The Impact of Financial Performance on SMEs Utilization of Trade Credit:
A Descripto-Explanatory Study of the Swedish Market

Authors: Martin Axelsson
Filip Lundin

Supervisor: Catherine Lions
Abstract

Debt and financial leverage have for long been a well debated topic in managerial finance since the revolutionizing theories developed by Modigliani & Miller. Researchers have for many consecutive years reviewed the relationship between the choices of financing and its impact on financial performance. However, many of the theories developed have gained critique due to their limited applicability to small- and medium-sized enterprises, since they often neglect market imperfections. More specifically, small- and medium-sized enterprises (SMEs) have fewer available sources of funds compared to larger corporations, making existing traditional theories of capital structure inadequate. They thus have to turn to more alternative sources of funding, namely trade credit. This implies the possibility of a reverse causation where capital structure may be a byproduct of financial performance for SMEs.

This field is not sufficiently researched yet, in particular with regards to the Swedish market. Hence, the goal of this degree project is to fill an existing research gap that concerns the impact of financial performance on the usage of trade credit for SMEs based in Sweden. Empirical evidence about SMEs financing decisions forms the basis for answering the research question, which asks: How does the financial performance of SMEs in Sweden affect their usage of trade credit?

For this purpose, the investigation builds upon a five-year time frame (2010-2015) where approximately 19 910 Swedish SMES comprise the scrutinized sample population. Certain criteria have been defined in order to establish the population, allowing the authors to maneuver this degree project accordingly.

In order to examine the relationship between financial performance and its effect on the usage of trade credit, different financial performance indicators are considered and statistically analyzed through a multiple regression model. Additionally, other determinants of capital structure are utilized as control variables to reinforce the explanatory power. Based on 115 091 observations, the majority of outcomes reveal a negative relationship between Swedish SMEs financial performance and their usage of trade credit. Nevertheless, positive relationships are observed with regards to return on equity, long-term debt-to-equity and size. Essentially, the study is able to answer the given research question and demonstrate that financial performance affects SMEs’ usage of trade credit. Additionally, the findings demonstrate that traditional capital structure theories poorly explain small-and medium-sized enterprises financing decisions. Conclusions are of great benefit for SMEs’ managers in search of optimal capital structure.

Keywords:
Trade credit, financial performance, SMEs, capital structure, pecking order, alternative financing, traditional debt, market imperfections, information asymmetry, Sweden
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Martin Axelsson

Filip Lundin
# Table of Contents

Abstract .......................................................................................................................... II

Acknowledgements ........................................................................................................ III

1. Introduction .................................................................................................................. 1
   1.1 Problem background ............................................................................................. 1
   1.2 Research gap ......................................................................................................... 4
   1.3 Research question ................................................................................................. 4
   1.4 Purpose .................................................................................................................. 5
   1.5 Theoretical and Practical Contributions ............................................................... 6
   1.6 Delimitations ......................................................................................................... 7
   1.7 Disposition ............................................................................................................ 8

2. Research Methodology ............................................................................................... 10
   2.1 Choice of Topic and Preconceptions ................................................................. 10
   2.2 Research Philosophy ......................................................................................... 11
      2.2.1 Epistemology .................................................................................................. 11
      2.2.2 Ontology ....................................................................................................... 12
   2.3 Research Approach ............................................................................................. 13
   2.4 Research Design .................................................................................................. 14
   2.5 Research Strategy ............................................................................................... 15
   2.6 Time Horizon ....................................................................................................... 18
   2.7 Research Method ............................................................................................... 19
   2.8 Literature & Data sources .................................................................................. 20
   2.9 Source critique ..................................................................................................... 21
   2.10 Summary Methodology .................................................................................... 23
   2.11 Ethical and Moral Considerations ..................................................................... 24

