationship in terms of information asymmetry when he engages the thought that larger firms should obtain a reduced amount of asymmetric information. This when larger firms operations are more diversified, hence a decreased amount of
centralised control. Worth mentioning is that our empirical evidence suggesting a positive relationship between size and leverage is highly in line with the trade-off theory as Rajan and Zingales (1995, p. 1248) determines in their study by concluding that large firms tend to have increased debt ratios when larger firms are thought of to obtain greater amounts of collateral, collateral that eminently can act as a solid foundation that can be easily liquidated in terms of financial distress.

As previously mentioned, empirical evidence state that the financial crisis eminently had a negative impact on firms. This mainly due to the fact that the amount of available funding decreased affecting chances for firms to obtain external funding, sources for this is proclaimed to be due to bank regulations and a tightening of lending standards forcing financial institutions to acquire a greater capital adequacy. Longstaff (2010, p. 436) emphasises this and also speaks of the credit market and consequences resulting in a declined amount of liquidity flooding the markets at this point in time. In that sense, it might be prone to analyse the relationship between the size of firms during this period in time and the amount of debt they withhold in terms of diversification. Even though this period is surrounded by financial uncertainty and a reluctance from financial institutions to provide loans to external sources as mentioned by Longstaff (2010), the factor aligned with an increased diversification and more widely spread operations amongst firms might in our sense have generated a more relaxed notion when granting loans to other parties during this period of financial instability and uncertainty. Van de Heuvel (2002, p. 260) states that the tightening of lending standards surrounding this period in time reduced profits for financial institutions when the banks had to reduce their amount of lending to achieve determined capital requirements. Seeming that we provide empirical evidence predicting a positive relationship between the size of firms and the debt/equity post crisis, it would be reasonable to assume that financial institutions perceive a more relaxed notion regarding granting loans to substantially larger firms during this period in time. This when the greater chance of them acquiring more diversified operations, hence less chance of being exposed to costs associated with financial distress.

It is from the aspects established and obtained from our theoretical model that we have critically been able to evaluate and analyse our stated hypothesis, this in light of our acquired data set, firms in Sweden during the period 2007-2013 post crisis. Our analysis has evolved from the pillars that lie as a foundation for our theoretical model that we have built in figure 7. It has been of value for us to analyse our findings in terms of the main features that act as our main pillars, the capital structure aspect and issues regarding the banking industry concerning matters as the financial crisis and enforced regulations during this period in time.
7. Conclusion

This section reveals the conclusion of our presented results and analysis in terms of our findings in line with the change in capital structure of non-listed firms in Sweden post crisis. We intend to answer the stated research question by utilising descriptive statistics and graphs that we summarised above for our intended research period, 2007-2013. This will be done to clearly reveal the dispersion of values between the years to enhance the understanding concerning the observed changes in capital structure of firm’s in Sweden. Further we will conclude the quality and reliability of our findings and provide the readers with suggestions for future research.

7.1 Research question is answered

Our main intention and purpose of this study was set out to answer the research question: Has the capital structure for non-listed firms in Sweden changed post crisis? This question was constructed to pursue our found research gap regarding a lack of previous studies looking at the capital structure of non-listed firms post crisis. To be able to answer the stated research question and fulfil our gap, descriptive statistics and multiple regression tests were utilised. With the research question in mind, hypotheses were created based on previous literature to enhance the understanding surrounding the matters aligned with the change in capital structure post crisis.

Due to our empirical findings based on our field of study, non-listed firms in Sweden during 2007-2013, we can conclude that there has been a change in capital structure post crisis.

Our evidence obtained through our descriptive statistics reveals an overall decrease in the mean value of the debt/equity ratio throughout the years. Our dependent variable, the debt/equity ratio, was chosen to primarily represent the capital structure of firms. In that sense, we can conclude that an overall decrease in the debt/equity ratio throughout our empirical study implies a decrease, hence a change, in the capital structure of firms’ in Sweden, post crisis. To further amend and answer our research question, our hypotheses have given us grounds to observe the impact on the capital structure based on chosen determinants of capital structure throughout this period. To be able to further observe any eventual changes in the capital structure, our hypotheses that are based on determinants of firms’ composition of capital structure were incorporated to detect any impact on the debt/equity ratio that could help explain the change.

Our empirical findings revealed a negative relationship between the asset structure and the debt/equity ratio, which serves as contradicting towards the pecking order theory. The variable concerning size proved a positive relationship with our dependent variable debt/equity ratio, which also revealed contradicting evidence to our chosen theory, the pecking order theory. We observed a non-significant value concerning the determinant growth that did not give us any foundation to draw any conclusions from when we can, justified by our model, state that the dependent variable debt/equity cannot be explained by a percentage change in net income during our chosen period in time. In terms of the determinant profitability, the models presented a positive relationship; hence an increase in net income would increase the debt/equity ratio, contradicting the theory of pecking order. Due to our findings we can therefore reveal that all of our hypothesis show contradicting evidence towards the pecking order theory.
In terms of presenting an overall conclusion in accordance to our chosen theorem, the pecking order of capital structure, it is of importance for us to highlight that our chosen theory stemmed from the apprehension of us attempting to explain the capital structure through firm performance. This angle was highly in line with our main intention and due to our findings; we can further conclude that under our chosen circumstances for this specific study regarding the change in capital structure for non-listed firms in Sweden post crisis, our theorem does not serve as a good indicator. We can draw these conclusions by revealing contracting evidence towards the pecking order theory in terms of our entire constructed hypothesis. In that sense, we can conclude that the attempt to explain the capital structure through firm performance by the use of the pecking order theory has not proven to be successful, which ultimately makes us evaluate the theory and state that the theory does not serve as a good indicator, at least during our research period post crisis.

