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The relationship between leverage and profitability

A quantitative study of consulting firms in Sweden

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Abstract

Profitability is fundamental for any firm to retain a competitive advantage and facilitate long-term prosperity. The drivers of profitability may depend on the industry, and the path to profit maximisation has been thoroughly discussed in previous research. A common factor included by researchers to determine firm profitability is capital structure. The results on the relationship between capital structure and profitability differ significantly depending on the context of the research. Furthermore, research on capital structure in the management consulting industry seems absent, which has left the authors of this study a research gap to fill.

This study does through a quantitative method investigate the capital structure and profitability of 130 management consulting firms in Sweden during the years 2012-2016 by examining the relationship between leverage and profitability. Leverage is mainly constituted by total debt to assets, but also by short-term and long-term debt to assets. Profitability is defined as Return on Assets, which indicates how profitable firms are relative to total assets. To account for the aspects of profitability that are not captured by leverage, control variables including size, liquidity and age are also tested.

The establishment of hypotheses is based on the theoretical frame of reference which includes the theories of Modigliani and Miller, the trade-off theory and the pecking-order theory. The study utilises several statistical models including OLS, Fixed Effects and Robust Fixed Effects. From generated results, it becomes evident that the modelling has a considerable impact on the outcome. However, the improved modelling is believed to generate more robust results and corresponding conclusions, which is an improvement compared to methods widely used in previous research. To account for reversed causality, tests of the relationship between last year's leverage and the current year's profitability have been conducted.

The statistical analysis shows that leverage has a significant negative relationship with profitability. This is in line with the pecking-order theory, implying that firms mainly use internal financing over external financing to achieve higher profitability. Profitable consulting firms also tend to use less short-term and long-term debt, according to the results. Moreover, the results show that larger firms in terms of employees generally are more profitable. For age and liquidity, no overall conclusive relationship with profitability could be found. Lastly, the results show a positive relationship when including last year's debt ratios but is only significant for long-term debt.

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1. Introduction

The introductory chapter will present the problem background and problem discussion. These parts will lead into the research question and purpose of the study. Lastly, the theoretical and practical contributions and delimitations will be explained.

1.1 Problem Background

Profitability has always been a central term to determine performance of firms, where an adequate level of profitability is important for a firm's long-term survivability and success.

Currently, there is no universal formula to explain why profitability varies among firms. Yet, due to the importance of profitability and the drivers behind it, researchers have provided useful insights and shed some light on the area. According to previous research, it is relevant to discuss how industry affiliation and firm-specific characteristics can help explain profitability.

Porter (1981) discussed how strategic decision-making in industrial organisations can affect firm performance. Claver et al. (2002) aimed to compare the effects of industry and firm-specific factors on profitability in relation to previous studies on the subject. The results showed that firm effect is larger than industry effect for all firm sizes, thus being in line with previous research on firm effects (Claver et al., 2002, p. 325). Conversely, McGahan and Porter (1997, p. 29) conclude that industry effects can help explain variations in the profitability, and that the identified firm-specific effects varied to such an extent between sectors that it indicates differences in structural industry contexts. Furthermore, McGahan and Porter (1997, p. 29-30) conclude that industry effects are more persistent over time in comparison to firm-specific effects, which indicates that industry structure changes slowly over time. Baker (1973, p. 503) examined the effects of financial leverage on industry profitability and concluded that firms who earned systematically higher returns had a relatively low degree of leverage. Dewenter and Malatesta (2001) compared profitability, leverage and labour intensity between state-owned and privately-owned companies. Dewenter and Malatesta (2001, p. 321-322) found that state-owned companies in general have a relatively higher degree of leverage and lower profitability, which is in line with the results found by Baker (1973). However, Dewenter and Malatesta (2001, p. 321) also state that government firms generally cannot issue stock and are thus reliant on borrowed capital if internally generated funds are not sufficient.

The research described above implies that profitability can vary depending on industry, firm characteristics, and public or private ownership. Consequently, such factors should be considered when conducting research to increase the chance of fully comprehending generated results.

It is also possible that earlier empirical results vary depending on how profitability is measured. Naturally, there is no specific measure of profitability that is superior to another, and the choice differs throughout previous research. A common measure of profitability included in previous research is Return on Assets (*abbreviated ROA*) (Barton & Gordon, 1988; Simerly & Li, 2000; Gill et al., 2009; Shah, 2012; Ahmed Sheikh & Wang, 2013; Le & Phan, 2017). Another recurring measure in previous research is Return on Equity (*abbreviated ROE*) (Chaklader & Chawla, 2016; Le & Phan, 2017; Abor,

2005). Although ROA and ROE are the most commonly used measures, other measures such as EBIT to total assets (Margaritis & Psillaki, 2010) are also utilised. The choice of measure depends on the perspective of the study and the stakeholders who are supposed to utilise the information. ROA reflects how profitable a firm is relative to its total assets, that is, how efficient assets are utilised to generate profits. Thus, ROA is suitable for managers and all stakeholders of the firm. On the other hand, ROE reveals how efficient a firm uses shareholders' invested capital to generate profits and is thus more suitable from the perspective of investors.

Many factors help explain how maximal profitability can be achieved. An important and well-debated factor for maximising profitability is the choice of capital structure. Brealey et al. (2013, p. 427) states that the basic resource of a firm is the cash flows generated by its assets. The cash flows can be divided into two streams, of which a relatively safer stream goes to debtholders and a riskier stream goes to stockholders. The financing mix of debt and equity in a firm is called capital structure (Brealey et al., 2013, p. 427). To measure capital structure, leverage is often used in research. This is logical, as it describes the extent to which firms rely on debt for financing their business (Berk & DeMarzo, 2013, p. 39). Furthermore, as leverage describes the amount of debt in the firm, the remaining assets after subtracting debt reveal the total equity in the firm. Consequently, the assessment is that leverage is an adequate measure for capital structure.

As previously mentioned, leverage is frequently used in previous research. Moreover, many authors have examined how leverage is related to profitability (Margaritis & Psillaki, 2010; Avci, 2016; Abor, 2005; Kester, 1986; Khan, 2012; Nunes et al., 2009). There are findings concluding that a positive relationship exists between leverage and profitability (Margaritis & Psillaki, 2010; Avci, 2016; Abor, 2005). This positive relationship implies that firms with more debt generally are more profitable. In contrast to these findings, Kester (1986), Khan (2012) and Nunes et al. (2009) found a negative relationship between leverage and profitability. This instead implies that firms using less debt are more profitable. However, it should be mentioned that these relationships do not claim causality, which means that it is difficult to state that leverage affects profitability, and not the other way around. This is called reversed causality and is important to consider as both leverage and profitability likely affects each other through the years.

Today, there are numerous different theories on the optimisation of firms' capital structure. Modigliani and Miller (1958) presented a proposition that highlights the irrelevance of capital structure. The well-known theory assumes that firms operate in a perfect market and implies that the choice of debt or equity does not affect a firm's cost of capital. Modigliani and Miller (1963) revised the theory few years later, stating that debt levels indeed are relevant. The new view encompassed the idea of debt generating value in form of tax shields, indicating that firms should maintain high leverage to maximise firm value.

Another well-known and important theory of capital structure is the pecking-order theory presented by Myers and Majluf (1984). The pecking-order theory states that firms prefer internal financing to fund their operations. However, in cases external financing is required, firms issue the safest securities first, which is debt, and will only issue equity as a last resort (Myers, 1984, p. 581).

The trade-off theory does in contrast to the pecking-order theory show that firms can reach an optimal level of leverage, in which the benefits of tax shields are directly offset by costs from financial distress (Kraus & Litzenberger, 1973; Myers, 1984).

Consequently, the firms are ought to swap equity for debt, and debt for equity to maximise the value of the firm (Myers, 1984, p. 577).

The theories mentioned are central for the area of capital structure and are also implying that certain relationships between leverage and profitability are expected. The irrelevance of capital structure (Modigliani & Miller, 1958) would indicate that a certain relationship is not to be expected. The revised theorem of Modigliani and Miller (1963) and the trade-off theory (Myers, 1984) do in general advocate higher debt levels for increasing firm value, which leads to a positive relationship between leverage and profitability. Lastly, the pecking-order theory (Myers & Majluf, 1984) suggests internal financing, leading to relatively lower debt levels and a negative relationship between leverage and profitability.

This study will investigate the management consulting industry in Sweden which has grown the past years. The relevance of capital structure in the industry is relatively unknown, more so for its relation to profitability. Furthermore, as presented before, results on the relationship between leverage and profitability differ depending on the research context. Thus, this provides the basis for the choice of studying how leverage is related to profitability in a relatively unexplored industry.

1.2 Problem Discussion

The problem background highlighted the importance of capital structure and leverage and its debated relation to profitability. Furthermore, established theories on the subject and their predictions of the relationship were presented to provide a relevant theoretical background. This section will look further into previous research on the relationship between leverage and profitability and connect the problem background to the chosen industry in this study.

As stated in the problem background, previous research has generated varied results on the relationship between leverage and profitability. Mashavave and Tsaurai (2015, p. 85) found that there is no relationship between leverage and profitability for firms listed on the Johannesburg Stock Exchange in South Africa. Mohammadzadeh et al. (2013, p. 576) found that total, short-term and long-term debt had negative relationships with profitability for pharmaceutical firms listed in Iran. Abor (2005, p. 443) examined listed firms on Ghana Stock Exchange and found a positive relationship between leverage and profitability. Additional research has been conducted by Gryčová and Steklá (2015, p. 39-40) on the agricultural industry where they found a negative relationship between leverage and profitability. Furthermore, Yazdanfar and Öhman (2015, p. 113) investigated Swedish small and medium-sized enterprises (SMEs) and concluded that both short-term debt long-term debt had a negative relation to profitability. The study of Yazdanfar and Öhman (2015) may be of particular relevance as it incorporates firms operating in the same country and with similar size.

As briefly mentioned before, this study will investigate the management consulting industry in Sweden. Munchus (1989, p. 21) refer to a definition of management consulting as an advisory service provided by organisations with the task to identify, analyse, recommend solutions, and to help implement the solutions regarding managerial issues. This definition is according to Munchus (1989, p. 21) becoming more accepted by academia.

The structure of having management consultants have been around since the 1890s but it was not until the Great Depression in the 1930s the rapid expansion of consulting services took place (McKenna, 1995, p. 52, 54). During the 1930s the existing firms grew and established branches in new territories (McKenna, 1995, p. 54). The reason for this expansion is believed to be a countercyclical reaction from the firms suffering losses from the depression. The use on external consultants helped troubled firms to improve efficiency and cut costs (McKenna, 1995, p. 54).

McKenna (1995, p. 51) also stated in his work the *Origins of Modern Management Consulting* that in 1993 AT&T spent more resources on consulting than they did on research and development, and analysts at Wall Street predicted the spending to increase. According to Consultancy UK the global consulting market has a total turnover of \$251 billion in 2016 (Consultancy, n.d.a), of which management consulting accounts for \$130 billion (Consultancy, n.d.b) and the numbers are expected to increase. The increase in turnover indicates a growing market which makes it particularly interesting to investigate.

Srinivasan (2014, p. 257) conducted a study on the emerging trends of management consulting in India in which he describes management consulting as the earliest form of outsourcing. Furthermore, he states that although consulting services have been available for a long period of time, there is not much research on the topic. He states that the main reasons for this are high fragmentation and varying firm size, less regulations in the industry, differences in services offered and the difficulty of measuring the services provided (Srinivasan, 2014, p. 258).

In Sweden, the consulting market has flourished in recent times, where firms tend to become more reliant on hiring consultants for its business activities. The capital structure in the consulting business is characterised by low capital intensity in comparison to other industries. Due to the vast amount of intangible assets in form of human capital, the balance sheet demonstrates a relatively low book value of assets in relation to the revenue generated by the firm. The nature of consulting firms' capital structure makes it an interesting area to consider, as it may provide additional insights on theories of capital structure. As stated before, research has provided different implications on the relationship between capital structure and profitability. Moreover, research on the relationship in the consulting industry seems absent, not least in Sweden. Thus, the authors are hopeful that this study can contribute with new insights on the relationship between capital structure, measured as leverage, and profitability. Furthermore, the study will focus only on Sweden and its consulting industry, resulting in narrow but precise contributions to the area of capital structure and the leverage-profitability relationship.

Ultimately, the problem background and discussion have laid the foundation for the underlying research question for this study, which will be presented next.

1.3 Research Question

The authors of this study aim to fill a research gap introduced in the previous sections. Thus, this study will investigate how capital structure, measured as leverage, is related to profitability for management consulting firms in Sweden. As a result, the authors find it natural to formulate the following research question:

Is there a relationship between leverage and profitability for management consulting firms operating on the Swedish market?

1.4 Purpose

The main purpose of this paper is to examine the relationship between leverage and profitability for management consulting firms in Sweden. The main variable for leverage to fulfil the purpose and answer the research question is total debt. However, a sub-purpose of the study will be to find if short-term debt and long-term debt have any relationship with profitability.

Furthermore, another sub-purpose of the study will be to see if the control variables included in the models have a relationship with profitability. These control variables are constituted by size, liquidity and age. The reason for including control variables is to account for variations in profitability that cannot solely be explained by leverage.

1.5 Theoretical and Practical Contributions

Capital structure and its influence on firm performance has been extensively researched throughout the years. This study is not destined to revolutionise the area of capital structure itself, but rather applying and studying it on an industry from which meaningful conclusions can be drawn. The management consulting industry has in the last years developed significantly and the perception is that the importance of the profession will continue to increase in the future. Moreover, the extensive use of consultants in Sweden signals that more organisations potentially are becoming more reliant on such services to facilitate their operations in today's competitive market. Yet, previous research on the industry is limited, particularly in relation to capital structure and its link to profitability. Thus, this study aims to research and contribute with knowledge to fill this gap. The study will deliver results on the relationship between leverage and profitability in the management consulting industry.

Although the area of capital structure is well explored, previous research has mainly focused on other sectors and firms than the ones addressed in this study which lead to generalisations being more difficult to make due to numerous distinguishing factors accompanying those sectors. Additionally, due to the nature of the firms being studied, such as being less capital intensive and more reliant on human capital, the choice of the management consulting sector in Sweden provides theoretical insight on capital structure from a different perspective.

The results derived from this study can be important for managers and other stakeholders in the sector to interpret and reflect upon how to assess their own capital structure and how it potentially can be recomposed to improve profitability. Naturally, although rethinking the choice of capital structure is not necessarily on top of the agenda for all managers, it remains an important aspect to consider. Consequently, this study aims to provide insight into the area of capital structure for managers in the Swedish consulting industry to improve strategic decision-making. This will hopefully lead to managers acknowledging the fact that financing decisions can matter for increasing profitability, both in short run and long run. Furthermore, this study will be conducted with a recent time horizon, generating results which safely can be assumed to be relevant today for managers and firms active in the consulting industry.

1.6 Delimitations

The delimitations of the study are established to provide a narrower scope on the research question and purpose of the study. In addition, the delimitations of the study aim to

provide more relevant and specified results which in turn intend to make conclusions focused and graspable. The delimitations of the study are:

- Limited to primarily management consulting firms operating in Sweden. In addition, firms that offer services in both management and information technology (IT) will be included in this study as this combination is a common phenomenon. However, firms that are clearly defined as IT-consulting firms will not be included.
- Firms included will exclusively be limited companies (*swe: aktiebolag*) that are not listed on a stock exchange. Listed companies are not included to reduce the risk of the analysis and results being affected by possible outliers arising from differing characteristics that those firms may possess. The characteristics that may cause the result to be misleading is partly the availability for private investors to purchase and trade the firm's stocks. It is also easier for listed firms to raise more capital by issuing stock.
- Firms that fulfil these requirements will further be limited down by turnover and size:
 - Firms are required to have a yearly turnover of 10 million SEK or more to be included
 - Firms are required to have 10 or more active full-time employees

It should be noticed that these requirements must be fulfilled for the last year of the chosen time period. The choice to limit the turnover to a minimum of 10 million SEK is to ensure that chosen firms have the financial strength to either issue equity or debt. This, together with the minimum of 10 employees, reduces the risk of including firms not suitable for answering the research question.

- The study will investigate firms within the timeframe of 2012-2016.

Firms will be identified within the limitations using SNI-codes. The authors will use the code 70.220 "Business and other management consultancy activities" that, according to Statistiska Centralbyrån, SCB (n.d.) include:

- Advice, guidance, and operational support to firms and other organizations regarding managerial questions.
- Strategic and organisational corporate planning, restructuring, and change.
- Cost reduction and financial issues; Targets and policies for marketing.
- Providing corporate services such as advice, guidance, operational support for firms and public institutions.

1.7 Characteristics for the Management Consulting Industry

In comparison to other industries, management consulting firms demonstrate a relatively different balance sheet. This is due to the main source of revenue stemming from the consultants, that is, employees, who are not accounted for as assets on the balance sheet. Consequently, consulting firms tend to generate relatively high profits in relation to the book value of assets. Furthermore, as consulting firms are highly dependent on the employees to generate revenue, major investments in capital-heavy assets are generally not frequently occurring. As a result, the need for issuing long-term debt to finance capital intensive investments is relatively low. This means that consulting firms generally operate with a large degree of short-term assets and debt, which is interesting from the perspective of capital structure.

The characteristics are as described above different from other familiar industries. For instance, manufacturing firms generally possess opposite characteristics in terms of capital structure. Naturally, the manufacturing industry is likely dependent on investments in long-term assets like plant, property and equipment, and are thus likely in need of more long-term debt. Furthermore, the different composition of the balance sheet likely means a higher book value of assets compared to the consulting industry.

The distinguishing balance sheet and composition of capital structure for consulting firms is interesting to consider. Moreover, this can provide interesting implications for the relationship between leverage and profitability which is what this study aims to investigate.

2. Theoretical Methodology

This chapter aims to explain and argue for the methodological point of departure through the ontological, epistemological, and scientific approach. Furthermore, the choice of subject and the authors preconceptions will be discussed.

2.1 Choice of Subject

The authors chose to conduct research on the relationship between leverage and profitability in the consulting industry. The industry is chosen due to various reasons. When looking at previous research the authors have found an extensive amount of scientific papers regarding management consulting, and the consulting business in general. However, previous research generally involves how consulting services affect their customers, and how to measure and value the impact from hiring an external consultant. These studies provide interesting implications but are not primarily related to the finance area or capital structure. Furthermore, as previously mentioned, the consulting industry has a different balance sheet compared to more capital-intensive industries, such as manufacturing. This reveals an area of research that is reasonable to investigate to provide interesting contributions to the research field.

The authors believe the demand for consulting services will increase in the future, making it more attractive towards both potential employees and for managers who may need external advice. Research shows that the demand for consulting services are closely correlated to the performance of the global economy. When the economy experiences growth and prosperity, the demand and spending on consulting services increases (Consultancy, n.d.a). On the contrary, when the economy experiences downturns, the first budget cut is typically on the use of external services such as consulting (Consultancy, n.d.a). The authors believe the performance of the global economy to be interesting in relation to the research question, but that it would not fit into the scope of this study. Therefore, it was decided that effects of changing circumstances in the economy will not be discussed in this study, but that it is suitable to investigate in future research.

As mentioned in the problem discussion, the industry is growing in terms of turnover on a global basis. This indicates a growing importance of the consulting industry for the economy which makes the industry relevant to investigate. Lastly, the authors have during their time studying at university developed a genuine interest for the area of capital structure and profitability. This combined with the absence of research on capital structure in the consulting industry has further motivated the authors into conducting this study.

2.2 Preconceptions

Coghlan (2001, p. 51) describes the term pre-understandings as people's knowledge, insights, and experience they have previously acquired.

The authors preconceptions for this paper are that both are enrolled to the International Business Program at Umeå University. Throughout the studies they have encountered theories and concepts such as the trade-off theory, Modigliani and Miller and the pecking-order theory. Both authors have studied Financial Management at master level which allowed them to acquire essential pre-understandings for conducting research within the chosen field. For the statistical analysis which will be conducted at a later stage the authors consider themselves to have the skills necessary to perform the required tests with

precision and correctness. Beyond the competence mentioned, one of the authors have experience from the management consulting industry after doing an internship at a firm based in Stockholm for seven months.