3. Theoretical frame of reference .................................................................................... 27
   3.1 Market imperfections ......................................................................................... 27
   3.2 Capital Structure ................................................................................................ 28
      3.2.1 Traditional Financial Management Theories .............................................. 29
      3.2.2 Non-traditional theories .............................................................................. 36
      3.2.3 Determinants of Capital Structure ............................................................ 39
   3.3 Trade Credit ......................................................................................................... 42
      3.3.1 Neoclassical Theories of Trade Credit ...................................................... 43
      3.3.2 Explicit costs .................................................................................................. 45
      3.3.3 Implicit costs .................................................................................................. 46
      3.3.4 Trade Credit and Taxes ............................................................................. 46
   3.4 Financial Performance ......................................................................................... 48
      3.4.1 Return on Sales ............................................................................................ 48
      3.4.2 Return on Assets ........................................................................................ 49
      3.4.3 Return on Equity ........................................................................................ 50
      3.4.4 Debt-to-Equity Ratio .................................................................................. 51
      3.4.5 Cost of Debt ................................................................................................ 51
   3.5 SME Financing ..................................................................................................... 52
      3.5.1 SMEs Choice of Financing ......................................................................... 52

4. Practical Research Method ......................................................................................... 54
   4.1 Population & Sampling ....................................................................................... 54
   4.2 Data Sources & Access ....................................................................................... 56
   4.3 Research Variables .............................................................................................. 57
      4.3.1 Dependent & Independent Variables .......................................................... 57
      4.3.2 Control Variables ......................................................................................... 58
List of Figures

Figure 1. Summary of Methodology .................................................................23
Figure 2. Modigliani & Miller Proposition II without Corporate Taxes. ..............30
Figure 3. Modigliani & Miller Proposition II with Corporate Taxes .................31
Figure 4. The Static Trade-Off Theory of Capital Structure .............................32
Figure 5. The Optimal Amount of Debt and the WACC ..................................33
Figure 6. Distribution Histogram: TC excluding outliers. ...............................69
Figure 7. Distribution Histogram: TC excluding outliers. ...............................69
Figure 8. Linearity assessment: GM including outliers. .....................................71
Figure 9. Linearity assessment: COD including outliers ....................................72
Figure 10. Distribution Histogram: Residuals including outliers .......................74
Figure 11. P-P Plot: Residuals including outliers ............................................75
Figure 12. Residual scatterplot: Including outliers ..........................................75
Figure 13. Linearity assessment: GM excluding outliers ....................................77
Figure 14. Linearity assessment: COD excluding outliers ...............................78
Figure 15. Distribution Histogram: Residuals excluding outliers .....................80
Figure 16 P-P Plot Residuals: excluding outliers .........................................80
Figure 17. Residual scatterplot: excluding outliers .........................................81

List of Tables

Table 1. European Commission’s definition of SME ........................................2
Table 2. Variable Coding ..................................................................................62
Table 3. Correlation interpretation ..................................................................66
Table 4. Descriptive statistics ..........................................................................68
Table 5. Pearson Correlation: Including outliers .............................................73
Table 6. VIF statistics: Including outliers .........................................................74
Table 7. Multiple Regression Output: Including Outliers ...............................76
Table 8. Pearson Correlation: Excluding outliers ..........................................79
Table 9. VIF statistics: Excluding outliers .......................................................79
Table 10. Multiple Regression Output: Excluding outliers ............................82
Table 11. Multiple Regression Output: Excluding COD and outliers ..............82
Table 12. Multiple Regression Unstandardized Coefficients ............................83
1. Introduction

This chapter constitutes the foundation of the degree project. It covers the problem background, the research gap, research question, purpose, theoretical and practical contribution as well as the delimitations of the study. The aforementioned enhances the philosophy surrounding the chosen field, making it conceivable to grasp the reasoning for choosing it.