Due our findings, we can therefore conclude that we have successfully pursued our gap by aiming our study at the capital structure of non-listed firms in Sweden post crisis. In that sense, we have contributed to our empirical field by presenting new evidence of an actual change, and moreover an overall decrease, in the capital structure of non-listed firms during the period 2007-2013.

When considering our purposes of our study, we aimed to identify the severity of the financial crisis in terms of the impact of the capital structure for Sweden. To conclude, we cannot clarify the severity of the impact by can instead conclude that there has been an impact through an overall decrease in the firms debt/equity ratios but we emphasise that we do not possess grounds to present evidence surrounding the extent of the impact post crisis. In line with our second purpose attempting to seek if our chosen independent variables have an impact on our chosen dependent determinant, the debt/equity ratio, we can conclude that all of our chosen variables except for the determinant concerning the change of net income in terms of growth showed an affect on our main indicator, the debt/equity ratio. Lastly, we also perceived one purpose to evaluate if the pecking order theory of capital structure could act as a good indicator for evaluating firm performance by comparing our obtained data in line with the notions applicable with the pecking order theory generated by Myers (1984). In terms of pursuing our third purpose, we can conclude that the pecking order theory of capital structure based on data from 2007-2013 does not serve as a good indicator when evaluating the capital structure of non-listed firms in Sweden in terms of firm performance when we present evidence contradicting the theorem.

### 7.2 Theoretical Contributions

We chose to utilise ourselves of the pecking order theory in line with our intention to explain capital structure through firm performance. We conclude that our results show deviations from the notions applicable with our given theory. This conclusion gives us grounds to contribute to new empirical evidence in regard to the pecking order theory of capital structure. The determinant growth revealed non-significant results in accordance to a 95 % confidence level and an alpha value of 0.05 concluding that the capital structure of non-listed firms in Sweden during 2007-2013 cannot be explained by growth. The profitability showed contradicting evidence to the pecking order theory of a positive relationship of a 1% increase in ROA increased debt/equity by 7.4%. This tells us that during our period of research the more profitable firms are the higher their debt/equity ratio. In terms of the composition of asset structure of our firms, our findings detect a negative relationship between the composition of asset structure and
the debt/equity ratio, which contradicts previous studies and implies a specific relation for this period in time regarding non-listed firms in Sweden 2007-2013. These years reflect an occurrence of financial happenings and alterations prominent for this period that advocates changes that may not appear in other periods of time, which makes our study ground breaking to a certain extent. Further we also obtained findings contradicting to the pecking order theory of capital structure regarding the determinant size when it presents a positive relationship in terms of the determinant size in accordance to the debt/equity ratio of Swedish firms, post crisis.

Through these theoretical contributions we have fulfilled our theoretical gap when we have observed the absence of evidence indicating an evaluation of the capital structure in terms of firm performance for non-listed firms in Sweden. This in a time period identified and encircled by economic fluctuations and under different circumstances for this conducted study. To enhance, our chosen theorem, the pecking order theory of capital structure, is not applicable to our obtained data for our chosen non-listed firms in Sweden post crisis. This due to the fact that our results show contradicting evidence surrounding the apprehensions of the theory inevitably concluding that the theory does not act as a good indicator for our study.

7.3 Practical Contributions

The main practical contribution of this study is based on the grounds that we have conducted a study on a field that lacked information regarding the capital structure of non-listed firms. We can therefore contribute with information regarding changes in non-listed firm’s capital structure in Sweden, post crisis. Through this practical contribution we have fulfilled our practical gap when we considered there to be a profound lack of understanding regarding the computation of capital structure by finding any eventual changes regarding the capital structure of non-listed firms in Sweden, post crisis. We can present evidence reassuring the occurrence of changes in Sweden post crisis based on chosen determinants of capital structure, which could enhance the understanding relating to the changes in capital structure, post crisis.

In terms of evaluating our composition of chosen independent variables, we can contribute by stating that our variables have had an impact on our main determinant. In that sense, we can through our study enhance the knowledge for non-listed firms in Sweden through times permeated by financial uncertainty by identifying important indicators and their severity by observing their effect on the debt/equity ratio, which acts as our determinant for the capital structure. By utilising our evidence, firms can take part of our research and apply the notions obtained for any certain time of financial uncertainty when we perceive ourselves to be able to generalise our findings to fluctuated periods in time concerning stressed economic events.