2.3 Theory

According to Bryman and Bell (2015, p. 19) business research relates to other subjects such as sociology, psychology, anthropology, and economics which assists the writer into choosing different perspectives. The first choice the author is presented to is the choice of theory. Bryman and Bell (2015, p. 23) describe the choice of theory in two different perspectives, deductive and inductive.

The deductive theory is described by Bryman and Bell (2015, p. 23) as the most commonly used approach. The author constructs a hypothesis that will be tested and proved significant with empirical data. Once the hypothesis is tested, the author must deduce the hypothesis into usable terms to demonstrate the usage of the findings (Bryman & Bell, 2015, p. 23). They describe the deductive perspective as the process of taking an existing theory and try to find new observations or findings regarding the chosen subject (Bryman & Bell, 2015, p. 25). Graneheim et al. (2017, p. 30) defined the deductive approach in a similar manner as Bryman and Bell (2015) and add that one of the challenges with the deductive approach is how to treat the data that does not fit into the theories used in the study. How to treat the leftover data depends on the intentions with the study, and for this study the intention is to verify a model which could lead to implications of the fitness of the models (Graneheim et al., 2017, p. 31). Thus, this study will also discuss how well-chosen variables fit into the models for achieving the purpose of the study.

Bryman and Bell (2015, p. 23) describe the second perspective as the inductive theory. If the inductive theory is used, the author conducts a study and from the findings develop new theories. Thus, the outcome of the research is new theory (Bryman & Bell, 2015, p. 25). The method of reaching the results is data-driven and is most often taking a so called grounded theory approach (Bryman & Bell, 2015, p. 26). Grounded theory approach is explained as the process of discovering emerging patterns in data (Scott, 2009). Graneheim et al. (2017, p. 30) describe the inductive process as the search for patterns in the collected data.

Given the descriptions of the approaches above, the authors find it natural to use a deductive approach. This is due to the study incorporating hypothesis testing based on already existing theories from which findings will be generated. Thus, the study does not intend to generate new theory, but rather to use already established theories on capital structure to generate relevant hypotheses for answering the underlying research question. The goal is to explain how leverage and control variables are related to profitability, which makes the deductive standpoint appropriate. Also, since conducting a deductive study enables the authors to generalise the findings for the target population, this method is assessed as most suitable. Regarding the dilemma mentioned by Graneheim et al. (2017, p. 31) leftover data is not considered any major problem as the data collection is considered accurate enough to collect correct and relevant data for the study.

2.4 Epistemology

The epistemological considerations are explained as what should be considered to be satisfactory knowledge for the social world (Bryman & Bell, 2015, p. 26). Epistemology is viewed as the link between the researcher and what is being researched (Collis & Hussey, 2014, p. 47). The epistemological approach has two different perspectives, positivism and interpretivism (Bryman & Bell, 2015, p. 27-28). The difference between the two perspectives is described as either explaining human behaviour, or understanding it (Bryman & Bell, 2015, p. 28).

The first perspective, positivism, is discussed by Bryman and Bell (2015, p. 27-28) and explained as the application of the methods used to study natural science and used to study the social reality. Bryman and Bell (2015, p. 28) explain positivism by the following principles:

- Only knowledge confirmed by the senses are considered valid, meaning that it must be verified.
- The aim with this perspective is to conduct hypothesis tests, which will generate explanations for the knowledge of the findings.
- Knowledge is derived from facts.
- The research must be conducted in an objective manner, leaving the authors values aside.
- There is a clear line between science and normative facts.

Easterby-Smith et al. (2002, p. 30) explain the features of positivism as independent by the observer, irrelevant for the human interests, the research process is conducted by hypotheses and deductions, and the sample need to be considered large enough to generalise the findings through statistical probability.

The second epistemological consideration is interpretivism, the counterpart of positivism (Bryman & Bell, 2015, p. 28). Bryman and Bell (2015, p. 28) describes interpretivism as writers being critical to the application of scientific models for the use of studying the social world. In contrast to positivism, interpretivism demand a different set of logics behind the research which includes the understanding of human action, rather than explaining it (Bryman & Bell, 2015, p. 28).

For this thesis the authors consider the positivistic approach to be appropriate. The goal is to explain the relationship between leverage and profitability based on empirical data to verify the knowledge. The authors will set aside their own values and conduct the data gathering and interpretation in an objective manner. The study will be based on testing already existing theories within corporate finance and capital structure, which also suits the positivistic approach since the objective is to investigate if there is a relationship between leverage and profitability.

It would have been interesting to conduct a study with an interpretivist perspective since it could provide a deeper understanding of why there is or is not a relationship between leverage and profitability. However, given the data collection and statistical analyses, it would be more difficult to claim that the performed interpretations are considered valid knowledge. Consequently, the positivistic perspective is considered most appropriate for finding out if there is a relationship between leverage and profitability for management consulting firms in Sweden.

2.5 Ontology

Ontology is the perspective of whether the author regards social entities as objectives with an external reality, or whether they should consider social entities as individuals' perceptions (Bryman & Bell, 2015, p. 32). In other words, it explains the nature of reality. There are two different perspectives for the ontological considerations according to Bryman and Bell (2015, p. 32): objectivism and constructionism. Objectivism reflects and interprets how an individual establishes facts and is described as the position that confront external facts beyond the authors influence, that is, separate from the actors (Bryman & Bell, 2015, p. 32). Objectivism is the perspective of a reality in which phenomena exist independent from each other (Bryman & Bell, 2015, p. 32).

The second ontological consideration is constructionism, which takes the standpoint that the social reality is subjective with multiple realities (Collis & Hussey, 2014, p. 47). Constructionism is described as how the reality is being perceived by individuals, and that the social phenomena studied is constantly changing (Bryman & Bell, 2015, p. 33).

Jonassen (1991, p. 9) describes the reality of objectivism as external to the knower and that the structure can be modelled, whereas constructivism assumes the reality to be determined by the knower and that the structure of the reality is depending on the experiences and interpretations of the knower. Jonassen (1991, p. 9) further states that objectivism represents the reality, while constructionism provides the knower with the tools for constructing a reality.

This study will incorporate the objectivistic perspective. The authors consider it to be the most applicable standpoint since the objective is to view the reality as external and beyond the influence of the authors. Furthermore, the structure of the social reality will be modelled, rather than constructed. This study will thus apply the standpoint that leverage and chosen control variables and their relation to profitability exist in one objective reality. The reality will thus not be constructed as a result of different perceptions of reality from the authors. Instead, the study will view reality based on what is observable and measurable for consulting firms in Sweden and the leverage-profitability relationship.

2.6 Research Strategy

The research strategy involves how the authors are going to conduct their data collection. Bryman and Bell (2015, p. 37) describe the research strategy as two different methods, qualitative and quantitative. The quantitative approach is aligned with the deductive approach since it involves quantifying theories (Bryman & Bell, 2015, p. 37). For the epistemological considerations the positivistic approach is suitable when conducting a quantitative research since the aim is to explain variables that are considered as valid knowledge, together with the ontological perspective of objectivism where the social reality is viewed as external and objective to the authors (Bryman & Bell, 2015, p. 38).

The qualitative strategy is, according to Bryman and Bell (2015, p. 38), better connected with the inductive theory and creation of new theories, rather than testing already existing ones. The epistemological approach interpretivism is also most suitable when conducting a qualitative study due to the nature of scientific models, and the viewpoint on how individuals interpret the world combined with the ontological assumption of the social reality that is constantly shifting (Bryman & Bell, 2015, p. 38). Collis and Hussey (2014,

p. 52) emphasize the quality and depth of the data collection, thus making the qualitative study more in depth and detailed.

Gawlik (2016, p. 4) investigates and highlights the issues of writing a quantitative analysis without considering the qualitative characteristics. Gawlik (2016, p. 4) states that when conducting quantitative research, the results only explain what happens, and not the cause to why it happens. Gawlik (2016, p. 4) also describes the quantitative research method as the lack of deepened knowledge about the understanding of the research environment and the characteristics influencing the decision-making process.

Collis and Hussey (2014, p. 52) state that in a positivistic study the purpose is to collect quantitative data to cover all existing variables and make statistical analysis on the data, which is in line with the authors' intentions for this study.

The authors find it most appropriate to conduct a quantitative study since the aim is to test existing theories by quantifying data from the standpoint of seeing the world as objective. By conducting a quantitative study, it allows the authors to fulfil the assumptions regarding the theoretical, epistemological, and ontological standpoints. The quantitative approach is most appropriate considering the nature of the study in which the aim is to examine whether there is any relationship between capital structure, measured as leverage, and profitability. Furthermore, by quantifying data and conducting statistical tests for chosen variables, it enables the authors to draw valid conclusions based on the result and its implications. The statistical tests performed in this study will be based on multiple regression models. These models incorporate a dependant variable and several independent variables, in which the latter aim to predict the outcome of the dependent variable. A more in-depth description of the modelling is presented in chapter 5. Still, it is deemed relevant to mention the terms dependent and independent variables at this point as they will be briefly touched upon in the upcoming chapter.

2.7 Summary of Research Process

The chosen research method is summarised in the figure below. This paper will in line with deductive theory test already existing theories including the trade-off theory, pecking-order theory, and theorems of Modigliani and Miller. These theories will be tested by conducting hypothesis tests with the aim to explain the relationship between leverage and profitability for management consulting firms operating on the Swedish market. This is in line with the positivistic approach. Furthermore, the authors will maintain an objective, and value free approach throughout the paper which is aligned with the objectivistic approach. These chosen approaches are according to Bryman & Bell (2015, p. 37-38) adequate and suitable for conducting a quantitative study, which is what will be done in this study. Below follows a simplified illustration of the research process.

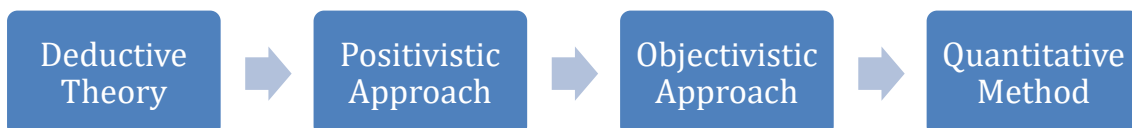


Figure 1. Summary of the research process

2.8 Perspective of the Study

The main purpose of this study is to examine the relationship between leverage and profitability. Moreover, short-term debt, long-term debt and control variables are also examined to find if they have any relationship with profitability. The aim is to present generalisable findings that are helpful toward managers when deciding upon capital structure in management consulting firms. Considering that this study primarily takes the perspective of managers, Return on Assets (ROA) is a suitable measure for profitability. ROA accounts for the return on total capital, which should be in the interest of managers (Penman, 2013, p. 371). The total capital incorporates all sorts of financing and is thus not limited to only debt or equity. Consequently, the higher ROA a firm has the more efficiently the firm allocates its assets.

Since this thesis will exclude listed companies it is not as appropriate to write it from the perspective of an investor. However, if it were to be written from the perspective of an investor it could be more suitable to use Return on Equity (ROE) as a measure of profitability. ROE measures the return on shareholders' equity or, as defined by Berk and DeMarzo (2013, p. 42), book value of equity and not total capital. As ROE reveals how efficient capital from investors is used for generating profits, it is an adequate measure for investors.

Although ROA is primarily aimed towards managers, the profitability in relation to total assets is still of interest for investors. This means that investors also can utilise the findings of this study, as it is a measure often used and can be compared to other industries to provide useful implications.

2.9 Literature Review

According to Bryman and Bell (2015, p. 9) the literature review is an important part when conducting research since it involves what is previously known about the subject, which theories have been used, and which research methods have previously been tested. Collis and Hussey (2014, p. 87) describe literature review as the opportunity for the researchers to demonstrate which literature that has been used and analysed.

For this paper several databases have been used to locate the information needed. The use of databases such as Umeå University Library and Google Scholar allowed the authors to search for previous studies and peer-reviewed articles related to the subject of corporate finance, capital structure and other areas relevant for this study. The literature review allowed the authors to get a deeper insight into capital structure and other relevant findings from previous research. By reviewing several concepts, theories and the previous application of these, the authors managed to identify a research gap to be filled.

To gain credibility the authors have chosen only to include articles that have been peer-reviewed to ensure the facts are reliable. Few websites have been used to find information, but those are limited due to the varying quality and credibility. The websites included have been critically reviewed by the authors before using any of the available data.

The database DIVA has been used to identify which student theses that have been written historically. This has been done to assure that the topic and scope chosen for this study has not been covered by other students. After searching in DIVA, the authors could not find any research covering the specific topic chosen in this study.

The authors have also included relevant literature from the University Library. This literature has primarily been focused towards the methodological section, both theoretical and practical to describe the different approaches of how the reality is perceived, and what is considered as valid knowledge by the authors as well as to describe the statistical assumptions for the regression analysis.

2.10 Evaluation of Source Credibility

Ejvegård (2009, p. 71) states that the credibility of sources must carefully be evaluated by the authors. This accounts for printed material as well as peer-reviewed dissertations, even though dissertations are supposed to fulfil the scientific requirements (Ejvegård, 2009, p. 71).

Ejvegård (2009, p. 71) further state four demands that need to be fulfilled, authentication (*swe: äkthetskrav*), independent demand (*swe: oberoendekrav*), need for recent research (*swe: färskhetskrav*), and concurrency requirement (*swe: samtidighetskrav*) (2009, p. 71-73).

If the source fulfils the demand for authentication, the material is considered reliable and true and that there is no underlying counterfeiting (Ejvegård, 2009, p. 71). The demand for independence involves that the author conducts further research to establish the source from where the information is taken (Ejvegård, 2009, p. 71). Ejvegård (2009, p. 71) also states that the use of primary sources is to prefer over secondary sources, since secondary sources may be taken out of context and could therefore be misleading. The need for recent research is described as the general idea that facts from newer sources are to prefer over older sources which is because papers or literature more recently published contains more updated findings which often are based on previous research (Ejvegård, 2009, p. 72). The fourth and last criterion described by Ejvegård (2009, p. 73) is the concurrency requirement, which involves the human factor of interpretation and how memories can be shaped and mislead as time passes. As described by Ejvegård (2009, p. 73), if a person, say another author has experienced some event and a few years pass before the event is written down the information may differ compared to if it would be written as it occurred.

All the criteria mentioned above have been taken into consideration when critically evaluating the sources that have been included in this thesis. Authentication is considered fulfilled as peer-reviewed and trustworthy sources have been used for the study. Independence has, to best of the authors abilities been fulfilled by using primary sources and checking the origin of the sources to avoid inadequate referencing. The recent research criterion is more difficult to assess since this study has used well-known theories on capital structure that are relatively old. However, this study also refers to more recent research on capital structure and the relationship between leverage and profitability to assure that updated findings are captured. Lastly, the concurrency requirement is difficult to assess since the authors of this paper can only assume that the observations have been documented shortly after being observed. Still, most of previous research uses historical data for the basis of the studies, which is likely to be correct.

3. Theoretical Frame of Reference

This chapter aims to describe the theoretical framework of the study, based on the theoretical methodology presented in the previous section. This includes descriptions and discussions of capital structure through the theories of Modigliani and Miller, trade-off theory and pecking-order theory. Moreover, measures of capital structure and profitability will be discussed to generate the key variables used for this study. Lastly, a presentation of excluded theory will be provided.

3.1 Modigliani and Miller

Modigliani and Miller presented a famous article in 1958 discussing the choice of capital structure and its implications on the businesses. Based on a few assumptions, Modigliani and Miller (1958) argued for the irrelevance of firms' capital structure. Five years later, Modigliani and Miller revised their theorem in the article, *Corporate Income Taxes and the Cost of Capital: A Correction*, concluding that capital structure in fact was relevant (Modigliani & Miller, 1963). The theorems of Modigliani and Miller have been central to the research area of capital structure and is still taught at universities nowadays, despite the number of years that has passed since their inception. Due to the important role these theorems have had and still have today in the discussions of capital structure, the authors have assessed the inclusion of the theorems as central for the theoretical framework.

3.1.1 The irrelevance of capital structure

Modigliani and Miller (1958, p. 268) argued in their first proposition that the capital structure of any firm is irrelevant for its total value. This statement was based on the assumptions that firms operate in a perfect market, that for instance bonds yield a constant return per unit and that two commodities must sell at an equal price given homogeneity (Modigliani & Miller, 1958, p. 266, 268). Moreover, firms are assumed to operate in a market without taxes and in which the average cost of capital is equal for all firms in each class (Modigliani & Miller, 1958, p. 273-274). Although it can be concluded that the assumptions are not truly realistic, it is important to understand the theorem to gain an ability to assess which capital structure is better. In addition, the assumptions provide insight into which market imperfection to look for as for example a financial manager (Brealey et al., 2013, p. 427). The irrelevance of capital structure theorem should logically assume that the degree of leverage is of no relevance for profitability. Thus, this study will be based on the theorem predict that no specific relationship is expected between leverage and profitability.

3.1.2 The relevance of capital structure

Modigliani and Miller (1963) revised their theorem from 1958, after criticism had been raised towards the exclusion of taxes in their reasoning. The authors stated that ignoring taxes indeed was a mistake, and that the tax shield accompanying debt was relevant for firm value. This follows that arbitrage is not merely a function of expected net-tax returns, but also of the tax rate and level of leverage (Modigliani & Miller, 1963, p. 434). The implications of the theory are thus that firms can increase the firm value by maximising their debt financing, and consequently reaping the benefits of tax savings. However, Modigliani and Miller (1963, p. 442) also states that due to factors not incorporated in the model, such as limitations set up by lenders and other types of costs, it is not always beneficial for a firm to maximise the degree of debt in its capital structure. Ultimately,

the theorem states that increasing leverage is beneficial, and will for the basis of this study predict that a positive relationship between leverage and profitability is expected.

3.2 Trade-Off Theory

In contrast to Modigliani and Miller's theorems on capital structure and the debate on its relevance on firm performance, the trade-off theory states that firms have an optimal capital structure from which maximum firm value can be attained (Kraus & Litzenberger, 1973; Myers, 1984). Instead of having firms unlimitedly increasing debt levels to maximise firm value, the trade-off theory states that firms have a certain capital structure to strive for to reach the highest possible firm value. This leads to a form of balancing, in which firms deliberately should swap debt for equity and equity for debt to reach their optimum (Myers, 1984, p. 577). This balancing stem from the benefits of tax shields and the costs of potential bankruptcy and financial distress, where optimum is reached when the benefits of tax shields are offset by the costs related to debt (Myers, 1984).

According to Kraus and Litzenberger (1973, p. 911), the irrelevance of capital structure theorem is valid under the assumptions of complete and perfect markets. This is due to bankruptcy risks and penalties not existing in a perfect market, thus not affecting the choice of capital structure. However, the existence of taxes and bankruptcy penalties are market imperfections that do affect the capital structure and its effect on firm value. Hirshleifer (1966, p. 265) did a few years earlier much like Kraus and Litzenberger (1973) conclude that taxes, transaction costs and bankruptcy penalties affect the capital structure and its effect on firm value. To validate the theorem of capital structure irrelevance, those factors would thus have to be excluded (Hirshleifer, 1966, p. 265).

The value of tax shields arises from the tax deductibility of interest expenses, where financial leverage decreases a firm's income tax liability and increases its after-tax earnings (Kraus & Litzenberger, 1973, p. 911). Thus, the trade-off theory of Myers (1984) implies that increasing debt levels are beneficial for the firm until a certain limit. After that, any debt issued is in theory relatively more costly than beneficial.

The trade-off theory indicates that debt initially has a positive relationship with profitability but changes direction after benefits from tax shields and costs of financial distress break even. The traditional trade-off theory approach may thus imply a concave relationship, rather than linear. For low levels of debt there is a positive relationship, which eventually shift and become negative at some point as leverage increases (Kraus & Litzenberger, 1973, p. 916). However, for this study, the trade-off theory will simply refer to debt being positive for profitability. Thus, for the scope of this study, support to the trade-off theory will be given if a positive relationship is found between leverage and profitability.