1.1 Problem background

Debt and financial leverage have for long been a well debated financial topic and is a frequently discussed issue in managerial finance, mostly regarding the relationship between capital structure and firm performance (Darush & Öhman, 2015, p. 103). This relationship has been discussed heavily for decades, especially in regards to Modigliani & Miller’s propositions, with many divided opinions in the matter. In addition to this discussion, Jensen showed in 1986 that debt financing could have a disciplinary impact on ownership and management if the two are separated, often being the case in large corporations. Taking on debt financing could increase the pressure on managers, encouraging them to perform more efficiently and reduce moral hazard behavior.

On the other hand, Jensen (1986) also states that the effect of debt financing on small firms, namely small- and medium-sized enterprises (SMEs), could have a contradictory impact and lead to inefficiency. Agency cost is closely related to the subject, and is a common friction that can arise when management and ownership are not separated. This potential conflict between shareholders and creditors is more likely to arise among SMEs, since the vast majority of them do not separate the two functions. Hence, taking on debt as a source of financing could jeopardize the independence of the firm, and the managers’ control over it (Darush & Öhman, 2015, p. 103). Further on, Fama and French (2002) also states that excessive debt leads to higher agency costs, implying a negative association between debt ratio and firm profitability. To avoid these types of hazards, SME managers tend to follow the hierarchy of the pecking order theory (Myers & Majluf, 1984).

Many of today’s SMEs are family firms where management and ownership are combined, which in turn will create obstacles larger enterprises do not encounter. This has its origin in that it is often necessary to separate management and ownership in order to make efficient decisions for stakeholders. Darush & Öhman (2015) nevertheless showed that the vast majority of Swedish SMEs do not separate these two functions, implying that previously developed models are not directly applicable. As a consequence, a research trend has developed over time focusing on SMEs and among others, scrutinizing, the issue of capital structure and alternative financing decisions.

SME is a complex concept to find a consensual definition of in terms of non-numerical characteristics. Most commonly, SMEs are seen as the major source of work opportunities, keeping the competitiveness high, and developing as well as adapting new technologies (European Commission, 2003). Furthermore, they might be seen as “the little people”, who have scarcer resources in terms of economies of scale, funding, and managerial experience. Even though they are in the shadows of the large corporations, they make society function and are the most important enterprises in the economy.
The hard cut numerical definition of an SME according to the European Commission, which is applied in Sweden (Tillväxtverket, 2016), can be found in Table 1 below.

<table>
<thead>
<tr>
<th>Firm Size</th>
<th>Revenue</th>
<th>Number of Employees</th>
<th>Total Assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro-Sized</td>
<td>≤ €2 million</td>
<td>&lt; 10</td>
<td>≤ €2 million</td>
</tr>
<tr>
<td>Small-Sized</td>
<td>≤ €10 million</td>
<td>&lt; 50</td>
<td>≤ €10 million</td>
</tr>
<tr>
<td>Medium-Sized</td>
<td>≤ €50 million</td>
<td>&lt; 250</td>
<td>≤ €43 million</td>
</tr>
</tbody>
</table>

Table 1. The European Commission's definition of SME

Source: Adaption European Commission, 2015.

As a matter of fact, SMEs have limited access to traditional debt. Size is clearly a handicap since the access to main sources of capital is structured in such a way that large firms have easier access to it. In particular, transaction costs associated with outside financing are likely to depend on size, implying higher transaction costs for SMEs (Petersen & Rajan, 1994; Wald, 1999). Consequently, as expressed by Huyghebaert et al. (2007, p. 437), smaller firms tend to be more reliant on alternative sources of finance, especially trade credit.

Trade credit can be defined as a delay between the delivery of goods or services by a supplier and their payment. For a seller this represents an investment in accounts receivable, while for a buyer it represents a source of financing, classed under accounts payable (Garcia-Teruel & Martínez-Solano, 2010, p. 215). The existence of trade credit is not only important for SMEs to use as a financing tool, it is also important for firms to use as a sales tool. It creates operating efficiencies as it separates the exchange of goods and the payment, which in turn creates more flexibility to meet variations in demand (Emery, 1987, p. 220). Furthermore, the usage of trade credit may stimulate sales in the sense that it creates long-term relationships between supplier and customer (Garcia-Teruel & Martínez-Solano, 2010, p. 2016). As it is a sales- and financing-tool, it is beneficial for both parties to enlist the usage of trade credit. It can also be seen as a signalling mechanism from the supplier to offer trade credit. Mainly due to the indication of quality, since it grants the customer the convenience of assessing the quality of the product sold before payment is due (Lee & Stowe, 1993; Long et al., 1993; Smith, 1987).