To contribute with strong evidence and findings that can be applied by other users, it is vital to consider the ethical issues of the study. We have not actively altered any factors in line with our obtained data, which is publicly available. In that sense, we perceive our findings to be very trustworthy and reliable when we present results with no exclusions, which makes our study high-principled and righteous. This inevitably enhances the chance of actors to make use of our study when our study is credible in light our acquired data.
It is also of importance to consider the impact our findings can have on Sweden as a society. We believe that our findings can eminently contribute to a more stable and sound economy by enhancing the chance of firms to sustain their operations by handling times of economic uncertainty in a sufficient and effective way. The greater chance of survival for non-listed firms in Sweden, the greater extent they will contribute to the Swedish and global economy, which inevitably would pose as a good economic contribution to all social actors. Further, the more sound the Swedish economy becomes, the greater chance of an expansion for international actors when the Swedish economy consists of a vast amount of comprehensive foreign trade very reliant on their export (Österholm, 2010, p. 272). This could exceedingly contribute to a more united and stable global economy.

To enhance, we perceive our contributions to be useful practically for actors such as managers of non-listed firms by fully understanding the impact of their firm in times of financial uncertainty and to what extent certain factors alter. Moreover we see a large contribution to the overall economic sector when economists would obtain a greater understanding regarding the well being of the state of the economy during times permeated by financial instability. Also in terms of banks when they can intervene by amending and enforcing regulations to reduce the severity of financial down turns.

7.4 Reliability
Reliability concerns matters aligned with the quality of the research and is often used to evaluate whether your line of research is consistent in terms of producing reliable data. According to Saunders et al. (2012, p. 192) reliability also refers to the consistency of findings from collection techniques and analytical procedures, this in term of generating consistent findings if alternative researchers were to replicate empirical studies. Bryman and Bell (2011, p. 41) also speak of the issue regarding reliability and enhances its importance in line with quantitative research, this merely connected to the thoughts concerning if a measure is stable or not. Thoroughly emphasising the fact that unreliable measures would not generate consistent and trustworthy results. In line with our research, our acquired data has been retrieved from Retriever Business, a source that is eminently seen as a reliable and trustworthy source in terms of content when its credibility is not questionable as it is frequently and abundantly used. In terms of our data collection technique, our archived data is collected from an externally available source, which inevitably proclaims that our study is highly replicable when the data is available to all interested parties. Due to this, our data is vastly transparent which concludes that our empirical field of study is consistent in terms of the possibility to replicate and achieve the same findings; this inevitably increases the trustworthiness and reliability attached to our area of research. Another measure utilised within our study concerns the statistical program STATA 12. This program is also not questionable in terms of credibility when it is abundantly used in terms of statistical analysis. Moreover, the software is established and used through standardised statistical tests and outputs meaning that it would not differ if any other statistical program were to be utilised.

To conclude, we can bravely enhance the reliability linked towards our study when any person that chooses to replicate our study, for the same period in time, including the same criteria and foundation concerning the framework of our study would reliably achieve the same results.
7.5 Validity

Bryman and Bell (2012, p. 42) emphasises the importance of validity and states that it is considered to be the more important criterion, a criterion that addresses the integrity generated from the conducted research. According to Saunders et al. (2012, p. 193) to ensure the quality of the research, various forms of validity have been established. These forms concern matters aligned with constructed validity, internal validity and external validity. Saunders et al. (2012, p. 193) explain that construct validity enhances the issue regarding to what extent your chosen measures measure what you intend and expect them to do. They continue to elaborate around the issue regarding construct validity and stipulate that it is highly in line with a positivist and quantitative research, hence in line with our empirical field of study. In terms of internal validity, Saunders et al. (2012, p. 193) explains the term in terms of its causality in relation to the included variables. To enhance, the term addresses the importance of a clear relationship that is not caused by an external event other than the included variables. When addressing external validity, Saunders et al. (2012, p. 194) explains the concept in terms of establishing whether a study can generate generalisable findings.

In terms of our empirical study, we can conclude that our chosen measures do indeed measure what we expect them to do in terms of their statistical competence and data collection in relation to our chosen sources, STATA 12 and Retriever Business. When considering internal validity we can conclude that our variables of choice have a causal relationship to our chosen dependent determinant, the debt/equity ratio. We can conclude this from the utilisation of the statistical tool STATA 12 where we have established that the independent variables are connected and merely influence the dependent variable. Finally, when speaking off generalisation, we can conclude that our main focus on non-listed firms in Sweden primarily acts as our field of study, hence, we can state that our findings can also be highly applicable and act as a proxy for several other countries with prominent similarities as Sweden. This makes our area of research generalisable to that extent which enhances the scope of our study.

7.6 Future Research

Ultimately, our empirical study leaves room for future research and can act as a foundation for upcoming and more in depth studies in several ways. One suggestion would be to increase the amount of included variables in connection with our main area of interest, the capital structure of non-listed firms. Also, it may be of interest to utilise the use of our independent measure as dependent variables to seek any explanation in terms of the debt/equity ratio, hence to conduct the study the other way around. We perceived ourselves to be restricted in terms of including an increased amount of variables due to time constraints. Another interesting view would be to conduct a study over several countries to distinguish if there are any similarities or deviations in accordance to our research. Further, a qualitative study might be of interest to evaluate and establish a narrower relation to the actual cause of change in terms of the capital structure for non-listed firms during the period 2007-2013. In that sense, researches may enlighten their area of research by approaching main actors such as financial managers at different firms to establish their perception regarding eventual changes in capital structure during times of financial uncertainty.