3.3 Pecking-Order Theory

Myers and Majluf (1984) developed the pecking-order theory which proposed a different view on capital structure compared to the trade-off theory. The theory attempts to explain the way in which firms choose their financing method and includes asymmetric information as a significant aspect of this process.

The idea is that managers possess insider information which is not available to other stakeholders. Myers and Majluf (1984) argue that this can affect the managerial decision-making regarding which projects to engage in and how the operations are financed. Thus, as for instance issuing equity is seen as negative news by shareholders, managers may

sacrifice a positive net present value (*abbreviated NPV*) opportunity to avoid providing shareholders with inadequate signals (Myers & Majluf, 1984, p. 188). Myers and Majluf (1984, p. 219) concludes that if investment opportunities arise over time, then financial slack will on average be valuable to shareholders as the firm can undertake these opportunities. However, if internal funds are not sufficient and if low-risk debt is not available, then it may be reasonable for a firm to omit positive NPV projects and avoid issuing risky securities.

Myers (1984, p. 581) compares the trade-off theory to the pecking-order theory and states that instead of finding a firm's optimal debt ratio, the firm will follow a certain financing pecking order. This pecking order follows that firms primarily prefer internally generated funds when in need of financing. Moreover, if external financing is required, firms will issue debt first, followed by a mixture of hybrid securities, and equity as the last option (Myers, 1984, p. 581). The assessment is that the implications of this theory are important, as they highlight potential explanations to why the capital structure differs among firms. Myers (1984, p. 582) does, however, clarify that the pecking-order theory cannot explain everything in relation to capital structure, as there are numerous firms who could issue debt but instead choose to issue stock. Yet, while looking at the overall numbers, it becomes evident that there is a heavy dependence on internally generated funds and debt.

The pecking-order theory is deemed to be a fundamental theoretical pillar for this study as it highlights important reasons to why the capital structure can differ between firms possessing distinguishing characteristics. However, the asymmetrical information aspect of the theory will not be included in this study due to the difficulty of measuring and interpreting it.

Furthermore, according to the theory, profitable firms use less debt. In contrast to the other theories mentioned, this implies that profitability affects leverage. This is based on profitable firms being able to finance themselves with sufficient internal capital, leading to relatively low debt levels. For the scope of this study, the relationship between leverage and profitability is investigated, assuming that it is leverage which drives profitability. This exemplifies the concept of reversed causality, which means that both leverage and profitability may affect each other. Although this could raise some concerns, it is not believed to be a problem as this study mainly intends to look at the relationship rather than the direction of causality. Moreover, the implications of the pecking-order theory tell us that profitable firms use less debt. Consequently, regardless of the direction of causality, a negative relationship between leverage and profitability is expected. Hence, if a negative relationship is found, support to the pecking-order theory will be given.

Although the purpose of this study is not to claim causality, actions will be undertaken to also shed some light on the causality. Hence, in addition to finding a potential relationship between leverage and profitability, the question of which variable that affects the other will be briefly considered.

Ultimately, the pecking-order theory will be mainly used to compare the relationship between leverage and profitability, where a negative relationship is expected according to the theory.

3.4 Profitability

The way in which profitability is measured depends on the choice of ratios and formulas. As there are numerous varying techniques for measuring profitability, the measure used

for this study will be generated through relevant previous research and assessments of the different measurements included in those.

Chaklader and Chawla (2016, p. 271) investigated the determinants of capital structure and used ROE as one of the independent variables. The authors concluded that more profitable firms would according to the pecking-order theory use internal funds and based on the trade-off theory issue debt to benefit from the tax shields. However, there is no clear motivation to why ROE is used as the measurement for profitability. Le and Phan (2017, p. 714) also measured profitability, defined as performance, as ROE in their study on capital structure and its effect on firm performance. On the other hand, Le and Phan (2017) did unlike Chaklader and Chawla (2016) include other measurements of profitability, namely Tobin's Q and ROA.

In terms of relevant previous research, there seems to be a pattern in which ROA is commonly used (Barton & Gordon, 1988; Simerly & Li, 2000; Gill et al., 2009; Shah, 2012; Ahmed Sheikh & Wang, 2013; Le & Phan, 2017). ROA is an adequate measure to reflect return that is directly controlled by management (Bettis, 1981, p. 384). Moreover, according to Bettis (1981, p. 384), ROA is widely used by managers and other stakeholders, and is in many cases highly correlated with other measurements such as ROE. Furthermore, Simerly and Li (2000, p. 40) states that including ROA is as central as excluding ROE due to the latter ignoring the impact of certain kinds of resource investment. Moreover, a high ROE could simply indicate a heavily leveraged firm, while a low ROE could indicate the opposite. Simerly and Li (2000, p. 40) therefor concludes that ROA and ROI are more adequate for capturing firms' contribution to the more general investment of resources. According to Berk and DeMarzo (2013, p. 43), a strength of ROA is its lesser sensitivity to leverage in comparison to ROE. However, ROA is more sensible to changes in working capital.

Ultimately, there is no sole measure of profitability that is superior to another. The authors have made the assessment to choose the measure of profitability based on the arguments presented in previous research in combination with the frequency of measure used. Consequently, based on most of previous research using ROA, and the measure taking all sorts of financing into consideration, this study will use ROA as the measure of profitability.

3.5 Capital Structure and Profitability

This study investigates capital structure and profitability in the Swedish management consulting industry. The capital structure of a firm consists of the composition of debt and equity (Brealey et al., 2013, p. 427). To determine firms' capital structure, the authors have chosen to use leverage as it describes the extent to which firms are reliant on debt as a part of their financing structure (Berk & DeMarzo, 2013, p. 39).

Earlier theories on capital structure suggest different views on the relationship between leverage and profitability. The revised theorem of Modigliani and Miller (1963) acknowledged the importance of tax savings accompanying debt. Although Modigliani and Miller (1963, p. 442) stated that there are circumstances in which it is not always beneficial to maximise debt levels, the theorem indicates that firms benefit from increasing the debt ratio. Due to this, it can be concluded that the theorem suggests a positive relationship between leverage and profitability, which means that firms with a higher degree of leverage have higher profitability. Much like the theorem of Modigliani and Miller, the trade-off theory suggests a similar relationship between leverage and

profitability. However, the trade-off theory differs as it signals an optimal debt level in which firm value can be maximised (Kraus & Litzenberger, 1973; Myers, 1984), rather than maximising debt levels. Still, even though Myers (1984, p. 577) suggests that further borrowing above the optimal debt level reduces firm value, the foundation of the theory indicates a positive relationship between leverage and profitability.

The pecking-order theory by Myers and Majluf (1984) differs from the theories above by claiming a reversed relationship between leverage and profitability. Firms will, if possible, finance their business with internally generated funds and will only raise debt and equity if necessary. Thus, instead of maximising leverage or reaching for an optimal debt level, firms will raise debt only if internal funds are not sufficient. Consequently, Myers and Majluf (1984, p. 209) believe that more profitable firms will rely primarily on internal funding, leading to a relatively small debt ratio compared to less profitable firms. Ultimately, the pecking-order theory thus suggests a negative relationship between leverage and profitability.

Harris and Raviv (1991, p. 334) did based on previous studies conclude that leverage generally decreases with profitability, implying a negative relationship between leverage and profitability. Rajan and Zingales (1995, p. 1457) found that profitability is negatively correlated with leverage. Furthermore, they concluded that the negative effect of profitability on leverage becomes larger as firm size increases. The results of Rajan and Zingales (1995) signal reversed causality, meaning that profitability negatively affects leverage, which is in line with the pecking-order theory.

Kester (1986, p. 12-13), Friend and Lang (1988, p. 275, 277) and Nunes et al. (2009, p. 703) did similar to this study investigate the relationship rather than causality and found that leverage had a negative relation to profitability measured in ROA.

Gill et al. (2009, p. 52) studied the determinants of capital structure in the U.S service industry and did also conclude that there is a negative relationship between leverage and profitability. A year later, Gill et al. (2010) investigated the relationship between working capital management and profitability for American manufacturing firms. The results were in line with Gill et al. (2009), concluding that there was a significant negative relationship between leverage and profitability (Gill et al., 2010, p. 6). However, Gill et al. (2011, p. 12) found by looking at both the service and manufacturing industry that there is a positive relationship between leverage measured in total debt to assets and profitability. It should be noted, however, that Gill et al. (2011, p. 7) used ROE to measure profitability, which differs from ROA chosen for this study.

Simerly and Li (2000, p. 44) found support for both a positive and negative relationship between leverage and profitability depending on the environmental dynamism. The relationship was positive for firms operating in a low or non-dynamic environment, whereas they found a negative relationship for firms operating in a more dynamic environment. However, it should also be stated that firm size measured as number of employees was included as a control variable which had a positive effect on profitability (Simerly & Li, 2000, p. 44). Abor (2005) investigated the effect of capital structure on profitability for listed firms in Ghana. Leverage were defined using short-term debt, long-term debt and total debt to capital (Abor, 2005, p. 441), which showed different relationships with profitability. The empirical results suggested that short-term debt and total debt have a positive relationship with profitability, while long-term debt has a negative relationship with profitability (Abor, 2005, p. 443).

As seen here, there are different ways to measure leverage and capital structure, and different measures can show distinguishing relationships with the dependent variable. Thus, the authors of this study will take this into consideration when the ratios underlying the independent variables for leverage are chosen.

This section has described previous research on capital structure and its implications it has on the relationship with profitability. Earlier empirical results have as can be seen above varied to a large extent, and it is apparent that there is no single theory or model that alone can fully describe or explain the relationship between leverage and profitability. For this reason, the theoretical framework will present suitable guidelines for the assumptions underlying the relationship between leverage and profitability. The first theorem of Modigliani and Miller (1958) would imply that a specific relationship between leverage and profitability is not to be expected. The revised theorem of Modigliani and Miller (1963) implicates that tax shields arising from increasing debt levels affect the firm value positively. Hence, since the theorem assumes a positive impact of debt on performance, this study will use the theorem to assume a positive relationship between leverage and profitability. Moreover, the trade-off theory estimates a positive impact of debt on profitability until the optimal debt level of the firm is reached (Myers, 1984). Consequently, the underlying prediction for the trade-off theory related to this paper will be that it exists a positive relationship between leverage and profitability. In contrast, the pecking-order theory (Myers & Majluf, 1984) states that profitable firms primarily will look to use internal funds as a source of financing, leading to relatively low debt levels. Thus, the pecking-order theory will for this study be used to predict a negative relationship between leverage and profitability.

Ultimately, it is hard to believe that leverage as a measure of capital structure alone can explain profitability of firms. Indeed, earlier studies have included other variables to help explain what impacts profitability. Due to this, it is important to assess which other factors that can play an important role for determining profitability of management consulting firms in Sweden. The next part will thus based on previous research introduce and discuss other drivers of profitability that are deemed relevant for the study.

3.6 Drivers of Profitability

A common variable to include as a determinant of profitability is size, which has been used in previous research by for instance Yazdanfar and Öhman (2015), Chadha and Sharma (2015), Kester (1996), Abor (2005), Simerly and Li (2000), Danis et al. (2014), Baños-Caballero et al. (2014) and Goddard et al. (2005). Past research suggests that the relationship between size and profitability is not unique and that there is no sole explanation to how profitability is affected by size.

Yazdanfar and Öhman (2015, p. 115) found that size has a positive relation to profitability for SMEs in Sweden, which implies that the larger SMEs generally are more profitable than smaller ones. However, Yazdanfar and Öhman (2015, p. 115) also noticed that the relationship can differ between industries, where they found a significant negative relationship between size and profitability in the retail trade and wholesale sectors. Goddard et al. (2005, p. 1280) also found a negative relationship between size and profitability when studying the European manufacturing and service sector. Unlike the negative relationship found by Yazdanfar and Öhman (2015) and Goddard et al. (2005), Chadha and Sharma (2015, p. 300) found a significant positive relationship between size and profitability, implying that older larger firms offers a higher return on their assets.

Similarly, Simerly and Li (2000, p. 44) also found that size had a positive relation to profitability.

There are different ways to measure size, and previous research has shown that common measurements include primarily turnover (Yazdanfar & Öhman 2015, p. 115; Kester, 1986, p. 12; Abor, 2005, p. 442; Danis et al. 2014, p. 441) but also number of employees (Simerly & Li, 2000, p. 44).

The choice of measurement for size will be based on an overall assessment of the suitability of the measurement in relation to the chosen population in this study.

Liquidity is another variable that commonly is included. Myers and Rajan (1995, p. 1) states that liquidity determines how easily an asset can be traded. Moreover, the liquid assets tend to increase a firm's debt capacity and are in general positive for non-financial firms. According to Goddard et al. (2005, p. 1273), liquidity can also indicate how fast firms can react and adapt to sudden changes in its surroundings. Moreover, liquidity can help firms reduce the risk of being unable to meet its short-term financial obligations.

Research on the relationship between liquidity and profitability has been conducted earlier. The results of Goddard et al. (2005, p. 1280) implied that there exists a positive relationship between liquidity and profitability. An indication of this relationship is that firms operating in a risky competitive market are more likely to adapt to adverse changes in the environment and maintain high profitability if they hold liquid assets (Goddard et al., 2005, p. 1280). Lyroudi and McCarty (1993) found varying results on the relationship between liquidity and profitability depending on the measures used. They found that the cash conversion cycle (*abbreviated CCC*) and the quick ratio were positively related to return on investment (*abbreviated ROI*), ROE and net profit margin (*abbreviated NPM*). However, Lyroudi and McCarty (1993, p. 153) found that the quick ratio and ROE is negatively related. In contrast, Eljelly (2004, p. 58) found there is an apparent negative relationship between liquidity measured as CCC, current ratio and profitability. Consequently, Eljelly (2004, p. 58-59) concludes that firms holding excessive liquid assets can suffer increased costs and lost profits. In line with the results of Eljelly (2004), Bagchi (2013, p. 365) found that firm liquidity has a negative impact on profitability measured in ROA.

A variable that also appears in previous research to determine profitability is age. The extent to which age affects profitability and whether the relationship is positive or negative differs in earlier research. Yazdanfar and Öhman (2015, p. 107) studied SMEs in Sweden and found that age measured as days since firm inception had a significant negative impact on firm profitability, meaning that younger small firms tend to be more profitable than older ones (Yazdanfar & Öhman 2015, p. 113).

In contrast, Chadha and Sharma (2015, p. 300) found while investigating the Indian manufacturing market that age had a significant positive relationship with profitability, implying that older firms tend to be more profitable. The positive relationship between age and profitability found by Chadha and Sharma (2015) was also found by Nunes et al. (2009, p. 703) who examined profitability in the Portuguese service industry

3.7 Choice of Variables

This section will describe and discuss the variables chosen for enabling the purpose of the study to be achieved. All chosen variables have been discussed in the previous section based on previous theoretical and empirical findings and will be further motivated in this section. As mentioned briefly in the last chapter, multiple regression models are used in this study which includes a dependent variable and several independent variables. Profitability constitutes the dependent variable and will lay the basis for the statistical tests. Moreover, the central independent variable is constituted by leverage since it is directly related to the underlying research question of the study. The remaining independent variables act as control variables and consist of size, liquidity and age to explain drivers of profitability that cannot be solely explained by leverage.

Based on previous research, the variables will be generated including definitions. By understanding the definitions of chosen variables, it is deemed easier to grasp the characteristics of the variables when they are being referred to in the text. Furthermore, this understanding becomes helpful when approaching the hypotheses of the study, which are presented in the next chapter.

3.7.1 Profitability

Profitability will act as the dependent variable for this study. As stated earlier, previous research has shown that there are different methods that can be used to measure profitability. The two most common measurements for profitability appears to be ROE (Chaklader & Chawla, 2016; Le & Phan, 2017; Gill et al., 2011; Abor, 2005) and ROA (Barton & Gordon, 1988; Simerly & Li, 2000; Gill et al., 2009; Shah, 2012; Ahmed Sheikh & Wang, 2013; Le & Phan, 2017; Nunes et al., 2009).

This study has a perspective that mainly highlights the interests of the managers of the firm. Due to ROA incorporating the return on total capital (Penman, 2013, p. 371), and not only shareholders' return, ROA is assessed to better reflect the perspective of this study. Furthermore, ROA is often used in previous research and by managers and other stakeholders (Bettis, 1981, p. 384), strengthening its validity. For these reasons, ROA will act as a measurement of profitability for this study and will thus be the dependent variable used in the data analysis. Return on Assets can be calculated using different equations. This study will use a common and well-known measure for ROA:

Return on Assets = (Net income + interest expense / Book value of assets)
(Berk & DeMarzo, 2013, p. 43)

3.7.2 Leverage

As this study incorporates capital structure as a determinant of profitability, it is important to define how this study intends to measure it. Firms' capital structure will be defined based on leverage, as it captures the extent to which firms are reliant on debt as a part of their financing structure (Berk & DeMarzo, 2013, p. 39).

Previous research has shown that leverage can show varying relationships with profitability depending on the debt ratio used. For instance, Abor (2005, p. 443) found that short-term debt and total debt had a positive relationship with profitability, while long-term debt had a negative relationship. As the relationship with profitability may differ between leverage measures, this study will include total debt, short-term debt and

long-term debt to ensure that the results are meaningful for achieving the purpose of the study. Thus, the variables for leverage are:

Debt to total assets = Total debt / Total assets
(Penman, 2013, p. 686)

Short-term debt to total assets = Short-term debt / Total assets

Long-term debt to total assets = Long-term debt / Total assets

3.7.3 Size

Size will also be included as a determinant of profitability. Currently, the Swedish consulting industry contains many firms with varying sizes. Due to this, it is interesting to investigate if this variable has any relationship with firm profitability.

Yazdanfar and Öhman (2015, p. 115) and Goddard et al. (2005, p. 1280) found a negative relationship between size and profitability, while the results of Chadha and Sharma (2015, p. 300) and Simerly and Li (2000, p. 44) implied that larger firms generally are more profitable. Size was measured as turnover by Yazdanfar and Öhman (2015, p. 107), natural logarithm of total assets by Goddard et al. (2005, p. 1272) and Chadha and Sharma (2015, p. 298), and logarithm of full-time employees by Simerly and Li (2000, p. 41).

Turnover in management consulting firms are likely to be highly dependent on the employees, as it is their time spent working for clients which mainly generates revenues to the firm. Due to the nature of the sector and the dependence on human capital in form of employees, the authors find it natural to measure size similar to Simerly and Li (2000, p. 41):

Size = Logarithm of number of employees

3.7.4 Liquidity

As stated earlier, previous research has provided different results on the relationship between liquidity and profitability. According to Goddard et al (2005, p. 1280) there is a positive relationship between liquidity and profitability, while the results of Bagchi (2013, p. 365) suggests that liquidity has an insignificant, but negative relationship with profitability.

To see if liquidity is related to profitability, this study will include liquidity measured in line with Goddard et al. (2005, p. 1273):

Liquidity = Current assets / Current liabilities

3.7.5 Age

To determine if firm age has a relationship with profitability, it is important to include it as a control variable. Yazdanfar and Öhman (2015, p. 113) found that age had a significant negative impact on firm profitability, while Chadha and Sharma (2015, p. 300) and Nunes et al. (2009, p. 703) found a positive relationship between age and profitability. This study will in line with Yazdanfar and Öhman (2015, p. 107) include age as a measure of:

Age = Number of years since firm inception

3.8 Exclusion of Theory

Throughout the years several theories have been constructed to explain the optimal capital structure. Beyond the theories mentioned earlier in the study there are also other theories that can be considered relevant but have been excluded. One theory that have been excluded is the agency theory. Brealey et al. (2013, p. 882-883) describe the agency theory as the involvement of many parties, including managers, employees, shareholders, and bondholders. The background of this theory is the belief that all the parties mentioned above strive towards the same goal and work for the common good. However, the existence of conflicting interests was found, hence the agency theory (Brealey et al., 2013, p. 882).

Crutchley and Hansen (1989, p. 37) describe the conflict between stockholders and managers as stockholders wanting to diversify risks by having a spread in their portfolio, while managers are striving to achieve their own goals. Managers typically spend excessive funds on the expense of shareholders through short-term investments that benefit themselves but hurt the shareholders. The managers may also take operating decisions that overrule the shareholders' risk preference (Crutchley & Hansen, 1989, p. 37).