It can be assumed that most people view financial leverage as traditional debt outstanding (i.e. loans, notes, bonds, certificates, mortgages, and leases), easily accessible for large corporations. Traditional debt is many times the cheaper alternative of debt. Solely based on the explicit cost for firms seeking financing, traditional debt should be preferred compared to alternative financing (i.e. trade credit) (Huyghebaert et al., 2007, p. 436). However, the implicit costs of traditional debt have to be considered as well, which can be considered high. As financial institutions tend to follow a strict liquidation policy when debtors face financial distress, the ultimate price to pay could be the liquidation of the entire firm (Huyghebaert et al., 2007, p. 436).

A popular substitute for the more traditional debt granted by financial institutions is trade credit, which many SMEs rely on. However, trade credit is considered to be an expensive type of debt. The most frequently used credit term is “2/10 net 30”, which equals an implicit interest rate of 43.9 % (Huyghebaert et al, 2007, p. 435). On the other hand, contradictory to banks, suppliers of trade credit have an implicit equity stake in
their customers. Therefore, suppliers tend to be more willing than banks to renegotiate their claims, or even grant additional debt when debtors are in financial distress (Petersen & Rajan, 1997). To put it in other words, suppliers may be willing to recognize the defaulted debt even when the firms’ going concern is exceeded by its liquidation value (Huyghebaert et al., 2007, p. 436).

Moreover, in terms of financial motives, trade credit can be used as a signalling mechanism for SMEs who have a hard time obtaining traditional debt, since trade credit transmits a lot regarding a firm's creditworthiness (Biais and Gollier, 1997). The difficulty of obtaining traditional debt exists because of their limited access to capital markets (Petersen & Rajan, 1997). This limited access can be explained by information asymmetry, due to the less transparent character of SMEs. Which in turn raises the monitoring cost for capital providers and making SMEs less favorable recipients of financing (Ang, 1992; Berger & Udell, 1998; Michaelas et al., 1999). These external capital provisions for SMEs are also affected negatively by their greater operational and default risk, arising from what typically is seen as limited business diversification (Ang, 1992). As a result of the aforementioned hurdles the finance continuum of SMEs is restricted to internal funds as the main source of financing (Berger & Udell, 1998; Petersen & Rajan, 1997). Not only does it limit SMEs financing opportunities, but it also leaves them with little or no credit history that fund providers factor while pricing the loans. Evidently resulting in a higher cost of borrowing, a cost that many SMEs find difficult to absorb (Raju & Rajan, 2015). Hence the usage of external finance, especially bank finance is quite limited (Beck et al., 2008) and SMEs therefore have to rely more on short-term debt.

In consequence to the foregoing, trade credit is particularly important to SMEs since it can be considered as a substitute to create financial leverage (Ogawa et al., 2011, p. 101). In spite of this crucial reasoning the majority of previous studies focusing on the determinants of trade credit granted, and its use as a financing source, have focused on large firms (see for example Cheng & Pike, 2003; Deloof & Jegers, 1996, 1999; Long et al., 1993; Pike et al., 2005). This is of concern as SMEs around the world represent the majority of firms, both in terms of GDP and employment (Forte et al., 2013, p. 349). No other applies for the chosen area of this study, namely Sweden, where SMEs account for 99% of all firms and employ 70% of the labor force (Statistics Sweden, 2011).