Also, we believe that it may be of interest to expand the study and overlook values over a broader period of time to see any long-term effects or establish any kind of correlation in terms of recovery from periods of financial instability and the economic wealth
prevailing the given period in time. Finally, it may be of interest to examine this study in light of the static trade-off theory instead of the pecking order theory to establish if the notions in line with the trade-off theory are more applicable than the pecking order theory in this given period in time.
Reference List


Appendix 1

Descriptive Statistics

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<th>Std. Dev.</th>
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<td>-2.813411</td>
<td>7.66795</td>
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<td>lnyear2007</td>
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<td>1.039941</td>
<td>1.3749</td>
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Heteroskedasticity

Cameron & Trivedi's decomposition of IM-test

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<td>Heteroskedasticity</td>
<td>5.90</td>
<td>14</td>
<td>0.9689</td>
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<tr>
<td>Skewness</td>
<td>4.12</td>
<td>4</td>
<td>0.5902</td>
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<tr>
<td>Kurtosis</td>
<td>1.06</td>
<td>1</td>
<td>0.3049</td>
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<td>Total</td>
<td>11.08</td>
<td>19</td>
<td>0.9210</td>
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Cameron & Trivedi's decomposition of IM-test

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<tr>
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<td>Kurtosis</td>
<td>7.55</td>
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Multicollinearity

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<td>Assets hugs</td>
<td>1.01</td>
<td>0.986542</td>
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<tr>
<td>ROA</td>
<td>1.01</td>
<td>0.98833</td>
</tr>
<tr>
<td>changelNI</td>
<td>1.00</td>
<td>0.997971</td>
</tr>
<tr>
<td>Total assets</td>
<td>1.00</td>
<td>0.998267</td>
</tr>
<tr>
<td>Mean VIF</td>
<td>1.01</td>
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Omitted Variables

Ramsey RESET test using powers of the fitted values of DE
Ho: model has no omitted variables
F(3, 3353) = 0.29
Prob > F = 0.8323
Regression Models

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<th>2303</th>
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<tr>
<td>Model</td>
<td>193.30762</td>
<td>13</td>
<td>14.8700586</td>
<td>F (13, 2289) =</td>
<td>11.43</td>
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<tr>
<td>Residual</td>
<td>2978.43296</td>
<td>2289</td>
<td>1.30119395</td>
<td>Prob &gt; F =</td>
<td>0.0000</td>
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<tr>
<td>Total</td>
<td>3171.74372</td>
<td>2302</td>
<td>1.3778209</td>
<td>R-squared =</td>
<td>0.0669</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Adj R-squared =</td>
<td>0.0556</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td>Root MSE =</td>
<td>1.1467</td>
</tr>
</tbody>
</table>

**lnDE**

| lnROA       | Coef.  | Std. Err. | t     | P>|t| | [95% Conf. Interval] |
|-------------|--------|-----------|-------|-----|----------------------|
| lnROA       | .0743994 | .0349816 | 2.12  | 0.034 | .0056004, .1427983   |
| lnchangeBT  | .0262031 | .0397155 | 1.32  | 0.187 | -.0126308, .0646946  |
| lnTotalassets | .2930681 | .0325996 | 6.54  | 0.000 | .1491404, .2769559   |
| lnAssetstruc | -.0548779 | .0363685 | -3.35 | 0.001 | -.0946765, -.027793   |
| SMALL       | -.0468813 | .1427891 | -0.35 | .728 | -.3112029, .2174402   |
| MEDIUM      | -.4417552 | .1398455 | -3.30 | 0.001 | -.7044225, -.1790875  |
| LARGE       | -.2849847 | .1626291 | -1.95 | 0.052 | -.5718694, .0019001   |
| FINANCIALS  | -.3292648 | 1.412185 | -0.29 | 0.773 | -.2570951, 1.912621   |
| CONSUMERSGOODS | -.2637749 | 1.14355 | -0.23 | 0.818 | -.2506278, 1.978729   |
| CONSUMERGOODS | .0886026 | 1.142545 | 0.08 | 0.939 | -.2153729, 2.327334   |
| TECHNOLOGY  | -.1887785 | 1.144755 | -0.16 | 0.869 | -.2433644, 2.036087   |
| HEALTHCARE  | .0272243 | 1.148098 | 0.02 | 0.981 | -.222402, 2.278469    |
| INDUSTRIALS | -.2517295 | 1.143053 | -0.22 | 0.826 | -.2493258, 1.989799   |
| _cons       | -1.488531 | 1.226143 | -1.21 | 0.225 | -3.892999, .9159365   |

**Consumer Goods**

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
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<tbody>
<tr>
<td>Model</td>
<td>71.2413703</td>
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<td>10.17731</td>
<td>F (7, 590) =</td>
<td>8.57</td>
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<tr>
<td>Residual</td>
<td>700.294777</td>
<td>590</td>
<td>1.1869403</td>
<td>Prob &gt; F =</td>
<td>0.0000</td>
</tr>
<tr>
<td>Total</td>
<td>771.535974</td>
<td>597</td>
<td>1.25235502</td>
<td>Adj R-squared =</td>
<td>0.0915</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Root MSE =</td>
<td>1.0895</td>
</tr>
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</table>