Crutchley and Hansen (1989, p. 37) also describe that connected to the agency theory, there are agency costs which arise from the conflict of interests. The authors also present how to reduce the agency costs, where one option is to increase the stock ownership for the managers. By increasing the ownership, the decisions are more in line with the desires of the shareholders since the managers personal wealth are at stake (Crutchley & Hansen, 1989, p. 37). Another choice is to increase the dividends to increase the need for external equity capital (Crutchley & Hansen, 1989, p. 37). However, this option is not optimal since other costs arise from financing dividends by external capital. The third option to reduce the agency costs are to increase debt financing. The use of debt financing reduces the degree of equity financing, which reduces the agency costs since the shareholders equity decreases. However, this strategy is not optimal either since it increases the debt agency costs (Crutchley & Hansen, 1989, p. 38).

Berger et al. (2005, p. 1066) explain how capital structure can ease the agency costs by referring to the agency theory hypothesis. The hypothesis means that high leverage, or a low equity/asset ratio reduces the agency costs, which is similar to how Crutchley and Hansen (1989, p. 37-38) describe their options to reduce agency costs. By having a high leverage ratio, the amount of shareholders equity decreases in relation to the total debt.

The reason for the exclusion of this theory is partly since this paper will examine firms that are not listed on a stock exchange, which limits their ability to generate external funds in form of equity compared to firms that are listed and can issue stock. Another reason for the exclusion is due to the purpose of this paper, which is to examine the relationship between leverage and profitability where the agency theory aims more towards explaining the agency costs that arise due to the capital structure, and how to mitigate the conflict of interests between managers and shareholders. Lastly, as the agency theory indicates that increasing debt levels can reduce agency problems, the theory predicts a positive relationship between leverage and profitability, like Modigliani and Miller (1963) and the trade-off theory (Myers, 1984). Since this study is focusing on this relationship alone and not the aspects of agency problems, it is assessed that the theorems of Modigliani and Miller (1958, 1963) and the trade-off theory (Myers, 1984) combined with the pecking-order theory (Myers & Majluf, 1984) are sufficient for determining the relationship between leverage and profitability from a theoretical perspective.

3.9 Summary of Theoretical Framework

Irrelevance of capital structure

Modigliani and Miller (1958) proposed that under certain assumptions, the composition of capital structure is irrelevant for firm value. Thus, simply put, it makes no difference for the firm to finance with debt or equity. For this study, the theorem will be incorporated by predicting that capital structure and thus leverage is of no relevance for profitability in consulting firms. Thus, no relationship between leverage and profitability is expected.

Relevance of capital structure

Modigliani and Miller revised their initial theorem in 1963, proposing that capital structure is of relevance for firms. They meant that increasing leverage provides valuable tax shields that increase firm value. This study accounts for the revised theorem by predicting a positive relationship between leverage and profitability.

Trade-off theory

The trade-off implies that the tax shields arising from increasing leverage is positive for firm value until these benefits are outweighed by costs from financial distress such as bankruptcy costs. Any further issuing of debt after this break-even point is negative for the firm. This study expects based on the trade-off theory that a positive relationship between leverage and profitability exists.

Pecking-order theory

The theory states that profitable firms primarily use internal capital over external capital. This indicates that high profitability generally leads to lower debt levels. For the scope of this study, the results will be in line with the pecking-order theory if a negative relationship between leverage and profitability is found.

Profitability

Research has shown that profitability can be measured differently. This study will use Return on Assets (ROA) as the measure of profitability. The choice is founded in the perspective of the study, where ROA is assessed to better reflect the profitability in relation to total assets which is of relevance for managers.

Leverage

Leverage is used to incorporate the significance of capital structure in the study. Total debt to assets will constitute the main variable to answer the research question at hand. Short-term and long-term debt to assets will be included to consider other aspects of leverage that are of relevance for this study.

Control variables

The inclusion of control variables aims to improve modelling and account for explanations of profitability that are not captured by leverage. These control variables include size, liquidity and age. Although the main focus will not be put on these variables, they will be investigated to help explain profitability of management consulting firms in Sweden.

4. Hypotheses

This chapter will present the hypotheses used for answering the research question of this study. The hypotheses will be described and discussed separately aligned with the theoretical framework presented in the previous section to clarify how generated results can accept or reject the underlying theories.

4.1 Leverage and Profitability

To examine the relationship between leverage and profitability is the fundamental aim of this study. Consequently, the main focus of the statistical tests will be to conclude how they are related and what it implies from a theoretical perspective. The three variables used to capture the relationship between leverage and profitability are total debt to assets, short-term debt to assets and long-term debt to assets. Considerable focus will be put on total debt as it accounts for the main purpose of this study. Each of the leverage ratios will be discussed below based on previous research and will together with chosen theories generate each corresponding hypothesis.

4.1.1 Total debt and profitability

There is an extensive amount of both research and theories regarding total debt. However, there are different views on the relationship between total debt and profitability, which will be stated below.

Past research has suggested that there exist different opinions on the relationship between total debt and profitability. Margaritis and Psillaki (2010, p. 628) found that total debt to assets has a positive and significant relationship with profitability and efficiency. Furthermore, Gill et al. (2011) and Abor (2005) also concluded that total debt had a positive relationship with profitability.

In contrast to the results described above, earlier research has also found a negative relationship between total debt and profitability (Khan, 2012, p. 257; Nunes et al., 2009, p. 703).

Previous research on capital structure reveals interesting aspects related to the predicted relationship between total debt and profitability. The revised theorem of Modigliani and Miller (1963) argued that high debt levels are worthwhile due to the tax savings stemming from increased interest expenses. Consequently, this indicates that firms are ought to increase their total debt levels to benefit from these tax savings, leading to a high total debt to assets ratio. The conclusion drawn from this indication is that more profitable firms in theory should have high levels of total debt, meaning that there should be a positive relationship between total debt and profitability. The trade-off theory (Myers, 1984) suggests a relationship similar to the one of Modigliani and Miller (1963), with the difference between the two being the predicted amount of total debt. In contrast to Modigliani and Miller (1963) who virtually suggests maximisation of debt, the trade-off theory (Myers, 1984) instead predicts that firms should increase total debt to the point in which tax savings are offset by the costs of financial distress. To conclude, this means that the theory suggests a positive but concave relationship between total debt and profitability, i.e. the benefits of debt diminishes as total debt levels approach equilibrium between tax benefits and financial distress.

The pecking-order theory (Myers & Majluf, 1984) predicts an opposite relationship to the theories above. The theory suggests that profitable firms have sufficient cash flows which

constitute a large amount of the firm's financing. Moreover, firms will in theory only raise debt if internal funds cannot cover the need of financing. As a result, more profitable firms will have a relatively low degree of debt, suggesting a negative relationship between total debt and profitability.

Lastly, the irrelevance of capital structure proposed by Modigliani and Miller (1958) assumes that the choice of debt or equity will not affect the value of the firm. Although this was proposed given certain assumptions that arguably are not fulfilled today, it is still deemed relevant to examine if the theorem holds for the chosen industry. The theorem will thus predict that no relationship exists between total debt and profitability.

Due to the varying earlier empirical results and the theoretical distinctions that exist for predicting the relationship between total debt and profitability, it is natural to investigate if a relationship exists and how it stands in relation to previously mentioned theories. The hypotheses are listed below. It should be clarified that a rejection of the null hypothesis implicates that a significant relationship exists. However, it is the direction of the relationship that will provide support to the underlying theories. Thus, a positive relationship supports Modigliani and Miller (1963) and the trade-off theory (Myers, 1984), while a negative relationship supports the pecking-order theory (Myers & Majluf, 1984).

H₀ (1): There is no relationship between total debt and profitability

H_A (1): There is a relationship between total debt and profitability

4.1.2 Short-term debt and profitability

Much like total debt to profitability, earlier empirical results have shown differing results on the relationship between short-term debt and profitability. There are for instance empirical results that have shown a negative relationship between short-term debt and profitability (Yazdanfar & Öhman, 2015; Khan, 2012; Zeitun & Tian, 2007). Opposing results have been found by Abor (2005) and Gill et al. (2011), who concluded that short-term debt is positively related to profitability. However, it should be mentioned that Abor (2005) and Gill et al. (2011) used ROE as a measurement of profitability, which potentially could affect the results and thus the implications considered for this study.

Earlier results have shown that the relationship between short-term debt and profitability can vary. However, it is evident that a relationship is to be expected. This leads to the following hypotheses:

H₀ (2): There is no relationship between short-term debt and profitability

H_A (2): There is a relationship between short-term debt and profitability

4.1.3 Long-term debt and profitability

The relationship between long-term debt and profitability is not as apparent as for the other measurements of leverage. Earlier empirical results have suggested that a negative relationship between long-term debt and profitability exists (Yazdanfar & Öhman, 2015; Abor, 2005; Goddard et al., 2005). There are evidently less empirical results supporting a positive relationship. Gill et al. (2011, p. 11) found a significant positive relationship between long-term debt and profitability for firms in the manufacturing sector. However, for firms in the service industry, which arguably are more relevant from a capital structure perspective, there was no significant relationship to be found (Gill et al., 2011, p. 11). It

should also be stated that Gill et al. (2011) did like Abor (2005) use ROE as a measurement of profitability.

As mentioned before, management consulting firms tend to use relatively little long-term debt, and it is thus of interest to see if this is of any significance in relation to profitability. Due to different implications existing regarding the relationship between long-term debt and firm profitability, the authors find it natural to establish the following hypotheses:

H₀ (3): There is no relationship between long-term debt and profitability

H_A (3): There is a relationship between long-term debt and profitability

4.2 Control Variables and Profitability

The inclusion of control variables is important as they help explain profitability, and thus increase the explanatory power of the models used. Any potential relationship found between leverage and profitability will be valid in coexistence with the other independent variables, that is, the control variables. Consequently, the answer to the research question if there is a relationship between leverage and profitability is affected by the fact that control variables are included and held constant in the models.

Due to this, the authors found it natural to establish a sub-purpose presented in chapter 1 to investigate if a relationship exists between the control variables and profitability. Previous research has provided different results on the relationships between chosen control variables and profitability, and it is thus of interest to see if relationships are prevailing in the management consulting industry. To test this empirically and achieve one of the sub-purposes of the study, hypotheses are established for all control variables. Below follow separate discussions of the control variables in relation to previous research, which results in each corresponding hypothesis.

4.2.1 Size and profitability

Previous research which have included firm size as a determinant of profitability have generated different results. Some authors concluded in their research that there is a negative relationship between size and profitability (Yazdanfar & Öhman, 2015, p. 115; Goddard et al., 2005, p. 1280). Existing research has also provided empirical results that support the opposing relationship, that size is positively related to profitability (Chadha & Sharma, 2015, p. 300; Simerly & Li, 2000, p. 44).

Size has been measured in several ways throughout earlier research. This study will define size as the logarithm of total employees, based on the assumption that employees most adequately can capture the value creation in consulting firms. The varying relationships found in previous research implies that some form of relationship between size and profitability is to be expected. The established hypotheses are:

H₀ (4): There is no relationship between size and profitability

H_A (4): There is a relationship between size and profitability

4.2.2 Liquidity and profitability

Liquidity is not the most frequently used variable among the chosen variables when looking at previous research. However, it has been included by a few. Goddard et al (2005, p. 1280) concluded a positive relationship between liquidity and profitability.

Bagchi (2013, p. 365) reached the conclusion that liquidity and profitability are negatively related.

The measure of liquidity has been similar throughout previous research and defined as current assets/current liabilities, which is the same definition that will be applied in this study. Previous research indicates a mixed relationship between the two, and this study aims to test whether there is a relationship between liquidity and profitability. Therefore, the hypotheses are:

H₀ (5): There is no relationship between liquidity and profitability

H_A (5): There is a relationship between liquidity and profitability

4.2.3 Age and profitability

The use of age as a control variable for profitability is not as common as other variables. However, some authors have included it to examine if there is a relationship between age and firm profitability (Chadha & Sharma, 2015; Yazdanfar & Öhman, 2015; Nunes et al., 2009; Yazdanfar, 2013; Claver et al., 2002).

The results tend to vary, indicating that different relationships between the variables are existent. Among the authors who found a negative relationship between age and profitability are Yazdanfar and Öhman (2015, p. 112), Yazdanfar (2013, p. 157) and Glancey (1998, p. 24-25). Results found by Chadha and Sharma (2015, p. 300) and Nunes et al. (2009, p. 703) did in contrast suggest that a positive relationship exists between age and profitability.

Given the varying implications on a possible relationship between the variables, the hypotheses are:

H₀ (6): There is no relationship between age and profitability

H_A (6): There is a relationship between age and profitability

5. Research Methodology

In this chapter the practical method will be described. The chapter will outline the data selection and collection. Furthermore, data shortfall and data processing will also be discussed. Lastly, the choice of statistical models and discussion about relevant statistical assumptions will be presented.

5.1 Data Selection

Dahmström (2011, p. 65) describes the process of conducting a research which involves data collection as three main issues that need to be taken into consideration. The first issue is to determine *who* or *which* the research intends to examine. The second is *what* is going to be researched which must be specified with given variables. Third issue is to answer *how* the research will be conducted and carried out, it can be conducted by covering the entire population or by taking a sample from the chosen population (Dahmström, 2011, p. 65).

To address the issues mentioned above, regarding the process of conducting a research the element *population* is used by Dahmström (2011, p. 67). The population contains characteristics of the desired group the authors intend to examine that limit the population from the outside world. The limitations can include geographical areas, a time horizon or equivalent factors (Dahmström, 2011, p. 67). The desired population is known as target population (*swe: målpopulation*), however to examine the target population the characteristics must be transferred into a framework that replicates the target population (Dahmström, 2011, p. 67). The framework consists of selective units that matches the elements for the population (Dahmström, 2011, p. 67).

The population for this study is limited companies (*swe: aktiebolag*) performing management consulting services in Sweden. Further limitations for the desired population are a minimum of ten active full-time equivalent employees with a minimum turnover of 10 000 000 SEK. The reason for these limitations are that to have enough debt capacity the authors consider this minimum turnover relevant. By involving firms that have a lower turnover the risk of a misleading result may arise since their debt capacity are not considered large enough, or even non-existent.

The time horizon for the study is between the years 2012-2016. The reason for choosing a five-year period is to include as many observations as possible to avoid transitory effects from certain years and thus improve reliability.

When conducting statistical analysis with secondary data, the risk for coverage error arises. Coverage error is described as when the selected framework does not match the desired population which results in that some firms of the population not having an equal probability of being selected in the sample (Lantz, 2014, p. 115-116). Lantz (2014, p. 116) further discuss two types of coverage errors, under and over coverage. Under coverage is when individuals, or in this case firms that should be included in the sample are excluded while over coverage is the opposite, meaning that companies are included in the sample even though they should not (Lantz, 2014, p. 116). This study may be subject to both over and under coverage due to the manual filtering of companies with imprecise SNI-codes that captured firms that do not fit into the population. The manual filtering involved a process of going through a total of 945 firms to locate whether they conducted business that fit into chosen delimitations. From the 945 firms a total of 130 companies were suitable for this study and therefore included. The probability for

coverage error arise due to human error of unintentionally including or excluding firms. However, the authors of this study have on multiple occasions gone through the selected sample to confirm the validity of the firms. Ultimately, any small coverage errors that potentially have occurred are assessed as unlikely to affect the results of the study significantly.

5.2 Data Shortfall

The sample consists of 130 firms which are studied over a five-year period which resulted in a total of maximum 650 observations for the basis of the study. However, some data was missing from the database Business Retriever. The issue of missing data can be solved by using interpolation (Studenmund, 2014, p. 363). Interpolation is possible when the missing value is between two years, for example if the ROA is available for year 2013 and 2015, but not for 2014, the data for year 2014 can be interpolated if the movements are slow and does not capture extreme changes on a yearly basis (Studenmund, 2014, p. 363). Interpolation was used when deemed suitable, but when data was missing for more than one year the observations were excluded. As a result, the actual number of observations included in this study ended up being 609.

5.3 Data Collection

The data used for this study is secondary data. Lantz (2014, p. 52) describes secondary data as the data that previously have been gathered by someone else for a different purpose. The collection was done using the database Business Retriever. Business Retriever contains accounting information such as annual reports and other key ratios for firms in Sweden. To limit the search the authors have used SNI-codes to filter which companies that operate within the management consulting industry. However, the most appropriate SNI-code did not only include the desired firms, but also firms that are not operating within the management consulting industry. This led to manual filtering for the authors to ensure the proper data was collected for the target population. The selected time period for the data collection was 2012-2016, even though Retriever contains data up to 2017. However, after browsing the data for 2017, the authors found that many firms did not have sufficient data due to unavailable annual reports. Consequently, the decision was made to limit the time span to 2012-2016.

5.4 Data Processing

The chosen data was as previously mentioned downloaded from the database Business Retriever. The dataset contained useful information and some of the desired key ratios, while some had to be calculated manually. By using Microsoft Excel, the key ratios could be calculated which allowed the authors to test the chosen variables.

The ratios that were manually calculated include total debt to assets (TDA), short-term debt to assets (SDA), and long-term debt to assets (LDA). They were calculated as follows:

$$TDA = \text{Total debt to assets} = \text{Total debt} / \text{Total assets}$$

$$SDA = \text{Short-term debt to assets} = \text{Short-term debt} / \text{Total assets}$$

$$LDA = \text{Long-term debt to assets} = \text{Long-term debt} / \text{Total assets}$$

To carry out the desired statistical tests the authors have used the statistical software STATA 15. The tests were carried out by first adjusting for extreme values or outliers. Lantz (2014, p. 130) argues that manipulation of data is generally inadequate, but to trim the data by eliminating extreme values is a common approach. Outliers may be of great significance for the result when building models, and may affect the regression line (Lantz, 2014, p. 131). The purpose of trimming the data is to make the regression line flatter which makes it easier to test and draw valid conclusions (Lantz, 2014, p. 132).

When trimming and thereby adjusting the data the authors had to choose which percentiles to exclude. For this paper the values outside the 1st and 99th percentile was excluded which led to new maximum and minimum values.

To trim the observations and remove outliers the method Winsorize was used. Erceg-Hurn and Mirosevich (2008, p. 595) describe Winsorized variance as more resistant to outliers than the original variance. When using the Winsorize method, STATA 15 performs tests for each selected variable to test if there are any significant outliers within the chosen percentile and adjusts accordingly.

To test whether the null hypothesis can be rejected, the researchers need to decide upon a significance level and perform a hypothesis test (Studenmund, 2014, p. 128). The confidence interval allows the researcher to select a range which contains the true value of the observations (Studenmund, 2014, p. 140). Lantz (2014, p. 82) describes the confidence interval as an interval which, with a given certainty, contains the parameter representing the population. The confidence interval is for the researchers to decide. For this study a 99% confidence interval have been used for the hypothesis testing. When choosing a lower interval, for example 95% the span becomes narrower which captures less values. The lower interval equals a lower certainty that the true value of the parameter is captured (Lantz, 2014, p. 82-83). It should be mentioned that STATA provides outputs with a 95% confidence interval. However, this does not affect the coefficients in the models or the corresponding p-values and it does consequently not affect the possibility to accept or reject hypotheses at a 99% confidence interval.

During hypothesis testing, in addition to confidence interval, a significance level need to be included. Significance level is the opposite to confidence interval and is to claim with a given certainty that the value of the parameter deviates from a specific value (Lantz, 2014, p. 84). The authors of this paper have chosen a 1% significance level for all hypotheses. This was done to maintain a statistical consistency throughout the data analysis.

5.5 Statistical Models

To answer the hypotheses stated earlier, statistical models are built using three different measures of leverage, total debt to assets, short-term debt to assets and long-term debt to assets. Since leverage are measured using three different ratios, there is a need for three different models to test each variable independent of the other two. The models will also include control variables that are mentioned in chapter 3. By including both dependent and independent variables the use of multiple linear regression model is applied to find the relationship between leverage and profitability in coexistence with chosen control variables.