In conclusion, Modigliani & Miller (1958) states that the choice of financing is irrelevant and that the performance of the firm is unaffected by it. They later revised their statement by claiming that firms can gain benefits from tax-deductible interest payments, by increasing the amount of debt in their capital structure (Modigliani & Miller, 1963). These suggestions are based on that there is a world with perfect capital markets. However, circumstances in the real capital markets are more complex than those underlining the assumption made by Modigliani & Miller. More accurately, financial markets are imperfect and associated with information asymmetry, agency cost and moral hazards (Jensen & Meckling, 1976; Greenwald et al., 1984; Myers & Majluf, 1984; Stiglitz, 1988; Greenwald & Stiglitz, 1993). Further on, their views have been questioned due to their limited applicability to small firms (Grabowski and Mueller, 1972; Chaganti et al., 1995) or whether or not the gains of tax-deductible interest payments can outweigh the cost of borrowing.
This gives rise to the question if the choice and type of financing actually can be connected to financial performance, and if it is applicable to SMEs. The financial performance of SMEs is a riveting metric to examine, as it often mirrors what types of financing a firm can secure. The better the firm is performing financially, the more likely it is to access a wider spectrum of financing sources.

1.2 Research gap
There has been quite a substantial amount of research done regarding the field of trade credit, however, the focus has been more on how larger corporations in other countries than Sweden, use it as a financial tool (see for example Cheng and Pike, 2003; Deloof and Jegers, 1996, 1999; Long et al., 1993; Pike et al., 2005; Garcia-Teruel & Martinez-Solano, 2010). General findings within additional studies show that debt financing negatively influence firm performance (Darush & Öhman, 2015; Rajan & Raju, 2015; Rodríguez-Rodríguez; 2006). Despite the magnitude of research surrounding the subject, no information presents the possibility of a reverse causation between trade credit and financial performance. Implying that it is possible that causation runs in the opposite direction. Essentially, trade credit may be a byproduct of financial performance.

As foregoing arguments indicate, the focus of previous research has almost ignored SMEs. Descending from that Modigliani & Miller’s capital structure theories are less applicable to small firms (Grabowski and Mueller, 1972; Chaganti et al., 1995). This in turn opens up for further research to be conducted in the area regarding capital structure for SMEs. Furthermore, if some light can be shed upon the “perfect” capital structure of smaller firms it will be a great contribution to the existing literature in the area. Furthermore, SMEs represent the majority of firms and are also the largest employers and contributors to GDP in most countries in the world, with Sweden being no different. SMEs can be considered the backbone of the Swedish economy as they represent 99% of all enterprises in Sweden and employs 70% of the Swedish labor force. Therefore, it is crucial to identify the type of financing these firms use and what the underlying determinants are.

In conclusion, the research contribution will be regarding if a reverse causation exists. Essentially, the research aim is to establish if the relationship between financial performance and trade credit runs in the opposite direction, from what has formerly been reviewed. Moreover, it wishes to contribute to the existing literature regarding capital structure of the firm, especially SMEs.

1.3 Research question
Deriving from the research gap, it is evident that there is an existing shortage of scrutinization regarding the subject of how trade credit is affected by SMEs performance in Sweden. The majority of research carried out is on large corporations, in different countries, and the most common approach suggests that variations in trade credit may cause differences in performance. It is possible, however, that causation runs in the opposite direction. Trade credit may be a byproduct of performance. Based on, and in line with the aforementioned, the research question presented will be the following:

*How does the financial performance of SMEs in Sweden affect their usage of trade credit?*
1.4 Purpose
The principal purpose of this study is to establish, and assess, an original approach in the search for causality between SMEs’ financial performance and their usage of trade credit. However, the purpose of the study will differentiate itself, as the aim is to investigate if the chain of causality is reversed compared to previous research on the topic. To achieve this ambition, the study seeks to scrutinize what effect the financial performance of an SME has on the usage of trade credit. The purpose of this study is to use financial performance as the explanatory factor even if it might not be intuitive to most people, but the reason behind it is more logical than what might be assumed. In order to fulfill the abovementioned purpose, financial performance has to be examined in convergence with the usage of trade credit.