**lnDE**

| lnROA       | Coef.  | Std. Err. | t     | P>|t| | [95% Conf. Interval] |
|-------------|--------|-----------|-------|-----|----------------------|
| lnROA       | .4197395 | .0935447 | 4.49  | 0.000 | .2360784, .6035207   |
| lnchangeBT  | .0597244 | .0378405 | 1.58  | 0.115 | -.0149543, .134043   |
| lnAssetstruc | -.1007231 | .0265298 | -3.80 | 0.000 | -.1528274, -.0486188 |
| lnTotalassets | .0642922 | .085999 | 0.75  | 0.455 | -.1046592, 0.231437  |
| SMALL       | -.3463775 | .208307 | -1.66 | 0.097 | -.755491, .062736    |
| MEDIUM      | -.3068852 | .217588 | -1.41 | 0.156 | -.7346503, .1208598  |
| LARGE       | -.2089827 | .2490567 | -0.84 | 0.402 | -.6981284, .2801629  |
| _cons       | -.188802 | 1.136623 | -0.17 | 0.868 | -.2421222, 2.043418  |
### Financials

<table>
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<tr>
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<td>14.5496285</td>
<td>Prob &gt; F = 0.0000</td>
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<tr>
<td>Residual</td>
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<td>311</td>
<td>1.91084865</td>
<td>R-squared = 0.1461</td>
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<tr>
<td><strong>Total</strong></td>
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<td>318</td>
<td>2.18915654</td>
<td>Adj R-squared = 0.1271</td>
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<tr>
<td>Root MSE</td>
<td></td>
<td></td>
<td>1.3824</td>
<td></td>
</tr>
</tbody>
</table>

| lnDE | Coef. | Std. Err. | t | P>|t| | [95% Conf. Interval] |
|------|-------|-----------|---|------|----------------------|
| lnROA | 0.0494506 | 0.0889785 | 0.56 | 0.578 | -1.2524294 | 0.2243301 |
| lnChangeInNI | -1.122302 | 0.061414 | -1.70 | 0.091 | -2.2422713 | 0.108111 |
| lnTotalAssets | 0.276149 | 0.0615904 | 4.43 | 0.000 | 0.1514284 | 0.398015 |
| lnAssetStruc-e | 0.0249285 | 0.0434423 | 0.57 | 0.566 | -0.0605496 | 0.1104056 |
| SMALL | -0.7799495 | 0.502089 | -1.44 | 0.150 | -1.642876 | 0.2429769 |
| MEDIUM | -0.5220712 | 0.552208 | -0.95 | 0.345 | -1.608593 | 0.5644508 |
| LARGE | -0.5925721 | 0.5374552 | -1.10 | 0.271 | -1.65008 | 0.469363 |
| _cons | -2.4951578 | 0.9620298 | -2.59 | 0.010 | -4.388607 | -0.602288 |

### Consumer Services

<table>
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<td><strong>Total</strong></td>
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<td>1.11380321</td>
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</table>

| lnDE | Coef. | Std. Err. | t | P>|t| | [95% Conf. Interval] |
|------|-------|-----------|---|------|----------------------|
| lnROA | 0.1052777 | 0.0572856 | 1.84 | 0.067 | -0.0072033 | 0.2177587 |
| lnChangeInNI | 0.0481853 | 0.012733 | 3.83 | 0.037 | 0.013705 | 0.0824757 |
| lnTotalAssets | 0.1670569 | 0.059421 | 2.82 | 0.005 | 0.0510351 | 0.2843788 |
| lnAssetStruc-e | 0.038513 | 0.0293945 | 1.31 | 0.191 | -0.0192026 | 0.0962286 |
| SMALL | -0.0675979 | 0.2057274 | -0.34 | 0.735 | -0.473003 | 0.334181 |
| MEDIUM | -0.5723814 | 0.2051814 | -2.79 | 0.005 | -0.9752609 | -0.1695219 |
| LARGE | -0.2415028 | 0.2417754 | -0.99 | 0.322 | -0.7201507 | 0.2371451 |
| _cons | -0.5714737 | 0.7890062 | -0.72 | 0.479 | -2.120671 | 0.9777238 |

### Technology

<table>
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<td><strong>Total</strong></td>
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</table>

| lnDE | Coef. | Std. Err. | t | P>|t| | [95% Conf. Interval] |
|------|-------|-----------|---|------|----------------------|
| lnROA | -0.108692 | 0.1324467 | -0.82 | 0.413 | -0.3701551 | 0.1527711 |
| lnChangeInNI | 0.0404585 | 0.0609774 | 0.66 | 0.508 | -0.079917 | 0.1608341 |
| lnAssetStruc-e | -0.1198932 | 0.0622718 | -1.93 | 0.054 | -0.242924 | 0.0029375 |
| lnTotalAssets | 0.3041005 | 0.101814 | 2.98 | 0.003 | 0.1016582 | 0.801628 |
| SMALL | 0.6150736 | 0.5908786 | 1.04 | 0.309 | -0.55075 | 1.782157 |
| MEDIUM | 0.5979723 | 0.5753665 | 0.69 | 0.480 | -0.7374589 | 1.533804 |
| LARGE | -0.6679961 | 0.6128039 | -0.76 | 0.466 | -1.677733 | 0.7471004 |
| _cons | -3.165575 | 1.491288 | -2.12 | 0.035 | -6.109507 | -0.221632 |