To use a linear regression model, it is required to have a linear relationship between the residuals, and that the residuals are approximately normally distributed (Studenmund, 2014, p. 98). This can be tested for by plotting the residuals on a histogram. If the histogram does not experience any skewness and the mean is centred around zero, the residuals are normally distributed. As shown in Appendix 1, the residuals for this study are not skewed and have a mean around zero which indicates that the residuals in fact are approximately normally distributed.

Studenmund (2014) state that the most common regression estimation is the Ordinary Least Squares (*henceforth OLS*) (2014, p. 37). One of the main reasons for the use of OLS is that the regression is easy to use and considered the simplest econometric estimation model (Studenmund, 2014, p. 37-38). However, for the OLS estimator to hold certain assumptions must be met regarding the distribution, variation and correlation of the error terms (Studenmund, 2014, p. 97-98). If the assumptions are not met, OLS might not be the best available regression model. This will be discussed further on in the chapter.

5.6 Variables for Regressions

5.6.1 Profitability

The dependent variable for this study is profitability. When looking at previous research the measures of profitability differ. Some authors prefer the use of Return on Assets (ROA), where others prefer Return on Equity (ROE). A few studies include Tobin's Q as an indicator for profitability. ROA and ROE are measures based on numbers derived from the balance sheet which entails certain advantages and disadvantages.

ROA is the most commonly used measure for firm performance and have been included in research papers conducted by Barton and Gordon (1988), Simerly and Li (2000), Gill et al. (2009), Shah (2012), and Ahmed Sheikh and Wang (2013). They use ROA derived from net profit/total assets. The use of ROE as a measure on firm performance is included in research conducted by Abor (2005), Gill et al. (2011), and Chaklader Chawla (2016). Mehran (1995, p. 170) applied Tobin's Q as a measure of firm performance, which he calculated as the ratio of the market value of the firm's securities to the replacement costs of its tangible assets. Le and Phan (2017) use all three measures mentioned above to estimate the firm performance.

Most of previous research includes either ROA or ROE as a measurement of profitability. The advantage of using ROA as measure for firm performance is that it captures how well the resources are allocated since it involves all the firm's assets (Penman, 2013, p 371). Arguably, by including all assets and not just shareholders equity the researcher achieves a greater understanding of how efficient the resources are allocated, whereas ROE provides a better understanding on how well the capital from investors is allocated.

The purpose of the usage also affects the choice of measure for profitability. For this study the purpose is to examine the relationship between leverage and profitability. The authors of this study consider Return on Assets to be most suitable since the study is mainly written from the perspective of managers and ROA reflects how efficient the total capital is being allocated. As mentioned in chapter 3, ROA is calculated by net income plus interest expense divided by book value of assets.

5.6.2 Leverage

Leverage and its corresponding variables constitute the main independent variables for this study as they are directly related to the research question. Leverage is defined using debt ratios, of which total debt is the prime focus for this study. Previous research define debt similarly, by dividing debt by total assets. However, the difference lies in which type of debt to include in the regression. Le and Phan (2017), Abor (2005), Shah (2012), Ahmed Sheikh and Wang (2013) and Gill et al. (2011) chose to divide debt into three categories. By doing so the authors constructed three different regression models which each include a different debt measure. Others, such as Chaklader and Chawla (2013), Gill et al. (2009), Simerly and Li (2000), Barton and Gordon (1988), and Mehran (1995) chose to include one measure for leverage which is total debt to assets. By only including one variable for leverage the authors construct one regression model to explain the relationship between leverage and profitability.

As shown by previous research there is a mix between the two methods. The authors of this study chose to include three measures of debt. This is in line with the purpose of the study to investigate the relationship between leverage and profitability, but also the sub-purpose to see if short-term and long-term debt has any relation to profitability. The underlying reason is that the authors consider the regression model to be more informative by dividing debt into short-term, and long-term, as well as into total debt to assets since it allows to test if the ratios have different relationships with profitability. The ratios are calculated as total debt/total assets, short-term debt/total assets and long-term debt/total assets.

5.6.3 Size

Most of previous research define size of the firm as either logarithm of sales, or logarithm of assets. Abor (2005), Gill et al. (2009), and Gill et al. (2011) defined size as logarithm of sales, whereas Mehran (1995), Shah (2012), and Chaklader and Chawla (2016) defined size as logarithm of assets. Barton and Gordon (1988) defined it as the average sales over the period in which the firms were examined. Simerly and Li (2000) chose to define size as logarithm of full-time employees. Even though the definition used by Simerly and Li (2000) is not the most common approach it has been included as a definition in this study. The management consulting industry is heavily dependent on human capital, and the essence of it likely lies in the employees. Consequently, the authors consider it natural to measure size by using the logarithm of full-time employees.

If the study would examine more capital-intensive industries such as manufacturing, in which there are more tangible assets, the use of assets or sales as measures for size would arguably have been more appropriate.

5.6.4 Liquidity

The use of liquidity as a control variable is recurrent in previous research. Chaklader and Chawla (2016) and Shah (2012) included liquidity in their research and both used the same definition: current assets divided by current liabilities. This study will incorporate the same definition of leverage as the previous research.

The liquidity ratio for the consulting industry is particularly interesting to include since the composition of current assets and current liabilities may differ from other, more capital-intensive industries. By including liquidity, the authors of this study will gain an

understanding on how balanced current assets are towards current liabilities, and if it has a relationship with profitability.

5.6.5 Age

In previous research the use of age as control variable is not as common. Yazdanfar (2013, p. 153) included age as the natural logarithm of years since inception when studying the profitability determinants among Swedish micro firms. Yazdanfar and Öhman (2015, p. 102, 107) conducted further research where they included age defined as number of years since firm inception. Glancey (1998) also included age as control variable and defined it like Yazdanfar and Öhman (2015) as number of years since firm inception. This study will measure age as number of years since firm inception, in line with the studies of Yazdanfar and Öhman (2015) and Glancey (1998).

5.7 Panel Data

When constructing the research design the time aspect is of importance, especially when the study will examine events that happen over time (Lantz, 2014, p. 27). The use of time series involves that each individual is observed on various occasions with the main objective to analyse the time aspect. The opposite of time series is cross-sectional studies which means that each individual is only observed once and are therefore disregarding the time aspect (Lantz, 2014, p. 27).

The mix between time series and cross-sectional studies are called panel data (Studenmund, 2014, p. 364). The characteristics of panel data is similar to time series, which means that observations have been made on multiple occasions. The difference is that panel data makes observations on more than one variable with the aim to study the change over time for a certain type of individuals based on multiple variables (Lantz, 2014, p. 28). Furthermore, Dahmström (2000, p. 241) describes that an advantage of having panel data is that the researcher achieves a better estimate of changes compared to cross-sectional data.

Panel data is in line with the desired research design intended by the authors of this thesis. This is because of multiple variables such as age, size, liquidity, and debt ratios being used in the regression model, and firms being measured and tested annually over a five-year period. Panel data is therefore believed to be most suitable for examining the relationship between leverage and profitability.

5.8 Multiple Regression Model

The use of a multiple regression model involves having one Y-variable, or dependent variable and two or more X-variables, also known as independent variables (Lantz, 2009, p. 415). By including more independent variables the model can better estimate the variation of the dependent variable, which in turn leads to a higher significance and a higher coefficient of determination (Lantz, 2009, p. 415). Newbold (2013, p. 456-457) refers to multiple regression as the objective to estimate a linear equation to predict the outcome of the chosen dependent variable as well as describing the marginal change. The second objective is harder to provide with an accurate estimation due to the relation between both the dependent, and between the independent variables (Newbold, 2013, p. 457). Furthermore, another objective of constructing a multiple regression model is to explain the variability in the dependent variable (Newbold, 2013, p. 457).

The variation is not explained to its full extent when only including dependent and independent variables, according to Studenmund (2014, p. 9). He mentions that it is common for variation to stem from other sources and that there will always be parts of the dependent variable that cannot be fully explained (Studenmund, 2014, p. 9). It may arise due to measurement errors, incorrect functional form, or completely random which is why a stochastic error term is added to the equation. By adding the error term, it is now possible to explain all the variation for the dependent variable (Studenmund, 2014, p. 9).

The theoretical regression models for this study are in line with the modelling presented by Newbold (2013, p. 457-458):

$$ROA_{i,t} = \beta_0 + \beta_1 TDA_{i,t} + \beta_2 Size_{i,t} + \beta_3 Liquidity_{i,t} + \beta_4 Age_{i,t} + \varepsilon_{i,t}$$

$$ROA_{i,t} = \beta_0 + \beta_1 SDA_{i,t} + \beta_2 Size_{i,t} + \beta_3 Liquidity_{i,t} + \beta_4 Age_{i,t} + \varepsilon_{i,t}$$

$$ROA_{i,t} = \beta_0 + \beta_1 LDA_{i,t} + \beta_2 Size_{i,t} + \beta_3 Liquidity_{i,t} + \beta_4 Age_{i,t} + \varepsilon_{i,t}$$

Where,

ROA= Net Income/Total Assets

β = Constant

TDA= Total debt/Total Assets

SDA= Short-term debt/Total Assets

LDA= Long-term debt/Total Assets

Size= Logarithm of total number of employees

Liquidity= Current Assets/Current liabilities

Age= Number of years since firm inception

ε = Error term

i, t= For firm *i* on year *t*

As mentioned in section 5.5 the OLS regression is the simplest of the models used. The authors of this study consider the OLS regression to be not fully sufficient due to certain underlying assumptions of the model not being met. Consequently, the authors will construct more robust models, which are aimed to provide more accurate results. However, the OLS regression will be included to increase comparability of results between previous research and for comparability between the regression models used.

5.9 Fixed Effects

Since this study is building regression models to test the relationship between leverage and profitability using multiple variables the models are subject to random or fixed effects. According to Borenstein et al. (2010, p. 97, 104) the fixed effect model assume that the study has one true size of the effect that is identical for the entire study, where the term size of the effect being the difference in the mean values of the effect size between two groups. The only reason for the effect size to differ is due to internal errors, such as an error when estimating the size of the effect (Borenstein et al., 2010, p. 104).

Borenstein et al. (2010, p. 97) state that for the random effect model the effect size does not have to be constant, it can differ. For the fixed effect there is a distribution of true effect sizes (Borenstein et al., 2010, p. 98). The aim is not to estimate one constant effect size, instead the aim is to estimate a mean of the effect size (Borenstein et al., 2010, p. 104).

Newbold (2013, p. 669) describes the issue as two different treatments of time series. One being fixed over time and can therefore be illustrated by a straight line, whereas the other propose time-series are randomly distributed and cannot be considered universal (Newbold, 2013, p. 669).

Since this study only contain one group, which are the consulting firms in the sample, the fixed effect model is estimated to be assigned. This can be tested by conducting a Hausman Test (Wooldridge, 2015, p. 444) in STATA 15. The Hausman test is carried out by stating a null hypothesis that the difference in coefficients are not systematic. When conducting the hypothesis test the result was to reject the null hypothesis, meaning that the difference in coefficients are systematic. This demonstrates that the variance within management consulting firms are systematic and that the fixed effect model is suitable given the data in this study.

5.10 Multicollinearity

Multicollinearity may arise when building a regression model and including two independent variables similar to each other that in essence are explaining the effect to the same extent (Studenmund, 2014, p. 261-262). There are two types of multicollinearity as described by Studenmund (2014), perfect and imperfect. Perfect multicollinearity implies that the variance in one independent variable is fully explained by another independent variable included in the regression model (Studenmund, 2014, p. 262). When the model experiences multicollinearity the regression cannot distinguish the two variables which in turn will prevent the estimation of the coefficients (Studenmund, 2014, p. 263). However, perfect multicollinearity is rare while imperfect multicollinearity is more common. Imperfect multicollinearity is when two or more independent variables are correlated to the extent that they significantly affect each other (Studenmund, 2014, p. 264).

To test for multicollinearity the authors chose to construct a correlation matrix and to conduct a VIF test in STATA 15. According to Studenmund (2014, p. 379), there might be severe multicollinearity if the correlation between two variables exceed 0.8. If two variables are highly correlated, it might be redundant to include them in the same model as they explain mostly the same thing. However, this can be avoided if the two variables are included in separate regressions and if they are relevant to investigate separately to highlight differences in explanations of the dependent variable.

To further investigate the degree of multicollinearity, VIF tests are conducted on each regression model separately. According to Studenmund (2014, p. 379), the authors may suspect multicollinearity if the VIF values exceeds five. For this study, three tests were performed and showed low VIF values which is an indicator that multicollinearity is low and not an obstacle for this study.

5.11 Heteroskedasticity and Homoskedasticity

When conducting a study that involves gathering data for firms that differ in size it is likely to experience a larger variance in the output compared to if the firms are similar in size (Newbold, 2013, p. 557). If the errors are uncorrelated and the variance differ the model experiences heteroskedasticity (Newbold, 2013, p. 558). If the model experiences

heteroskedasticity the OLS model cannot be used since it does not consider the underlying assumption for heteroskedasticity (Newbold, 2013, p. 557).

The authors of this study tested whether heteroskedasticity was present for the models by conducting a White test in STATA 15 (Wooldridge, 2015, p. 253). When performing a White test, the null hypothesis is that the distribution of error terms has a uniform variance and are uncorrelated with each other. The result from the White test was insignificant which allowed the authors to reject the null hypothesis and conclude that the models was subject to heteroskedasticity. To adjust for heteroskedasticity the authors constructed a model using robust estimations of standard errors.

5.12 Serial Correlation

One other factor that need to be taken into consideration regarding the regression models and the error term is called serial correlation (Studenmund, 2014, p. 323). Serial correlation occurs when the expected value of the correlation coefficient is not equal to zero (Studenmund, 2014, p. 323). Serial correlation can be either positive or negative. Positive serial correlation is when the error terms have a constant positive or negative relationship between time periods, and negative serial correlation indicates that there is a change of pattern over time (Studenmund, 2014, p. 324). If there is serial correlation the errors in the OLS statistics will be invalid, making it less suitable for statistical testing (Wooldridge, 2015, p. 375).

When the model experiences serial correlation it may be hard to detect by only analysing the results since the factor behind the issue is most often an internal error (Studenmund, 2014, p. 331). To test for serial correlation the authors conducted a Wooldridge (Wooldridge, 2015, p. 377) test in STATA 15. By conducting the test, it is checked for serial correlation in each of the leverage measures with the null hypothesis stating that there is no first order autocorrelation. For all three measures of leverage the null hypothesis could be rejected which indicates that serial correlation exists. To counteract the issue, a robust regression model was used, which in addition to heteroskedasticity also adjusts for serial correlation. The improved models used in this study are constructed to generate more robust results in comparison to the OLS models. However, this is merely a change of modelling, while the number of observations and underlying variables remain the same.

5.13 Reversed Causality

As mentioned earlier, the dependent variable is profitability and the main independent variable is leverage, with the purpose to examine the relationship between leverage and profitability. However, when considering reversed causality, it may be that profitability affects leverage. Previous research has been conducted that support the reversed causality by using leverage as the dependent variable and profitability and control variables as independent variables. Alipour et al. (2015) conducted research regarding the determinants of capital structure. The research paper collected data over a five-year period for firms operating in Iran (Alipour et al., 2015, p. 63-64). Their findings regarding the relationship between profitability and leverage are in line with the pecking-order theory, i.e. a negative relationship between the two variables (Alipour et al., 2015, p. 73).

Rajan and Zingales (1995, p. 1423-1424) conducted research on non-financial firms in the G-7 countries. Their sample consisted of 4557 firms that were examined between the

years 1987-1991 (Rajan & Zingales, 1995, p. 1423, 1425). They found a negative correlation between profitability and leverage, measured in ROA (Rajan & Zingales, 1995, p. 1457). The result found in their research paper supports the predictions of the pecking-order theory.

Additional research has been conducted by Chen (2004, p. 1341) regarding the determinants of capital structure for Chinese-listed companies. Chen (2004, p. 1345) used leverage as the dependent variable and profitability as independent and concluded that there is a negative relationship between the two. Again, this is in line with the pecking-order theory.

Le and Phan (2017, p. 716) examined the relationship between capital structure and firm performance by including three measures of profitability as their independent variable, and leverage as their dependent variable. Their findings were in line with the ones previously mentioned in this section, that the relationship between profitability and leverage was negative which supports the pecking-order theory (Le & Phan, 2017, p. 722).

The pecking-order theory of Myers and Majluf (1984), which is discussed in chapter 3, states that firms prefer internal over external financing. If the result supports the theory, profitable firms supposedly finance its operations through primarily internal funds. Thus, more profitable firms use less debt which leads to a negative relationship between profitability and leverage.

The authors of this study are aware that reversed causality may exist. To take this problem into account, the authors have used lagged regression models where TDA, SDA, and LDA from the previous year is tested against ROA for the current year. This considers reversed causality as it is hard to believe that the current year's ROA can affect previous year's leverage. Consequently, it should in fact mainly be leverage which affects ROA. The authors consider the lagged model sufficient action to counteract the potential issue regarding reversed causality. Furthermore, it should be stated that the investigation of causality is not the purpose of this study. Instead, the reason for examining reversed causality is to highlight important aspects of leverage in relation to profitability, to provide meaningful implications beyond the scope of this study.

6. Empirical Results

This chapter will present the results from the conducted statistical tests. Statistics of multicollinearity, descriptive statistics, heteroskedasticity and serial correlation will be described. Furthermore, the results from the OLS regression model will be presented and followed by the results from the upgraded models.

6.1 Multicollinearity

As described in section 5.10, it is important to investigate the potential presence of multicollinearity. To do this, a correlation matrix has been established, accounting for the correlation between each independent variable. This reveal if the independent variables are too highly correlated, indicating that they largely explain the same thing and could arguably be redundant to include in the models. Below follow the results of the correlation matrix.

Table 1. Correlation matrix

	TDA	SDA	LDA	Size	Liquidity	Age
TDA	1					
SDA	0,909	1				
LDA	0,151	-0,272	1			
Size	-0,067	-0,097	0,075	1		
Liquidity	-0,687	-0,690	0,054	-0,109	1	
Age	-0,222	-0,278	0,154	0,306	0,194	1

Table 1 shows the correlations between the independent variables included in this study. As mentioned in the previous chapter, the correlation between variables should not exceed 0,8 to avoid inadequate levels of multicollinearity.

From the table above, it becomes apparent that the correlation between TDA and SDA is an outlier with a result of 0,909. Consequently, it can safely be assumed that multicollinearity exists between these variables. This is not unexpected, due to the common absence of long-term debt which generates an identical SDA and TDA. The descriptive statistics will be presented in section 6.2, which will further explain this phenomenon. The high correlation between TDA and SDA could make the inclusion of SDA in regression modelling redundant as they arguably explain the same thing. However, as the variables are included separately in their own regression models, they are investigated individually with the other variables being held constant. This can provide interesting implications that are deemed relevant for this study, and the multicollinearity is thus assessed to not be problematic. However, the prevailing high correlation should be kept in mind while reading and interpreting the results of this study.

Except from the high correlation described above, it can be noted that the lowest correlation result is 0,054 found between liquidity and LDA. To summarise, the correlation matrix reveals that in exception of SDA and TDA, the independent variables have correlations below 0,8, indicating that multicollinearity is not problematic for the models used.

To further investigate if multicollinearity exists, VIF tests have been conducted. To assess that the variables are not possessing multicollinearity, they are ought to show VIF scores below 5. Table 2 shows the VIF values for the independent variables included in the models.

Table 2. VIF

Variable	VIF	Variable	VIF	Variable	VIF
Liquidity	2,02	Liquidity	1,8	Age	1,19
TDA	1,98	SDA	1,8	Size	1,14
Age	1,18	Age	1,22	Liquidity	1,07
Size	1,17	Size	1,16	LDA	1,03
Mean VIF	1,59	Mean VIF	1,49	Mean VIF	1,11

As can be seen in table 2, there are no variables for which the VIF values are close to the critical point of 5. Thus, the VIF values do not imply that multicollinearity would be present. This, in combination with the results from the correlation matrix provides enough evidence to support the statement that multicollinearity will not be a problem for the statistical tests performed in this study. Clearly, this applies in exception for the high correlation found between TDA and SDA which was discussed earlier. Again, due to the use of these variables in separate regression models, the problem has been partly avoided.