Additionally, when examining the research question the intention is to decompose the effect financial performance has on trade credit usage, when put in convergence with elements affecting external financing access. The utilization of these elements and the overarching purpose is to investigate if they could have a higher explanatory power on the usage of trade credit. The elements of interest are, namely, industry affiliation, age, and size. Examining industry affiliation has the purpose of controlling if industry has an effect on trade credit usage.

When elaborating further on these elements, age has been considered. The purpose to account for age when decomposing the effect of financial performance on trade credit usage, is to detail the characteristics that come with age. It is of utmost importance to consider age, as with age come more beneficial characteristics in terms of gaining access to external sources of financing. These characteristics are particularly; reduction in information asymmetry and the consistency with the pecking order theory of a limited need for external finance later on in the business lifecycle. Basically, admitting for age will impede the hazard of ignoring the level of trade credit usage in relation to the maturity of the SME.

SMEs are considered to be relatively small-scaled when accounting for size, hence the inclusion of it as an element might seem quite illogical. The purpose behind the utilization of it is nevertheless straightforward. The European Commission's classification of what determines an SME is quite immense, and incorporates companies that differ widely in terms of size. This is of concern as transaction costs associated with outside financing are likely to depend on size, implying higher costs for smaller firms. This suggests that relatively larger SMEs gain enhanced access to preferred long-term financing. It is therefore of importance to consider size when investigating if there is a difference in trade credit usage among observed SMEs, and if it matters in the capital structure decision.

Concluding, the study has an inescapable purpose as it aims to decompose financial performance into several elements and test for reversed causation. Furthermore, the purpose is to administer an understanding in a readable manner, which ultimately fulfills the overall purpose of exclusive research improvement.
1.5 Theoretical and Practical Contributions

The theoretical contribution of the research will be to further increase the knowledge about capital structure, more specifically the use of trade credit as a component of it. In accordance with the purpose, the investigation will extend the knowledge concerning financial performance determinants and how they affect the usage of trade credit as a financing source. This empirical research will also contribute to, and extend, the knowledge on how variables that are indirectly associated with financial performance affect the usage of trade credit. In particular, tests will be conducted on whether financial performance determinants can explain the level of trade credit usage.

In addition to the abovementioned, this study could shed some light upon what could be considered to be the optimal level of financial performance in relation to capital structure. This would be a contribution to existing theories such as the trade-off theory and the pecking order theory. Both theories try to define and explain what is to be considered the optimal capital structure and how to finance it. The mentioned theories indicate that financial performance seems to have a strong correlation with how companies decide to finance their capital structure.

However, these theories are more likely to be applicable to large corporations rather than SMEs. This study will thus not only contribute to financial literature per se, it will also shed some new light upon, and contribute to existing SME literature. More precisely, the study will try to explain the capital structure decision process for SMEs, and if financial performance affects it. This in turn will make existing models and theories on capital structure, developed through the scrutinization of large enterprises, more applicable for SMEs.

In terms of practical contribution, the aim is to assist the management of SMEs to gain a better understanding for how the financial performance of their firm is related to the usage of trade credit. If some light can be shed upon this aspect, it will benefit the management of SMEs as guidance towards the most favorable financial performance and lowest cost of capital. When the first mentioned component, most favorable financial performance, is fulfilled, the firm in question can instead of trade credit attain traditional debt. As a consequence component number two, the lowest cost of capital, will be achieved. These two components feeding off each other will help maximizing financial performance and lowering the cost of capital. In essence, the findings of this study could be used as a guiding tool to progress from trade credit towards traditional debt.

Furthermore, suppliers granting trade credit could benefit from this study on the same level as management of SMEs. Since trade credit also works as an important sales tool, it could be beneficial for suppliers to see what type of firms most frequently use trade credit. For example, if they are the ones who are more likely to find themselves in financial distress, or the ones who have solid liquidity and solidity. This is of importance, since trade credit granted is of no good to suppliers if they are unable to collect their reimbursement. Therefore it is important for them to know if there are specific financial performance levels within SMEs they should look out for.