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## Health Care

<table>
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<td>.393064085</td>
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<td>.431081214</td>
<td>R-squared = 0.1561</td>
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### lnDE

| lnLOGA   | Coef. | Std. Err. | t     | P>|t| | [95% Conf. Interval] |
|----------|-------|-----------|-------|------|----------------------|
| -1.084941 | .1012983 | -1.07 | 0.287 | -.3088355 | .0928472 |
| lnChangeinNI | .0141775 | .0579237 | 0.24 | 0.807 | -.1009721 | .129327 |
| lnTotalassets | -.1334223 | .1082126 | -1.23 | 0.221 | -.3685066 | .0816621 |
| lnAssetstru-e | -.3386194 | .1175893 | -2.88 | 0.005 | -.572341 | -.1048979 |
| SMALL | -.6748826 | .3094004 | -1.53 | 0.129 | -.1090008 | .1402432 |
| MEDIUM | -.0896207 | .2541915 | -0.35 | 0.725 | -.5948538 | .4156123 |
| LARGE | .0732103 | .2071818 | 0.35 | 0.724 | -.338465 | .4851065 |
| _cons | 2.830918 | 1.571777 | 1.80 | 0.075 | -.2931595 | 5.954095 |

## Industrials

<table>
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<tr>
<td>Model</td>
<td>47.2155737</td>
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<td>6.74508195</td>
<td>F( 7, 402) = 4.99</td>
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<td>543.61853</td>
<td>402</td>
<td>1.3522849</td>
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<tr>
<td>Total</td>
<td>590.834103</td>
<td>409</td>
<td>1.44458216</td>
<td>R-squared = 0.0799</td>
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### lnDE

| lnLOGA   | Coef. | Std. Err. | t     | P>|t| | [95% Conf. Interval] |
|----------|-------|-----------|-------|------|----------------------|
| .0709854 | .093587 | 0.76 | 0.448 | -.1127345 | .2547162 |
| lnChangeinNI | .0391999 | .0485485 | 1.89 | 0.059 | -.0034514 | .1874299 |
| lnAssetstru-e | -.1773628 | .0612478 | -2.90 | 0.004 | -.2977687 | -.0569568 |
| lnTotalasset-e | .302819 | .089704 | 3.34 | 0.001 | .1245056 | .4811323 |
| SMALL | .3893716 | .3951574 | 0.98 | 0.330 | -.3953251 | 1.174068 |
| MEDIUM | .0840494 | .3754793 | 0.22 | 0.823 | -.6540899 | .8221976 |
| LARGE | .1175038 | .3985297 | 0.44 | 0.658 | -.6028269 | .952603 |
| _cons | -2.410413 | 1.2455052 | -2.74 | 0.006 | -.5.858039 | -.962789 |

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Appendix 2

Consumer Goods
AB Berner & Co
Abbott Medical Optics Norden AB
Acerinox Scandinavia AB
Acne Studios AB
Ahlberg-Dollarstore AB
Aktiebolag Lindex
ALSO Sweden AB
Alta Sweden AB
Arrow ECS Sweden AB
Bessmanet Livs AB
BESTSELLER Retail Sverige AB
Bil AB Josef Engström
Blomsterlandet i Sverige AB
BOLIST AB
Bra Bil Sverige AB
Bridgestone Sweden Aktiebolag
Brodvik AB
Bröderna Löfberg Aktiebolag
Bygma Gruppen AB
Caldec Sweden AB
City Gross Sverige AB
Crayon AB
CSL Behring Aktiebolag
Cumelin AB
Departments & Stores Europe AB
Despec Sweden AB
Di Luca & Di Luca Aktiebolag
Dressmann AB
Electra Sweden Aktiebolag
Elgiganten Aktiebolag
Esswell International Aktiebolag
Esswell International Holding
Aktiebolag
Eurocash Food AB
EvoBus Sverige Aktiebolag
Feralco AB
Filippa K Aktiebolag
Filippa K Group AB
Flägga Aktiebolag
Fred Holmberg & Co Aktiebolag
G. Toveks Bil Aktiebolag
Gandalf Data AB
Gasoil Trading AB
GE Healthcare Sverige AB
Giertz Vinimport AB
Gina Tricot AB
Granngården AB
Gruppo Di Luca AB
GrönsaksMästarna Nordic AB
Gymgrossisten Sweden Aktiebolag
Göinge Bil Invest Aktiebolag
Hilly Productions AB
Hornbach Byggmarknad AB
Hyundai Bilart Aktiebolag
Hälla Stormarknad Aktiebolag
Inet AB
Inflight Service Europe AB
Inflight Service Logistics Nordic AB
Ingram Micro Mobility Sweden AB
Isolda Aktiebolag
John Deere Forestry AB
Jönköpings Stormarknad AB
K.W. Bruun Autoimport AB
KIA Motors Sweden AB
Komplett Services Sweden AB
Korab International Aktiebolag
Kristianstads Ostförsäljning AB
K-rauta AB
Lagerstedt & Krantz AB
Lekolar AB
Lenslogistics AB
LG Electronics Nordic AB
Lobster Seafood Sweden Holding AB
Lomond Invest AB
Luleå Stormarknad AB
LäröMedia Örebro Aktiebolag
Martin Olsson Handelsaktiebolag
Maximat Nordby AB
Medartuum AB
MediCarrier Aktiebolag
Mercedes - Benz Försäljnings AB
Mercedes-Benz Sverige AB
Metsä Forest Sverige AB
Moelven Skog Aktiebolag
Momentum Industrial AB
Mölnlycke Health Care AB
Nacka Stormarknad AB
NetOnNet AB
Netto Marknad Sverige AB
Nikon Nordic AB
Nojel AB
O W Bunker Sweden AB
Octapharma Nordic AB
Oenoforos Aktiebolag
Oenoforos Arcadia Ageon AB
Orifarm AB
Paranova Läkemedel Aktiebolag
Pharmachim AB
Plantagen Sverige Aktiebolag
Quiq Distribution AB
RAMUK Aktiebolag
Roxtec AB
Samsung Electronics Nordic Aktiebolag
Sanofi AB
SC Motors Sweden Aktiebolag
Sony Mobile Communications International AB
Stryker AB
Svea Distribution AB
Swecon Anläggningssmaskiner AB
The Nuance Group (Sverige) AB
Topoil AB
Tornby Stormarknad AB
Transas Marine International AB
Transmode Systems AB
United Trading System Scandinavia Aktiebolag
Uni4 Marketing Aktiebolag
Valio Sverige Aktiebolag
Vattenfall Nuclear Fuel Aktiebolag
Vestas Northern Europe AB
vida Wood AB
VinGruppen i Norden AB
Vinunic Aktiebolag
Webhallen Sverige AB
Wernersson Ost AB
Zara Sverige Aktiebolag