6.2 Descriptive Statistics

Below follows a summary of the descriptive statistics. Table 3 describes means, standard deviations, minimum values and maximum values for the included variables. These variables comprise data from 609 observations, which were the final amount after the shortfall discussed in chapter 5.

Table 3. Descriptive statistics

	Observations	Mean	Std. Dev.	Min	Max
ROA	609	0,188	0,203	-0,362	0,649
TDA	609	0,619	0,195	0,243	0,986
SDA	609	0,586	0,200	0,204	0,982
LDA	609	0,033	0,082	0	0,385
Size	609	1,306	0,345	0,588	2,161
Liquidity	609	1,661	0,665	0,594	4,045
Age	609	10,856	7,680	2	33

ROA acts as the dependent variable and is a central variable for answering the underlying research question. The statistics show that the mean of ROA for the firms included in this study is approximately 0,19 or 19%. This high mean ROA is partly reduced by the negative ratio of some observations, including the lowest ROA at -0,362 as seen under the minimum column. It is further reduced as an effect of limiting the max ROA value at 0,649 after adjusting the outliers in the 99th percentile. However, the mean ROA is similarly positively affected by the limit set on the most negative observations after adjusting for outliers in the 1st percentile.

The three leverage ratios are of central importance for finding how leverage is related to the dependant variable ROA, and is thus crucial for answering the research question, that is, if there is a relationship between leverage and profitability. As for ROA, adjustments have been made for the outliers in the 1st and 99th percentiles. TDA has a mean of 0,619, with minimum and maximum values ranging from 0,243 to 0,986. SDA has nearly identical values, with a mean of 0,586 and minimum and maximum values of 0,204 and 0,982. These similar numbers help explain the reason for why TDA and SDA is so closely correlated as discussed under section 6.1. LDA constitutes the amount of TDA that is not SDA, with a mean of 0,033 and minimum and maximum values of 0 and 0,385. The relatively low mean LDA is explained by the observations having zero long-term debt and thus LDA of 0. These leverage values imply that management consulting firms in Sweden seem to rely mainly on short-term debt rather than long-term. It is worth mentioning that the descriptive statistics presented here are adjusted for outliers as described under section 5.4. The pre-adjusted values can be found in Appendix 2.

6.3 Heteroskedasticity

As described in section 5.10, a White test was performed to investigate if heteroskedasticity was present. Below follows the output from the test.

Table 4. White test

White's general test statistic:	
Chi-sq(14)	49.5783
P-value =	7.2e-06

From the White test in table 4 a high chi-sq value was found. The null hypothesis for the test is if the variance of the regression errors is constant, that is, if homoscedasticity exists. The high chi-sq value generated a low p-value of 7.2e-06 which is by far enough to reject the null hypothesis. Consequently, by rejecting the null hypothesis, it can be concluded that the regression is affected by heteroskedasticity. This will be adjusted for by including clustered robust standard errors in the FE-models. The empirical results from these tests will be presented later in this chapter.

6.4 Serial Correlation

As stated earlier, it is important that there is no serial correlation when performing multiple linear regression. To check for serial correlation, Wooldridge tests have been conducted. The output from the tests can be seen below in table 5.

Table 5. Wooldridge tests

TDA	SDA	LDA
H0: no first order autocorrelation	H0: no first order autocorrelation	H0: no first order autocorrelation
F(1, 124) = 18,307	F(1, 124) = 11,357	F(1, 124) = 14,054
Prob > F = 0,0000	Prob > F = 0,0010	Prob > F = 0,0003

The Wooldridge tests have a null hypothesis that there is no autocorrelation, that is, no serial correlation. As seen above, all variables have p-values below 0,01 which means that all null hypotheses can be rejected with a 1% significance level. As a result, it can be concluded that there is serial correlation in the regressions. The problem regarding serial correlation will be handled by including clustered robust standard errors, same as for the heteroskedasticity.

6.5 OLS Regression Model

This section will describe the results from the OLS regressions, which sometimes will be referred to as the simple models. As described in the practical method, there are limitations with the OLS model which might affect the outcome of the statistical tests. Yet, it is deemed relevant to include the results of the tests to highlight potential variations in results between the models. Moreover, the simpler regression model is often used throughout previous research, which further validates its inclusion by increasing comparability with earlier empirical results. The adjusted models accounting for potential weaknesses in the simple models will be presented separately to increase the chance of generating adequate results and exposing variations between the models. Below follow the results for the OLS regression tests.

Table 6. OLS Regression – TDA

ROA	Coef.	Std. Err.	t	P>t	[95% Conf.Interval]	
TDA	-0,21	0,054	-3,86	0	-0,317	-0,103
Size	-0,017	0,023	-0,74	0,46	-0,064	0,029
Liquidity	0,078	0,016	4,81	0	0,046	0,109
Age	-0,006	0,001	-5,85	0	-0,008	-0,004
_cons	0,28	0,069	4,08	0	0,145	0,414
R ²	0,1879					
R ² adjusted	0,1825					
Observations	609					

Table 6 consists of the results from the regression test. For all regression models in this study, the coefficients for each variable reveal the percentage point change in ROA for an increase of 1 unit of an independent variable, given that the remaining independent variables are fixed. Using this regression, it can be concluded that total debt has a negative and significant relationship with profitability on the chosen significance level of 1%. The results imply that when holding the other independent variables constant, then for each percentage point increase in TDA, ROA decreases by 0,21 percentage points. Age also had a significant negative relationship with profitability, with the coefficient however being small. Consequently, while holding the remaining variables constant, it is estimated that when 1 year passes by, ROA decreases by 0,006 percentage points. A significant relationship was also found between liquidity and profitability. However, this relationship is positive, implying that more liquid firms tend to be more profitable. This indicates that for each percentage point increase in liquidity while holding the other independent variables constant, ROA increases by 0,078 percentage points. The only variable not found to be statistically significant was size. Although the regression shows a negative relationship between size and profitability, the high p-value of 0,46 is not enough to reject the null hypothesis. This could mean that the other variables in the model explain the

same phenomena, as an effect of multicollinearity. However, as presented earlier, both the correlation matrix and the VIF values did not show signs of multicollinearity, rejecting the statement that the variable would be redundant to include. Due to high p-value, it is reasonable based on the simple model to conclude that size does not have any significant relationship with profitability.

Table 7. OLS Regression – SDA

ROA	Coef.	Std. Err.	t	P>t	[95% Conf.Interval]	
SDA	-0,163	0,050	-3,25	0,001	-0,261	-0,064
Size	-0,019	0,024	-0,78	0,435	-0,065	0,028
Liquidity	0,066	0,013	5,27	0	0,042	0,091
Age	-0,007	0,001	-6,07	0	-0,009	-0,004
_cons	0,269	0,060	4,48	0	0,151	0,387
R ²	0,1636					
R ² adjusted	0,158					
Observations	609					

The regression model incorporating short-term debt (SDA) shows similar results as the one including total debt. According to the statistics, short-term debt has a negative and significant relationship with profitability on a 1% significance level, indicating that an increase in SDA is related to a decrease in ROA. Age does again have a significant negative relationship with profitability, while liquidity has a positive relationship. Size shows virtually the same relationship as in the TDA model. The high p-value accompanying size leads to the conclusion that size does not have any significant relationship with profitability. Still, it is assessed as relevant to include the variable because of the increased explanatory power after its inclusion combined with the absence of multicollinearity.

Table 8. OLS Regression – LDA

ROA	Coef.	Std. Err.	t	P>t	[95% Conf.Interval]	
LDA	-0,307	0,092	-3,34	0,001	-0,487	-0,126
Size	0,0004	0,023	0,02	0,988	-0,045	0,046
Liquidity	0,122	0,012	10,29	0	0,098	0,145
Age	-0,005	0,001	-5,12	0	-0,008	-0,003
_cons	0,056	0,037	1,52	0,13	-0,016	0,129
R ²	0,1829					
R ² adjusted	0,1775					
Observations	609					

Table 8 shows the regression results including long-term debt (LDA). The results are in line with the empirical findings in regression models presented above. Long-term debt was found to have a significant negative relationship with profitability, indicating that profitable firms generally use less long-term debt. Age does again have a significant negative relationship with profitability, while liquidity has a significant positive relationship. Size does like in the SDA model have an insignificant but positive relationship with profitability. The high p-values for size in the three simpler models

imply that no significant relationship has been found between size and profitability when utilising the OLS models.

6.6 Fixed Effects Model

As stated in the practical method, the authors found that a Fixed Effects Model (*abbreviated FE Model*) is suitable for this study. This assessment was made through the Hausman test which based on a comparison of Random Effects and Fixed Effects concluded that the latter was most adequate. The FE regressions have merely changed in the modelling, while the variables and number of observations remain unchanged. The model also recognises that the same firms are represented over a fixed number of years, which is accounted for in the 130 groups seen in the tables. Below follow the results from the FE regressions.

Table 9. FE Model – TDA

ROA	Coef.	Std. Err.	t	P>t	[95% Conf.Interval]	
TDA	-0,465	0,079	-5,9	0	-0,620	-0,311
Size	0,159	0,048	3,32	0,001	0,065	0,254
Liquidity	-0,012	0,022	-0,54	0,59	-0,055	0,032
Age	0,008	0,004	1,88	0,06	0,000	0,016
_cons	0,201	0,101	1,99	0,047	0,003	0,400
R ² within	0,173					
R ² between	0,0002					
R ² overall	0,006					
Observations	609					
Groups	130					

In table 9 it becomes evident that total debt still has a significant negative relationship with profitability, meaning that firms which use less debt are generally more profitable. In comparison to the simple regression model, the control variables function in an opposite manner. Age shows a positive instead of a negative relationship which however is not significant on the 1% significance level. Furthermore, the results imply a negative relationship between liquidity and ROA, as opposed to the positive relationship found using the simple model. However, the coefficient of liquidity has a high p-value of 0,59 which is not significant on a 1% significance level. Lastly, size differs vastly as it shows not only a positive relationship with profitability, but also becomes significant. This implies that larger firms, that is, with more employees, generally are more profitable. Evidently, the change of model is of importance as it changes both the direction of the relationship for the control variables and the level of significance. Ultimately, it is important to point out that TDA, which is a main variable for this study, is significant using both the simple and the FE model.

Table 10. FE Model – SDA

ROA	Coef.	Std. Err.	t	P>t	[95% Conf.Interval]	
SDA	-0,316	0,071	-4,41	0	-0,456	-0,175
Size	0,156	0,049	3,17	0,002	0,059	0,253
Liquidity	0,013	0,017	0,76	0,446	-0,020	0,045
Age	0,009	0,004	2,13	0,034	0,001	0,018
_cons	0,047	0,09	0,53	0,598	-0,129	0,223
R ² within	0,1332					
R ² between	0,0039					
R ² overall	0,0004					
Observations	609					
Groups	130					

The FE model including SDA shows similar results as the TDA model. SDA remains significant and negative in relation to profitability on a 1% significance level. Age has like in table 9 a positive relationship with profitability, but this time with a lower p-value. Yet, it is not low enough to justify a rejection of the null hypothesis with the chosen significance level. Liquidity differs from the TDA model by showing a positive relationship instead of a negative but is again insignificant with a p-value of 0,446. The results from table 10 imply that the positive and significant relationship between size and profitability remains.

Table 11. FE Model – LDA

ROA	Coef.	Std. Err.	t	P>t	[95% Conf.Interval]	
LDA	-0,440	0,124	-3,55	0	-0,684	-0,196
Size	0,178	0,049	3,62	0	0,081	0,275
Liquidity	0,081	0,016	5,16	0	0,050	0,112
Age	0,008	0,004	1,89	0,06	0	0,017
_cons	-0,254	0,064	-3,97	0	-0,379	-0,128
R ² within	0,135					
R ² between	0,0007					
R ² overall	0,0036					
Observations	609					
Groups	130					

As seen in table 11 above, the variables have similar relationships with profitability as those in table 9 and 10. LDA does like the other debt ratios have a significant and negative relation to profitability. Age does like the TDA model but unlike the SDA model show an insignificant positive relationship with profitability. Liquidity differs from the results in both tables 9 and 10 by having a significant positive relationship with profitability on a 1% significance level. Moreover, size has like the in other FE models a significant positive relation to profitability.

6.7 Fixed Effects Model, Robust

As described in practical method, tests were conducted which revealed the presence of both heteroskedasticity and serial correlation. Consequently, a robust FE model will be used to take these prevailing factors into account. This is done by incorporating a more robust estimator of coefficients, standard deviations, and p-values. Ultimately, the purpose of using the robust model is to adjust for heteroskedasticity and serial correlation, while providing more robust estimates. Next, the results from the robust models will be presented.

Table 12. FE Model, Robust – TDA

ROA	Coef.	Robust Std. Err.	t	P>t	[95% Conf.Interval]	
TDA	-0,465	0,127	-3,67	0	-0,717	-0,214
Size	0,159	0,063	2,54	0,012	0,035	0,283
Liquidity	-0,012	0,032	-0,38	0,708	-0,075	0,051
Age	0,008	0,006	1,42	0,159	-0,003	0,019
_cons	0,201	0,156	1,29	0,2	-0,108	0,51
R ² within	0,173					
R ² between	0,0002					
R ² overall	0,006					
Observations	609					
Groups	130					

Adjusting the model for heteroskedasticity and serial correlation did not affect the results tremendously. The robust model shows that total debt has a significant negative relationship with profitability. Size retains its positive relation to ROA, even though it now becomes insignificant with a p-value of 0,012. Although size now is insignificant on a 1% significance level, it should be noted that the corresponding p-value is relatively low. Liquidity and age are again both insignificant with a negative and positive relationship, respectively.

Table 13. FE Model, Robust – SDA

ROA	Coef.	Robust Std. Err.	t	P>t	[95% Conf.Interval]	
SDA	-0,316	0,104	-3,02	0,003	-0,522	-0,109
Size	0,156	0,064	2,43	0,016	0,029	0,283
Liquidity	0,013	0,019	0,65	0,514	-0,026	0,051
Age	0,009	0,006	1,64	0,103	-0,002	0,020
_cons	0,047	0,123	0,38	0,703	-0,197	0,292
R ² within	0,1332					
R ² between	0,0039					
R ² overall	0,0004					
Observations	609					
Groups	130					

The robust model including short-term debt illustrated in table 13 generated nearly identical results as in table 12. The negative and significant relationship between short-term debt and profitability in the other regression models remains intact. Size and age show a positive relation to profitability, but still insignificant on the 1% significance level. The results differ with liquidity showing a positive instead of a negative relationship with profitability. However, due to the high p-value accompanying liquidity, it reasonable to assume that the variable does not have a significant relationship with ROA.

Table 14. FE Model, Robust – LDA

ROA	Coef.	Robust Std. Err.	t	P>t	[95% Conf.Interval]	
LDA	-0,44	0,174	-2,52	0,013	-0,785	-0,095
Size	0,178	0,065	2,75	0,007	0,050	0,306
Liquidity	0,081	0,022	3,75	0	0,038	0,124
Age	0,008	0,006	1,44	0,152	-0,003	0,019
_cons	-0,254	0,082	-3,09	0,002	-0,416	-0,091
R ² within	0,135					
R ² between	0,0007					
R ² overall	0,0036					
Observations	609					
Groups	130					

The robust LDA model show similar results as the ones above, with some exceptions. LDA and profitability have an insignificant negative relationship in contrast to the other debt measures, while the positive relationship between size and profitability now becoming significant. Age has a positive relationship with profitability, but still insignificant on a 1% significance level. In contrast to the other robust models, this model differs vastly by showing a positive and significant relationship between liquidity and ROA. From table 12 and 13 it can be seen that liquidity has both negative and positive relations to profitability. However, these have high p-values and are far from being significant. This shows that the inclusion of long-term debt in the model affects the significance of liquidity in relation to profitability. Still, it is assessed as reasonable to include the variable in the model due to the increased explanatory power arising when adding it.

6.8 FE Model, Robust - Lagged Leverage

As mentioned in 5.13, this study intends to consider if potential reversed causality is in effect. To partly avoid the problem of reversed causality, the main independent variables TDA, SDA and LDA will be lagged one year and included in the FE Robust models. This means that the previous year's debt ratios will act as independent variables for the current year's dependent variable, ROA. Furthermore, the control variables are included in the models as done before. The inclusion of previous years' debt ratios in the models aims to limit the potential effect of reversed causality. The effect is limited as it is reasonable to assume that the current year's profitability cannot affect the previous year's leverage. It should be mentioned that using the previous years' debt ratios leads to a decrease in number of observations from 609 to 484. This is because of the first year, 2012, not being measurable due to absence in this study of debt ratios from the year before. Consequently, these models incorporate the years 2013-2016. Moreover, number of groups are reduced

from 130 to 129 because of one firm in the sample only having adequate data for one year. Below follow the results for the robust FE models with lagged TDA, SDA and TDA.

Table 15. FE Model, Robust and Lagged – TDA

ROA	Coef.	Robust Std. Err.	t	P>t	[95% Conf.Interval]	
LaggedTDA	0,143	0,071	2,00	0,048	0,001	0,284
Size	0,084	0,068	1,23	0,222	-0,051	0,219
Liquidity	0,060	0,024	2,47	0,015	0,012	0,108
Age	0,022	0,006	3,38	0,001	0,009	0,034
_cons	-0,357	0,101	-3,54	0,001	-0,557	-0,157
R ² within	0,1262					
R ² between	0,0453					
R ² overall	0,0188					
Observations	484					
Groups	129					

Table 16. FE Model, Robust and Lagged – SDA

ROA	Coef.	Robust Std. Err.	t	P>t	[95% Conf.Interval]	
LaggedSDA	0,063	0,067	0,94	0,347	-0,069	0,196
Size	0,091	0,069	1,32	0,188	-0,045	0,227
Liquidity	0,059	0,023	2,56	0,012	0,013	0,105
Age	0,021	0,006	3,26	0,001	0,008	0,033
_cons	-0,304	0,100	-3,03	0,003	-0,502	-0,105
R ² within	0,1137					
R ² between	0,0369					
R ² overall	0,0149					
Observations	484					
Groups	129					

Table 17. FE Model, Robust and Lagged – LDA

ROA	Coef.	Robust Std. Err.	t	P>t	[95% Conf.Interval]	
LaggedLDA	0,386	0,120	3,22	0,002	0,149	0,624
Size	0,074	0,068	1,09	0,28	-0,061	0,210
Liquidity	0,056	0,024	2,30	0,023	0,008	0,104
Age	0,021	0,006	3,37	0,001	0,009	0,034
_cons	-0,259	0,089	-2,92	0,004	-0,435	-0,083
R ² within	0,1338					
R ² between	0,0357					
R ² overall	0,013					
Observations	484					
Groups	129					

In tables 15, 16 and 17 it becomes evident that the use of lagged debt ratios has affected the results to a notable extent. The most central difference lies in the relationship between leverage and profitability, which now is positive for all lagged variables. Total debt to assets goes from having a significant negative relationship with profitability to a positive relationship with a corresponding p-value of 0,048. However, it should be noted that the positive relationship found for lagged TDA is in contrast to the standard TDA not significant on a 1% significance level. Yet, the coefficient implies that an increase in total debt to assets year 0 is related to an increase in profitability year 1, and so on. The positive relationship found for lagged short-term debt did not result in any significance either, with a p-value of 0,347. Interestingly, lagged long-term debt to assets did unlike the other debt ratios become significant on the 1% significance level, implying that high LDA the current year is related to a higher profitability the upcoming year. Size turns out to have a positive relationship with profitability as found in the other robust regressions. However, no significance could be found in either of the regressions using lagged debt ratios. The regressions also revealed that liquidity and age have a positive relationship with ROA, where only the latter was significant across the three regressions. Although liquidity was not found to be significant, it should be mentioned that the corresponding p-values were close to 0,01 in all three regressions.

7. Analysis

This chapter will include an analysis of the previously presented results. A discussion will be held for each variable in relation to chosen theories and earlier relevant research. Furthermore, a central purpose of this chapter is to analyse how the prevailing research question can be answered from the key independent variables. As a result, considerable focus will be put on leverage and its relation to profitability. Lastly, an analysis of possible omitted variables will be conducted.

The last chapter presented the empirical results from the regressions. The results were an outcome from the various regression models, from which it became evident that the choice of model affected the results. For instance, the use of OLS regressions resulted in most variables being significant on a 1% significance level. The models were upgraded by using fixed effects which was determined more suitable for the data in this study. Moreover, the FE models were further improved to account for presence of heteroskedasticity and serial correlation by including robust estimations of standard deviations. Lastly, to take potential reversed causality into consideration, the same robust FE models were modified by swapping the regular debt ratios for time lagged ones. Established theories on capital structure used in this study focus to a great extent on the relationship between total debt and profitability. Correspondingly, this analysis will put additional focus on the results of TDA and how it stands in relation to previous research, theories and the research question. It is important to state that the analysis mainly will use terms which do not assume causality. The reason for this is based on the large degree of previous research using basic statistical modelling which tends to generate results that do not claim causality. Thus, the use of causality free terms increases the comparability of the results obtained from this study with earlier empirical results.

7.1 Independent Variables

7.1.1 Total debt to assets - TDA

In exception for the regressions using lagged debt ratios, the overall result shows that a negative relationship between total debt and profitability exists for consulting firms operating in Sweden. This relationship has been significant on the 1% level for all regressions using non-lagged total debt to assets. As mentioned before, extensive research exists on the relationship between TDA and profitability. The negative relationship found in this study is in line with the results found by Ebaid (2009, p. 483), Qureshi and Yousaf (2014, p. 32), Kester (1986, p. 12-13), Khan (2012, p. 257), Nunes et al. (2009, p. 703), and Zeitung and Tian (2007, p. 52).

In contrast to the studies mentioned above, Margaritis and Psillaki (2010, p. 628), Avci (2016, p. 27), Abor (2005, p. 443) and Gill et al. (2011, p. 12) found a positive relationship between total debt and profitability. To interpret, compare and analyse what potentially could explain the differences in results from these studies and this study, it is central to mention the sample and nature of the studies. The former study investigated a sample of French firms from three different manufacturing industries (Margaritis & Psillaki, 2010, p. 622). Avci (2016, p. 27) did similarly examine Turkish manufacturing firms listed on Borsa Istanbul, while Abor (2005, p. 441) used a sample of firms listed on the Ghana Stock Exchange. Gill et al. (2011, p. 8) studied both service and manufacturing firms in the United States. The investigation of manufacturing firms by Margaritis and Psillaki (2010), Avci (2016) and partly Gill et al. (2011) does arguably give room for speculation

regarding differences in results between the manufacturing industry and consulting industry. Indeed, McGahan and Porter (1997, p. 29) found that differences in structural industry contexts may exist and that industry effects can help explain potential variations in profitability. Thus, it is possible that drivers of profitability may vary depending on the industry. Furthermore, it is also reasonable to assume that the manufacturing industry and consulting industry often differ in the composition of capital structure. This is important to highlight as the theoretical predictions presented in this study and earlier research could depend on the industry investigated. Firms active in the manufacturing industry are likely to be capital intensive because of the need for capital heavy investments in equipment and other long-term assets. Consequently, to finance the more capital heavy investments, manufacturing firms may look to raise long-term debt if internal funds are not sufficient. On the contrary, consulting firms are likely to be less capital intensive due to the absence of heavy investments in long-term assets. Due to this, consulting firms may also have less need for financing assets with long-term debt. This statement becomes facilitated when comparing the data of Avci (2016) and this study. The mean total debt to assets is roughly 45% for the manufacturing industry (Avci, 2016, p. 24-25) which is lower than 61,85% found for the Swedish consulting industry in this study. However, apparent differences appear when comparing the composition of short-term and long-term debt. Avci (2016, p. 24-25) found that SDA is 31,9% and LDA 12,17%, while the corresponding ratios of this study are 58,55% and 3,27%. This means that composition of total debt found by Avci (2016) consists of approximately 28% long-term debt, while this study found that long-term debt constitutes roughly 5,3% of total debt. These statistics signal that manufacturing firms indeed seem to finance their assets with a relatively larger proportion of long-term debt than consulting firms. Consequently, it is important to consider which potential effects the differences in debt financing may have on firms and their abilities to generate profits.

Another important aspect of capital intensity that is interesting to consider is the value of assets on the balance sheet. The relatively low capital intensity for consulting firms implies that the book value of total assets is likely to be low due to the absence of costly fixed assets. Instead, the main source of revenues for consulting firms is generated by the consultants, i.e. employees of the firms. Due to employees not being accounted for as assets on the balance sheet, the returns should be relatively high in relation to the book value of assets. Similarly, for manufacturing firms, the opposite phenomenon would be expected. This could in theory mean that a firm from each industry with equal net income can have different ROA because of unequal value of assets on the balance sheet. Although the actual net income alone is not measured for the scope of this study, it is reflected by the ROA. The average ROA for consulting firms in this study is 18,8%, which is notably higher than the 5,05% for manufacturing firms (Avci, 2016, p. 24-25). This implies that consulting firms are more profitable when defining profitability as ROA. However, the previously mentioned difference in size of balance sheets should be kept in mind.

To connect back to the relationship between TDA and profitability and potential explanations to why results differ from earlier research, it is also worth to look into the modelling. As seen from the results in chapter 6, the way of modelling has a substantial effect on the outcome and level of significance. Thus, it is interesting to discuss if choice of models in studies with opposite results potentially can help explain the differences. Gill et al. (2011, p. 7) and Abor (2005, p. 442) used a simple multiple regression model in their studies, which has also been done in this study alone. That alone cannot explain the difference in results. However, neither Gill et al. (2011) nor Abor (2005) has used any additional improved models, such as the robust FE model used in this study. This

increases the risk for these studies to omit potential problems with heteroskedasticity and serial correlation. If robust estimations of standard deviations had been used, the generated relationships might have changed to become less significant or even changed direction. It should also be noted that Gill et al. (2011, p. 7) and Abor (2005, p. 442) used ROE to measure profitability instead of ROA used for this study, which could partly explain the distinguishing results. Avci (2016, p. 23) used both ROE and ROA to measure profitability. Interestingly, Avci (2016, p. 25-26) did like this study conduct Hausman tests but concluded that fixed effects were suitable for ROE, while random effects were more suitable for ROA. Furthermore, the relationship between total debt and profitability had substantially different significances for ROE and ROA, of which only the latter had a relatively low p-value (Avci, 2016, p. 27). Again, this shows that choice of statistical model does matter, and that the use of improved and more robust models in this study is adequate for improving reliability of the results.

As stated in the introduction of this section, the regressions conducted in this study imply that a significant negative relationship exists between total debt to assets and profitability. The empirical results are thus in line with findings of Ebaid (2009, p. 483), Qureshi and Yousaf (2014, p. 32), Kester (1986, p. 12-13), Khan (2012, p. 257), Nunes et al. (2009, p. 703), and Zeitung and Tian (2007, p. 52). This suggests that consulting firms operating in Sweden have higher profitability when their total debt to assets is low. These findings do not support the statement that choice of capital structure is irrelevant (Modigliani and Miller, 1958). Furthermore, the negative relationship between total debt and profitability is not in line with the revised theory of Modigliani and Miller (1963), in which firms are predicted to increase debt levels for maximisation of tax shield advantages to reach higher profitability. The theory of Modigliani and Miller (1963) thus suggests a positive relationship between total debt and profitability, which is also the case for the trade-off theory (Myers, 1984). However, the trade-off theory does instead of suggesting maximisation of debt predict increasing debt levels until benefits of tax shields are offset by costs from financial distress. Yet, for the scope of this study, both theories assume a positive relationship between total debt and profitability, which is what the results will be based on. The results from this study imply that firms primarily should finance their operations with internally generated funds, which leads to relatively low total debt and higher profitability. Hence, the findings suggest support of the pecking-order theory (Myers & Majluf, 1984), in which firms primarily should use internal capital as a source of financing.

As mentioned in the practical method, potential underlying reversed causality is worth discussing. The conclusion drawn above is that TDA has a negative relationship with profitability. However, without any further analysis it is difficult to state which direction the causality has. This means that it could in fact be profitability which affects total debt to a higher degree than the other way around. The authors of this study conducted separate regression models with one year lagged debt ratios to partly avoid this problem. These results showed in contrast to the other regressions that a positive relationship existed. However, this was not significant on the 1% level as opposed to the other regressions including total debt. Due to the assessed importance of reversed causality, a concise discussion on the topic will be presented under section 7.2.

7.1.2 Short-term debt to assets - SDA

In addition to the regressions conducted for TDA, the same regressions were used for short-term debt to assets. As presented earlier, the correlation between TDA and SDA was 0,909 which is high and would be inadequate to include in the same model as they

arguably are close to identical. However, as these variables have been included in separate regression models, the authors believe that the problem is not crucial. Furthermore, potential differences in results between TDA and SDA can reveal interesting implications on the debt-profitability relationship.

The overall result from the regressions show that short-term debt to assets has a significant negative relation to profitability on the 1% significance level. This resulting relationship is in line with the findings of Yazdanfar and Öhman (2015, p. 113), Avci (2016, p. 27), Khan (2012, p. 257), Ebaid (2009, p. 483) and Zeitung and Tian (2007, p. 52) who also found a negative relationship between SDA and profitability. On the contrary, Abor (2005, p. 443) and Gill et al. (2011, p. 10) found a positive relationship between SDA and profitability.

Again, the choice of model can possibly explain the difference in results in previous research. As mentioned before, both Abor (2005, p. 442) and Gill et al. (2011, p. 7) used a simple OLS regression for estimation of the relationships. Arguably, it is possible that the same results would not have been generated if more robust models were utilised. Clearly, the same can be assumed for earlier empirical findings based on OLS models that generated a positive relationship. Still, the usage of more robust models in this study increases the chance of finding reliable results. Thus, it is assessed reasonable to conclude that a significant negative relationship exists between SDA and profitability for consulting firms in Sweden. However, with the high correlation between TDA and SDA, these similar results are not unexpected. Given the fact that short-term debt constitutes 58,55% of total assets, while the total debt to assets is 61,85%, shows that consulting firms in Sweden mainly turn to short-term obligations when financing with debt. The significant negative relationship found in this study supports the pecking-order theory (Myers & Majluf, 1984), which means that consulting firms in Sweden that use less short-term debt have a higher profitability.

7.1.3 Long-term debt to assets - LDA

Long-term debt to assets deviates from the other leverage measures used in this study, as consulting firms in Sweden do to some extent not utilise long-term debt as a source of financing. This becomes evident in the descriptive statistics, in which long-term debt on average only constitutes 3,27% of total assets. The low overall LDA is important to highlight, as it questions its relevance in relation to consulting firms' financing strategy. If the sample used in this study generally does not raise long-term debt, it can arguably become harder to claim its significance of the relation to profitability. This has been taken into consideration by the authors, and consequently, the empirical results should be interpreted with slight caution.

Nonetheless, the empirical results of this study suggest that an insignificant negative relationship exists between LDA and profitability when using the robust model. The relationship was however significant in the other regression models. This relationship is in line with the findings by Yazdanfar and Öhman (2015, p. 113), Abor (2005, p. 443), Avci (2016, p. 27), and Zeitung and Tian (2007, p. 52) who found a significant and negative relationship. Gill et al. (2011, p. 11) did unlike the research articles above find a positive relationship between LDA and profitability, however only statistically significant for firms in the manufacturing industry.

The relationship for LDA is in line with the other leverage measures and implies that increasing long-term debt lowers profitability. Furthermore, firms are ought to finance their activities with internal funds, which supports the pecking-order theory (Myers and

Majluf, 1984). However, the statistical tests do not show a significant relationship when applying the robust model, and the relatively large number of firms with zero long-term debt are noteworthy. For these firms, long-term debt is arguably not of relevance for generating profits, which could be in line with the capital structure irrelevance theorem of Modigliani and Miller (1958). On the other hand, it could be of relevance in firms' decision-making, but is assessed as an inadequate source of financing for maximising profits. In this scenario, the decision to finance with short-term debt over long-term debt is in line with the findings of this study.

Lastly, when incorporating previous years' LDA in the models, the relation to profitability becomes positive and significant on the 1% significance level. This would instead support the trade-off theory (Myers, 1984) and the revised theory of Modigliani and Miller (1963). This shows that the relationship between LDA and profitability is hard to assess. The number of observations with zero long-term debt can possibly explain the variations in results. The opposing results can be an effect of reversed causality which will be further discussed in the next section.

7.2 Analysis of Reversed Causality

As has been discussed briefly before, it is important to consider potential cases of reversed causality. This study has used robust models with time lagged leverage variables to partially handle the problem. Although the authors of this study are aware that more complex actions can be taken to account for reversed causality, they believe the actions taken are adequate for the scope of this study. Furthermore, it should be addressed that the purpose of this study is primarily not to claim causality, but rather the strength and direction of the relationship between two variables. Yet, the authors have assessed a discussion regarding reversed causality as appropriate for increasing the robustness of results and providing transparent contributions toward future research.

All the leverage ratios used in the regression models were significant and negative in relation to profitability at the 1% significance level, except for LDA when applying robust standard errors. These results are reasonable and in line with previous research described earlier. However, the results describe merely the strength of the relationship, and not the direction of the causality. This means it is possible that profitability affects leverage to some extent and not only the other way around. To measure this is difficult but it is reasonable to assume that leverage and profitability affect each other, and that the relationship is not as simple as it may seem. Adding the previous years' debt ratios in the regression models did indeed change the implied relationships to profitability. All lagged debt ratios showed a positive relation to profitability, with only LDA being significant. These results imply that increasing leverage leads to higher profitability, which would be in line with the trade-off theory (Myers, 1984) and capital structure relevance theory (Modigliani & Miller, 1963). The question of why the relationship differs is hard to answer, but a reasonable explanation may lie in the year-to-year change in debt levels. The dependent variable in all regressions was the current year ROA, whereas the main independent variables, TDA, SDA and LDA changed in the last models to the year before. The positive relationship thus suggests that high leverage the year before leads to high profitability the current year, while the negative relationship in the original models suggests that high leverage the current year leads to low profitability the same year. In reality, this could mean that high leverage does lead to higher profitability the upcoming year, but it could also be that total debt levels are decreasing the current year as a result of increasing profitability. For example, a highly leveraged firm year 0 might during year

It becomes prosperous due to new incoming clients and can from increasing cash flows pay off existing debt, lowering leverage. As a result, the firm naturally has a low debt ratio in relation to generated profits for the current year, which leads to a negative relationship between the variables. This is merely a theoretical example and cannot be confirmed based on the scope of this study. Yet, it shows why reversed causality matters, and why the complexity of it is worth mentioning in this study.

Ultimately, in exception for long-term debt, no significant results have been found using time lagged variables. In contrast, the regressions including current year debt ratios which were the main models for this study, showed negative and significant relations to profitability. Thus, it is statistically confirmed that TDA and SDA have a negative relationship with profitability, which is the central conclusion drawn from the analysis.

7.3 Control Variables

Control variables have been incorporated in this study to further explain the drivers of profitability. The choice of variables is based on previous research and the authors' assessment of relevance for this study. In this section a discussion will be held regarding the results from this study in relation to previous research.

7.3.1 Size

The control variable size indicated a mixed result in the regression models. When including size in the OLS regressions the result was insignificant and the null hypothesis could not be rejected. The p-values from the tests showed high numbers, 0,46 for TDA, 0,988 for LDA and 0,435 for SDA which is insignificant on a 1% significance level. This indicates that when applying the simple regression model, the authors cannot statistically confirm that there is any relationship between firm size and profitability. Simerly and Li (2000, p. 41) defined size in the same manner as this study and performed a OLS regression where they found that size have a positive impact on performance. Simerly and Li (2000, p. 40) had a different population for their research which included a sample consisting of 700 large U.S firms from different industries. When comparing the descriptive statistics between the two studies, the mean ROA and size measured over a similar time period of five years is 5,346% and 0.915 for Simerly and Li (2000, p. 43), while it is 18,777% and 1,306 for this study. The difference in mean ROA is large which could be an underlying factor to why the results differ.

When performing a fixed effect (FE) model the result changed. For all three measures of leverage the variable size is positively significant on a 1% significance level and the null hypothesis can be rejected, similarly to Simerly and Li (2000, p. 44) who found a positive significant relationship between size and profitability. Yazdanfar and Öhman (2015) conducted similar research but with a different definition of size and a different regression model. They adapted the usage of 3SLS fixed-effect model to make it more robust (Yazdanfar & Öhman, 2015, p. 110). Their findings are in line with the ones from this study, it showed a positive significant relationship between size and profitability on the 1% significance level (Yazdanfar & Öhman, 2015, p. 115).

The third regression analysis included a fixed effect robust model which showed that on a 1% significance level the relationship between size and profitability has a positive relationship when including long-term debt. The p-value when including short-term debt and total debt are low with values 0,016 respective 0,012. This indicate that there is no statistically significant relationship between size and profitability when the model includes either short-term debt or total debt. However, it may still be argued for the

relevance of this model since the p-values are close to being significant on a 1% significance level. When assigning a fixed effect and robust model the variance is assumed to be constant which may be one of the underlying factors to why the result differs when conducting a fixed effect model and when assigning a fixed effect robust model. Given this, the authors argue that although the results are not statistically significant, the t-statistics are high when testing total debt and short-term debt with values of 2,54 respectively 2,43 compared to long-term debt which has a t-statistic of 2,75. Consequently, the authors argue in favour of the statement that size has a positive relation to profitability.

These findings indicate that larger consulting firms are more profitable. Considering that size is defined as logarithm of employees and consulting firms likely are heavily dependent on their employees, this relationship is logical according to the authors.

7.3.2 Liquidity

Like the variable size, liquidity also showed a mixed result when including the different measures of debt in the regression models. The simple regression model showed a strong positive relationship between liquidity and profitability for the firms. The t-statistics were high for all measures, 4,81 for TDA, 5,27 for SDA, and 10,29 for LDA. This indicated a significant result on the 1% significance level.

When comparing the other two models, the results differed. The fixed effect model showed an insignificant result when including TDA and SDA on a 1% significance level. The t-statistics were close to zero which indicates that there is no relationship between liquidity and profitability. However, when including LDA the t-statistics were high and a positive significant relationship could be found between liquidity and profitability.

The fixed effect robust regression showed a result similar to the fixed effect model. The t-statistics for SDA and TDA showed an insignificant result whereas LDA showed a strong positive relationship between liquidity and profitability. This result might somewhat be explained by many of the consulting firm having low, or no long-term debt.

Previous research also included liquidity in the regression model. Goddard et al. (2005, p. 1278), Qureshi and Yousaf (2014, p. 32) found a positive significant relationship between liquidity and profitability, whereas Bagchi (2013, p. 374) found a negative relationship, which however was not statistically significant. The previous findings are not supported by the findings of this study. Given the varying results between the models, the authors cannot conclude any decisive relationship between liquidity and profitability.

7.3.3 Age

The result for the variable age also varied depending on the regression model used. When testing the OLS model for the relationship between age and profitability the result shows a significant negative relationship on a 1% significance level. The negative relationship indicates that older firms generally are less profitable than younger firms. This result supports the findings by Yazdanfar and Öhman (2015, p. 113).

All three FE models indicate a positive relationship between age and profitability. Even though the t-statistics are too low to be considered statistically significant they are still considered large enough by the authors to be relevant. From the FE model the conclusion can be drawn that there is a positive relationship between age and profitability, however insignificant on a 1% significance level. The positive relationship is in line with the findings of Chadha and Sharma (2015, p. 300).

The result shown from the FE robust model is similar to the result derived from the FE model, with the difference being the t-statistics are lower for the robust model. This result lead to a similar conclusion, that there is a positive relationship between age and profitability.

The three models show a different result which makes it more difficult to draw any general conclusions regarding the relationship. The authors of this paper prefer to look at the FE robust model since it adjusts for effects of serial correlation and heteroskedasticity. From that model, as previously mentioned, a positive but insignificant relationship is found, implying that older firms are generally more profitable. This conclusion is considered logical by the authors since older firms, given that they have satisfied customers, can build a reputation of being a desired consultancy partner which in turn would generate more clients and profits. However, the differing results between the models makes it hard to claim that a specific significant relationship exists.