Consumer Services
AB Bostaden i Umeå
AB Gavlegårdarna
AB Svenska Spel
Academic Work Sweden AB
Acando Consulting AB
Accenture AB
Adecco Sweden Aktiebolag
ALD Automotive AB
Alltransport i Östergötland AB
Amanco Holding AB
Asko Appliances AB
Axcent of Scandinavia AB
A-Train Aktiebolag
Backahill AB
Bergteamet AB
Blocket AB
Botrygg Bygg AB
Bravida Prenad AB
BRING CITYMAIL SWEDEN AB
Bring Parcels AB
BTH Bygg Aktiebolag
Buss i Väst Aktiebolag
Bygg Partner i Dalarna Aktiebolag
Byggmästar’n i Skåne Aktiebolag
Casino Cosmopol AB
Chalmersfastigheter AB
Coor Service Management AIFM AB
Dialect AB
Diligentia AB
Däckia Aktiebolag
Einar Mattsson AB
Einar Mattsson Byggnads Aktiebolag
Eniro Sverige AB
ENS Entertainment Network Scandinavia Aktiebolag
Erik Selin Fastigheter Aktiebolag
Eskilstuna Kommunfastigheter Aktiebolag
Eskilstuna Kommunföretag Aktiebolag
Espresso House Sweden Aktiebolag
Falu Stadshus AB
Fastec Sverige Aktiebolag
Fastighets Aktiebolaget Briggen
Fastighetsaktiebolaget Norrporten
Flygpoolsen i Stockholm AB
G&L Real Estate (Nordic Region) AB
GECAS Sverige Aircraft Leasing Worldwide AB
Goodtech Projects & Services AB
Greencarrier AB
Gronmij AB
Grundmaren Group AB
Gunnar Karlsen Sverige AB
Gävle Stadshus Aktiebolag
Göteborgs Stadshus AB
Heving & Hägglund AB
HFN Sweden AB
HMB Construction AB
HMB Holding AB
Holmens Bruk Aktiebolag
HSB Bostad AB
HSB ProjektPartner AB
IKANO Bostadsproduktion AB
IKANO Invest Aktiebolag
Jernhusen AB
Jernhusen Stationer AB
Järntorget Byggintressenter Aktiebolag
Keolis Sverige AB
Kungsfiskaren Bygg och Fastighet Aktiebolag
Landstingshuset i Stockholm Aktiebolag
Lejonfastigheter AB
Lernia Bemanning AB
Lindebergs Intressenter Aktiebolag
Logent AB
Malmö Aviation AB
MaserFrakt Aktiebolag
Mecon Bygg AB
Mellansvenska Logistiktransporter AB
Micasa Fastigheter i Stockholm AB
Mindshare Sweden Aktiebolag
MVB Holding AB
M2 Asset Management AB
Nobina AB (publ)
Nova Airlines AB
Nya Airtours City Breaks of Sweden AB
Näidan AB
Omnicom Media Group AB
P & D Bronsman AB
Panalpina Aktiebolag
Peab Drift och Underhåll AB
Primas Invest AB
Q-Park AB
Ramirent AB
Rederi Aktiebolaget Nordö-Link
Rekab Entreprenad AB
RESIA Travel Group Aktiebolag
Riebe Holding AB
Rodret i Örnsköldsvik AB
Rogubini AB
Samhall Aktiebolag
SATS Sports Club Sweden AB
Schenker Logistics AB
Scream Mediabyrå AB
Semcon Sweden AB
SERNEKE Bygg AB
Skelleftebränslen Aktiebolag
Skogsäkarna i Mellansverige Aktiebolag
Skoogs Handels AB
SMBF Service Aktiebolag
Småa AB
SP Sveriges Tekniska Forskningsinstitut AB
Specialfastigheter Sverige Aktiebolag
Strukton Rail Aktiebolag
Strukton Rail Västerås AB
Svensk Järnvägsteknik AB
Svenska Retursystem Aktiebolag
SverigesEnergi elförsäljning Privat 1 AB
SWECO Civil AB
Swesafe AB
Södertälje Kommuns Förvaltnings Aktiebolag
TAXI 020 Aktiebolag
TB Gruppen AB
The Boston Consulting Group Aktiebolag
Tre Son Förvaltning AB
TT Nyhetsbyrå AB
USS United Shipping Services Aktiebolag
Vasakronan Fastigheter AB
Veidekke Bostad AB
Veidekke Entreprenad AB
Veolia Sverige AB
Vivaki Sweden AB
Vizeum Sverige AB
Volati AB
VSM Group Aktiebolag
Västrafik AB
Växjö Kommunföretag AB
Wagenborg Shipping Sweden AB
West Atlantic AB (publ)
White Intressenter AB
ZeroChaos AB