7.4 Analysis of Omitted Variables

The analysis has shown that relationships for some variables change either direction or degree of significance when different models are utilised. This could mean that certain variables are not optimal for describing profitability or that other variables not included in the model could help explain ROA. Due to this, the authors believe that it is adequate to analyse which potential variables that could improve the explanatory power of the models and if this could change any theoretical or practical implications.

This study has used a quantitative approach for collecting data and answering the research question. Consequently, only observable data from annual reports have been collected, which means that exclusion of qualitative factors were unavoidable for the scope of this study. As consulting firms are largely driven by the consultants, it is likely that qualitative factors exist and could help explain profitability. Although size is included as a measure of number of employees, it does likely not take individual employee factors into consideration. For instance, it is likely that salary, employee benefits, organisational culture and competence development have some form of relationship with profitability of the firm. This could affect the profitability of firms regardless of their size, as such qualitative factors likely differ between firms. Thus, these are examples of factors that could increase the explanatory power of the relation to profitability but were hard to include for the scope of this study. Moreover, if such types of factors would appear to be the prime drivers of profitability, it could lead to the significance or relevance of leverage being smaller than implied from this study.

This study is limited to the relationship between leverage and profitability, and the results can become useful for managers in decision-taking positions. However, the study does not consider how individual managers strategically consider capital structure, or how relevant it is from their perspective. The results from this study could imply that managers actively lower the degree of leverage to increase profitability, but this could also vary from firm to firm. Thus, investigation of managers' perception of capital structure and its relevance could increase the explanatory power of the models and provide a different theoretical perspective on the capital structure relevance. Furthermore, managers in firms with loyal and long-lived client relationships can potentially lead to more stable profits and formation of capital structure, which also could have increased the explanatory power of the models.

Lastly, another important aspect which has not been incorporated in the study is the ownership structure and pay out policy of dividends. This is due to the difficulty of obtaining the data of firm's ownership structures and the value of dividends issued to the owners of the firm. Still, it is worth mentioning, as there might be deviations in firms' degrees of partnerships and dividends issued to owners. Consequently, if consulting firms in theory would issue large dividends to owners because of increasing profits, the amount of internal capital reinvested into the firm would be relatively smaller. Hence, if this would be the case, it would argue against the pecking-order theory of Myers and Majluf (1984) since cash flows would be paid out to owners instead of reinvested in the firm. This would contradict the implications from this study that consulting firms primarily use internal capital to lower total debt and increase profitability.

All the factors mentioned above could potentially have increased the explanatory power of the models used in this study. However, they have not been included due to the difficulty of obtaining or measuring the data. Thus, remaining factors relevant to consider are left to future researchers, which will be discussed under chapter 8. Ultimately, the purpose of this study was to explore the relationship between leverage and profitability, which has been fulfilled.

7.5 Summary of Tested Hypotheses

The analysis has provided conclusions regarding the results in relation to the established hypotheses. Due to the number of regressions used in this study, the results have at times been scattered. This applies mainly to the control variables but was also evident for long-term debt to assets and its relation to profitability. As mentioned before, considerable focus should be put on the robust FE models, as they have accounted for the prevailing heteroskedasticity and serial correlation. However, the authors consider it satisfactory to provide a summary of acceptance or rejection of the underlying hypotheses and provide an overall overview of the tests performed. Thus, a summary of the tested hypotheses and their results can be seen on the next page.

Table 18. Summary of hypotheses

Null Hypotheses	Result OLS	Significance Level
There is no relationship between Total debt and Profitability	Reject	1%
There is no relationship between Short-term debt and Profitability	Reject	1%
There is no relationship between Long-term debt and Profitability	Reject	1%
There is no relationship between Size and Profitability	Cannot reject	1%
There is no relationship between Liquidity and Profitability	Reject	1%
There is no relationship between Age and Profitability	Reject	1%
Null Hypotheses	Result FE	Significance Level
There is no relationship between Total debt and Profitability	Reject	1%
There is no relationship between Short-term debt and Profitability	Reject	1%
There is no relationship between Long-term debt and Profitability	Reject	1%
There is no relationship between Size and Profitability	Reject	1%
There is no relationship between Liquidity and Profitability (TDA)	Cannot reject	1%
There is no relationship between Liquidity and Profitability (SDA)	Cannot reject	1%
There is no relationship between Liquidity and Profitability (LDA)	Reject	1%
There is no relationship between Age and Profitability	Cannot reject	1%
Null Hypotheses	Result FE Robust	Significance Level
There is no relationship between Total debt and Profitability	Reject	1%
There is no relationship between Short-term debt and Profitability	Reject	1%
There is no relationship between Long-term debt and Profitability	Cannot reject	1%
There is no relationship between Size and Profitability (TDA)	Cannot reject	1%
There is no relationship between Size and Profitability (SDA)	Cannot reject	1%
There is no relationship between Size and Profitability (LDA)	Reject	1%
There is no relationship between Liquidity and Profitability (TDA)	Cannot reject	1%
There is no relationship between Liquidity and Profitability (SDA)	Cannot reject	1%
There is no relationship between Liquidity and Profitability (LDA)	Reject	1%
There is no relationship between Age and Profitability	Cannot reject	1%
Null Hypotheses	Result Lagged	Significance Level
There is no relationship between Total debt and Profitability	Cannot reject	1%
There is no relationship between Short-term debt and Profitability	Cannot reject	1%
There is no relationship between Long-term debt and Profitability	Reject	1%
There is no relationship between Size and Profitability	Cannot reject	1%
There is no relationship between Liquidity and Profitability	Cannot reject	1%
There is no relationship between Age and Profitability	Reject	1%

8. Conclusion

This chapter will summarise and highlight important aspects of the results and analysis. Furthermore, theoretical and practical contributions will be presented, followed by social and ethical considerations. Lastly, suggestions for future research will be discussed.

8.1 Conclusion of the Study

The main purpose of this study was to investigate if any relationship exists between leverage and profitability for management consulting firms operating in Sweden. Furthermore, the study is limited to firms with a turnover of at least 10 million SEK, 10 employees and the years 2012-2016. The fundamental reason for including leverage as a determinant of profitability is founded in the established theories on capital structure and profitability. Accordingly, the results from this study have been analysed in relation to chosen theories on capital structure, namely the irrelevance and relevance of capital structure (Modigliani & Miller, 1958, 1963), the trade-off theory (Myers, 1984) and pecking-order theory (Myers & Majluf, 1984). Total debt to assets (TDA) is used as the main independent variable, while short-term debt to assets (SDA) and long-term debt to assets (LDA) also are included for the scope of this study.

The results show that a negative linear and significant relationship exists between total debt and profitability. Consequently, consulting firms in Sweden with a lower degree of leverage are generally more profitable. This implies that consulting firms are ought to lower total debt levels and primarily use internal funds for financing to achieve higher profitability. Thus, the findings of this study are in line with the pecking-order theory of Myers and Majluf (1984). Short-term debt and long-debt also show a negative relation to profitability, even though the latter is not significant when applying the robust model.

To account for other drivers of profitability, size, liquidity and age have been included in the models. Size has in exception for the OLS models shown a positive relation to profitability. Although it was not significant in all robust models, the corresponding p-values are low enough to claim that the positive relationship is reliable. This implies that larger consulting firms are in general relatively more profitable. For liquidity, the results differ notably depending on model used. While a positive relation has been found between liquidity and profitability in the OLS models and the other LDA models, scattered and insignificant results have been found in the remaining models. Due to the varying results between models, the authors have assessed that a specific relationship cannot be assumed based on the empirical results. Lastly, age had based on the OLS models a significant negative relationship with profitability, while opposite but insignificant results were found in the improved models. As for liquidity, the varied results do not provide enough empirical evidence to reject the hypothesis that there is no relationship between age and profitability.

Reversed causality has also been taken into consideration by using time lagged debt ratios. The model including the lagged leverage shows a positive but insignificant relationship between leverage and profitability. Thus, the negative and significant relationship found earlier is assessed as reliable.

Returning to the research question of the study: *Is there a relationship between leverage and profitability for management consulting firms operating on the Swedish market?*

Yes, there is a negative, linear and significant relationship between leverage and profitability for management consulting firms in Sweden. This means that management consulting firms with a lower degree of leverage generally have higher profitability.

8.2 Theoretical and Practical Contributions

The aim of this study is not to generalise the findings for the entire market regarding the relationship between leverage and profitability since the scope of this thesis is narrow and focuses on one industry. The aim is instead to generalise findings for consulting firms operating in Sweden within established delimitations. The findings of this paper intend to fill a gap in the science for an industry which is less capital intensive and heavily driven by human capital. The theoretical contributions are how leverage, when measured in three different debt ratios drive profitability, and how the relationship connects to established theories on the subject. Furthermore, this study can provide additional insights to existing theories by adding the element of low capital intensity. This can imply that different interpretations of theories on capital structure are suitable when the composition of balance sheets are widely different or when industries have varying characteristics. Moreover, this study examines an industry which has gone relatively unnoticed in terms of research, more so within finance. This study contributes with insights on capital structure and profitability in an industry that is likely to continue grow and prosper in the future. Hopefully, this will in turn lead to more researchers investigating the industry, and in that case this study will provide relevant insight into capital structure and profitability in the management consulting industry in Sweden.

This study is written from the managers perspective which allows the authors to aim the practical contributions towards the management of consulting firms. The general practical contribution is a greater understanding on the relationship between leverage and profitability. The findings from this research intend to assist managers in their decision-making process when deciding upon the level of debt to maximise the profitability. Moreover, for managers who perhaps do not consider capital structure strategically, this study can serve as an indicator that capital structure matters and is worth involving in the managerial process. This study has concluded that there is a negative relationship between leverage and profitability which could help managers reconsider their current capital structure and work their way towards a lower degree of leverage to potentially increase profitability.

8.3 Social and Ethical Considerations

The authors of this study believe that this study is not subject to any ethical dilemmas. The data retrieved is gathered from a secondary source which is available to the public and does not contain any sensitive information. The secondary data is derived from annual reports which the firms are obligated to disclose. This study has not engaged in any questionnaires or similar methods that involve personal information or opinions which may be considered sensitive.

Regarding the social dilemmas the result found in this study is that leverage has a negative relationship with profitability. Managers could conclude that these results imply minimisation of debt at all times. Furthermore, this could lead to avoidance of investments

in positive NPV projects if debt is the only financing option. Naturally, this would not be beneficial for the firm, and is not what the pecking-order theory suggests.

The same reasoning applies if managers would omit potential profitable investments from excess cash flows to instead pay off existing debt levels. Moreover, managers may choose to repay debt at the expense of dividends. By doing so the firm prioritise the debtholders over shareholders which in turn can initiate conflicts.

Furthermore, this study along with previous research put the main focus on how to maximise profitability. This is obviously beneficial for firms from a financial perspective, but it may also cause some complications. For instance, firms may put aside environmental or other important societal factors if this is more expensive than other alternatives. In this case, minimisation of expenses to increase profits may have a negative effect on social aspects of the firm and the society.

Moreover, as this study concludes that internal funds are the recommended financing option for maximisation of profitability, then potential avoidance of debt can negatively affect the consultants working for the firm. In a scenario where a manager needs financing for an investment but avoids debt, the reasonable source of financing will become internal funds, which are mainly generated by the consultants. Consequently, the manager may put pressure on the consultants to increase their workload and generate more revenue to the firm. This is socially inadequate as such factors could lead to increased stress, unsatisfied employees and a higher rate of sick leave. Paradoxically, if pressure is put on employees and they end up quitting their job or call in sick, they will no longer be able to generate revenue which directly counteracts the manager's aim to increase profitability.

Ultimately, it is not recommended that the results of this study are interpreted and utilised to the extreme. Instead, managers should be aware of the leverage-profitability relationship and take reasonable actions thereafter.

8.4 Suggestions for Future Research

It is recommended that future researchers investigate factors related to the topic of consulting firms and capital structure that have not been covered in this study. The regressions led to scattered results for some control variables, which can indicate that there are other variables relevant to include for determining profitability. The effect of ownership structure is a relevant aspect to consider for future research, which has not been included in this study due to the difficulty of getting hold of the data and lack of time. It is likely to assume that the degree of partnerships and equity holdings differ from firm to firm. This would be interesting to investigate, as it also means that firms probably pay dividends to different extents. Dividends are interesting to examine, because they do likely not only have some form of relationship with profitability, but they could also provide arguments against the pecking-order theory if profitable firms pay out large dividends to partners instead of reinvesting internal funds in the operations.

Furthermore, future research should investigate more qualitative factors that are hard to extract from annual reports. As consulting firms are highly dependent on human capital, it is also likely that factors such as organisational culture, competence development, salary and employee bonus programs can affect employees' abilities to generate revenue and increase profitability. Consequently, qualitative data collection such as deep interviews with employees and managers would likely help explain the relationship derived in this study and increase the overall explanatory power in the modelling. In addition, it would be interesting from a strategic perspective to investigate how managers

in the industry perceive capital structure and how relevant it is for decision-making and increasing profits.

Lastly, it is recommended to compare data over more than one time period to see if recessions and economic booms can affect the leverage-profitability relationship. Indeed, it is likely that the clients of consulting firms are sensitive to changes in the economy, which will probably affect their investments in consulting services. Moreover, it is recommended to compare different countries to examine if this is subject to any changes in results.

9. Quality Criteria

This chapter will describe the relevant quality criteria. A discussion will be held whether the study is considered valid, reliable and generalisable.

9.1 Validity

Validity is defined as the ability to measure what is intended to be measured, which is divided into two categories, external validity and internal validity (Eriksson & Wiedersheim-Paul, 2014, p. 62). External validity is related to generalisability, and whether the result can be generalised when conducting similar research on a representative sample (Bryman & Bell, 2013, p. 43). For this study the criteria for external validity are considered to be met since data has been gathered from a reliable secondary source. The definitions for the included ratios and variables used in this study correspond to the definitions used by the secondary source, which further facilitates the statement that this study is considered valid.

The second category, internal validity is related to causality (Bryman & Bell, 2013, p. 42). Internal validity is described as whether the relationship between two or more variables hold (Bryman & Bell, 2013, p. 42). The issue regarding causality have been mentioned previously, but the purpose of this study is not to fully find which variable that affects the other. Instead the purpose is to find if there is a relationship or not, and whether that relationship is positive or negative. Due to the stated purpose, the issue regarding internal validity become less relevant, and the authors consider this research to be valid. It should also be mentioned that the authors have taken actions to consider reversed causality, which also contributes to the claim that the research is valid.

9.2 Reliability

Reliability raises the question whether other researchers would find the same result and conclusions if the study were to be repeated (Eriksson & Wiedersheim-Paul, 2014, p. 63). Reliability also concern the issue of reliable and trustworthy measures. To consider the study to be reliable it should be independent of the researcher, and also the examined units (Eriksson & Wiedersheim-Paul, 2014, p. 63-64). The examined units in this case being consulting firms operating on the Swedish market.

Bryman and Bell (2013, p. 41) describe the term reliability as the study being repeatable and that the measure of a concept is consistent. Reliability is extra relevant when the authors are conducting a quantitative study (Bryman & Bell, 2013, p. 41).

Since the data have been gathered from a secondary source which is based on annual reports from the selected firms this study is considered highly reliable in the sense that the information is easily accessible and available for the next researcher looking to investigate the same topic. If some other researcher were to examine the relationship between leverage and profitability for consulting firms the result should therefore be similar. However, through this study it has become evident that the choice of statistical model can have a large effect on the outcome. The inclusion of improved modelling has been central for this study, as it has led to avoidance from rash interpretations of the results. Moreover, the authors argue that this has led to a high degree of robustness, which arguably differs from some earlier research which merely employs simple regression models. However, this also means that future researchers must employ the same type of modelling to achieve similar results. Still, the perceived increase in preciseness of results

are deemed important for the reliability of this study. If for some reason future researchers would like to utilise only simple modelling for examining the same purpose as in this study, results from such models are also provided in chapter 6.

One factor that could decrease reliability is the manual filtering of SNI-codes which potentially could cause coverage error. This could lead to some firms of the sample being different if the study was replicated. However, the authors of this paper find this unlikely to affect the results. Ultimately, the authors feel that the results from this study are reliable.

9.3 Generalisability

The third quality criterion is to which extent the findings are generalisable, or if the findings are only relevant for the study (Eriksson & Wiedersheim-Paul, 2014, p. 145). Usually researchers who chose a smaller population can examine the entire population, whereas the larger the population gets, the harder and more resource demanding the process becomes (Eriksson & Wiedersheim-Paul, 2014, p. 145). The sample used in this paper reflects the population for the study. However, since the population contain delimitations for the consulting firms it is not possible to generalise the findings for all consulting firms in Sweden, only for those who fit into the scope of this study. Still, due to the limited number of management consulting firms in Sweden, the results are likely to reflect the whole industry. Listed firms are an example of firms that are not incorporated in this study and it is thus hard to generalise the findings of this study to those firms.

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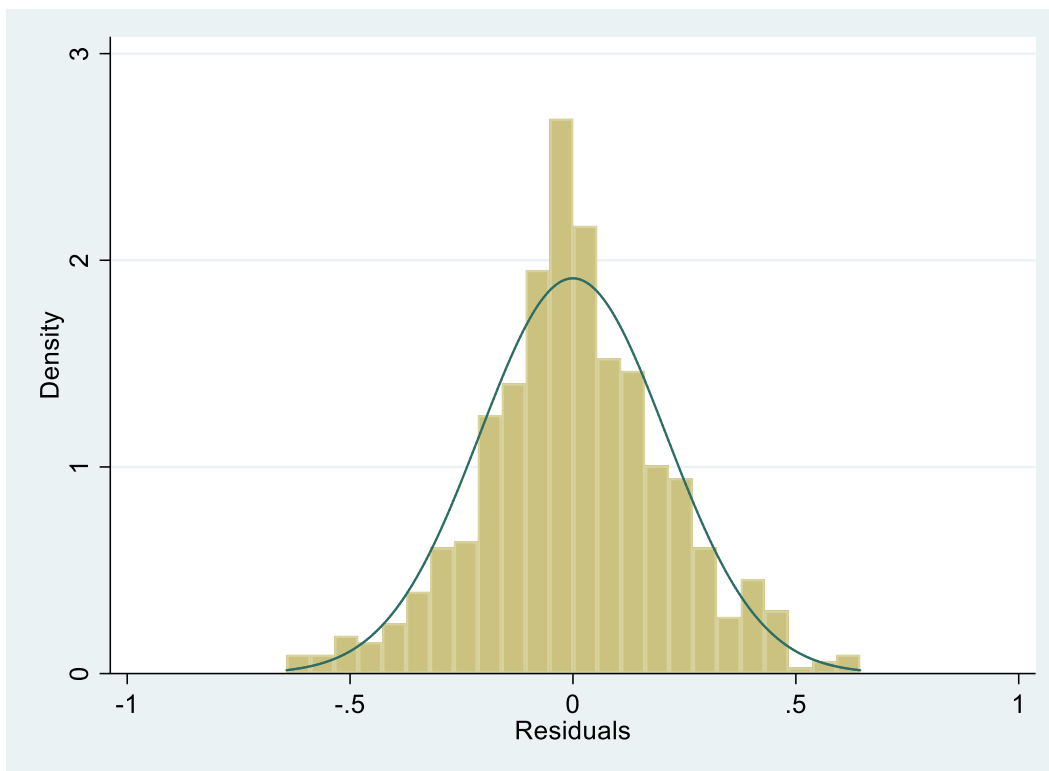
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Appendix

Appendix 1. Histogram indicating approximately normal distribution



Appendix 2. Minimum and maximum values before and after Winsorized adjustment

	All Observations		Extreme values excluded	
	Min	Max	Min	Max
ROA	-1,77	0,961	-0,362	0,649
TDA	0,189	1,156	0,243	0,986
SDA	0,018	1,129	0,204	0,982
LDA	0	0,607	0	0,385
Size	0,301	2,358	0,588	2,161
Liquidity	0,018	9,706	0,594	4,045
Age	1	82	2	33



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