Financials
Active Invest-Sweden AB
Albert Bonnier AB
Almi Företagsspartner Aktiebolag
Alpy AB
Amanco AB
Ampfield Aktiebolag
Arjo Ltd Med. Aktiebolag
ATA Holding Sweden AB
BGC Holding AB
Björkman Förvaltning AB
Blentagruppen Aktiebolag
BMW Financial Services Scandinavia AB
Borlänge Kommuns
Förvaltningsaktiebolag
Borås Stadshus Aktiebolag
Brummer & Partners AB
Collector Credit AB
Dolby International AB
East Capital Holding Aktiebolag
East Chemical Holding AB
Ernström Finans AB
Fairford Holdings Europe AB
Falkenbergs Stadshus AB
Fibonacci Growth Capital Aktiebolag
Finaref AB
Granitor Invest AB
Gunnarssons Förvaltningsbolag i Smålandsstenar AB
Hags Play Europe Aktiebolag
Heving & Hägglund Förvaltnings AB
Inducore AB
Kalmar Kommunbolag AB
Kraftningen AB
Kvarnfallet Mölndal Aktiebolag
LeasePlan Sverige AB
Locamama AB
Länsförsäkringar AB (publ)
M & O Olofsson Holding Aktiebolag
Max Hotell- och Restaurantinvest Aktiebolag
Melker Schörling Tjänste AB
Mellby Gård Holding AB
Mellby Gård Industri AB
Mercedes-Benz Finans Sverige AB
Mijesi Aktiebolag
Mobile Living Group Sweden AB
Nektar Asset Management AB
Nemus Holding AB
NordicGSA Holding AB
Norrtälje Kommunhus AB
NS Holding AB
Orvelin Group AB
Panduro Förvaltning AB
Per-Olof Ejendal Aktiebolag
Polykemi Holding AB
Proton Group AB
Radiant Invest AB
Schött & Tour Capital AB
SSRS Holding Aktiebolag
Stadshacken Aktiebolag
Stadshypotek AB
STAMTRÄDET Aktiebolag
Svea Ekonomi AB
Sveaskog AB
Tage & Söner Förvaltnings AB
Tastsinn AB
Toyota Industries Europe AB
TriOptima AB
Uppsala Stadshus AB
Västerviks Kommuns Förvaltnings AB
3 Step IT Sweden AB

**Industrials**
AarhusKarshamn Sweden AB
AB Persson Invest
Aktiebolaget Borgen
Aktiebolaget Strängbetong
Akzo Nobel Industrial Finishes AB
Arla Foods AB (publ)
Attends Healthcare AB
Aura Light International AB
Autoliv Electronics Aktiebolag
Axel Christiernsson International Aktiebolag
Barilla Sverige AB
Bergvik Skog AB
Bergvik Skog Väst AB
Bixia AB
Borås Energi och Miljö AB
Brand Factory Group AB
Cellmark Holding Aktiebolag
Coca-Cola Enterprises Sverige AB
Dalsjöfors Kött Holding AB
Dellner Invest Aktiebolag
Derome Timber Aktiebolag
DIAB Group AB
Domsjö Fabriker Aktiebolag
DONG Energy Aktiebolag
DraKa Kabel Sverige AB
Eberspächer Exhaust Technology Sweden AB
Econova AB
Elfa International AB
Emhart Glass Sweden AB
Eskilstuna Energi och Miljö Aktiebolag
Falu Energi & Vatten AB
Ferruform Aktiebolag
Finja Prefab AB
Flextronics International Sweden AB
Foodmark Sweden Aktiebolag
Fortum Indalskraft AB
Fortum Markets AB
Fresenius Kabi AB
Verizon Sweden Aktiebolag
Wall Street Systems Sweden AB

**Health Care**
Attendo Individ och familj AB
Capio AB
Capio Primärvård AB
Capio S:t Görans Sjukhus AB
Danderyds Sjukhus AB
Folkthandvården Stockholms län AB
Frösunda Omsorg AB
Förenade Care AB
Humana Assistans AB
Kropp och själ med omtanke i Helsingborg Aktiebolag
Luleå Kommunföretag Aktiebolag
Norrtäljes Gemensamma Hälso, sjukvård- och omsorgsbolag
TioHundra AB
Nytida AB
Södersjukhuset Aktiebolag
Vardaga AB
Vardaga Äldreomsorg AB