In connection to the previous paragraph another practical contribution that has to be taken into consideration for this research, is the one to banks. As the purpose of this study is to investigate how the financial performance of SMEs affects their usage of
trade credit, banks can use it in order to grant debt to SMEs. The “most favorable” financial performance of SMEs can be used as a benchmark by banks in order to determine whether or not an SME is performing well enough to be granted bank debt or not.

1.6 Delimitations

When conducting research it is important to bear in mind the delimitations of the study at hand, in order to arrive at solid findings. Essentially, delimitations remark the boundaries of a study, set by the researcher (Nenty, 2009, p. 24). Price & Murnan (2004, p. 66) further draws a clear distinction between limitations and delimitations. Limitations epitomize a systematic bias that is uncontrollable, resulting in erratic outcomes. Delimitations on the other hand are introduced with intent, so that the defined research purpose can be achieved. As long as this is fulfilled it should not influence the validity and reliability of the research.

The research itself has been delimited in several aspects; a delimitation that is important to keep in mind is the one of performance. There are several performances that could be investigated for the purpose of this study, however the focus will be on financial performance. As financial performance is the one metric that is most widely analyzed when firms attempt to acquire external financing. This delimitation will be in line with the theories, which are to be utilized in this study. For example, tradeoff- and pecking order theory both consider financial performance as the key metric when assessing the capital structure of firms.

A company can be viewed as either being a net supplier of trade credit, or a net recipient of it. When conducting a study on the subject it could be beneficial to distinguish between the two, this degree project will however disregard this matter. The thoroughgoing focus will be to view the observed sample as net recipients of trade credit. Thus, accounts payable will be the focal point of investigation when categorizing SMEs as users of trade credit. This philosophy is based in the existing information asymmetry surrounding SMEs, it is therefore viewed more interesting to pursue what type of debt obligations SMEs undertake. Instead of investigating if they issue trade credit themselves. Critics may argue that accounts receivables are equally important to scrutinize when investigating the subject at hand, it is nevertheless necessary to distinguish between the two when investigating the viewpoint of the recipient.

SMEs are the centerpiece of this study; hence large corporations have been neglected. This has its origin in that existing literature regarding capital structure often have formed its basis around large-scale corporations. However, this literature can be divergent towards SMEs due to their less transparent character, implying less applicability. Existing theory furthermore explains that large corporations have wider access to, and opt for, preferred long-term debt. Trade credit is thus viewed as a scarce liability on their balance sheet, while for SMEs it is considered to be a vital substitute for traditional debt. Hence, large corporations have been disregarded in order to map out the importance of trade credit for SMEs.

The time horizon used for the study will be set to five years (2010-2015), which should be sufficient in order to explore the usage of trade credit and what financial determinants that affect it. This specific delimitation has to be regarded as the study aims to establish rubust findings, to do so it could be argued to use a time horizon
longer than five years. However, in the case of this study it is not possible, the database (Retriever Business) being employed only allows data to be collected from 2006 and onward. Therefore, this is of concern as 2006 is part of the economic prosperity building up to the financial crisis of 2007, and further on 2007 and 2008 are the most central years of the crisis. The study has been limited to the years between 2010 and 2015 in order to exclude previous years, which can be considered outliers with the possibility of skewing the results. Moreover, the starting point chosen is 2010, as the economy by then had recovered to what can be considered normal levels. In conclusion, over this five-year period it should be possible to find interesting results that should be representative and could contribute to existing research within the area.

Lastly, the geographical area being scrutinized is limited to Sweden. The generalization of the findings in terms of other geographical areas will be limited, due to country specific regulations and societal factors. As for why the study is limited to Sweden lies in the fact that SMEs are dominant in the Swedish economy. They represent, as stated before, 99% of the total number of enterprises in Sweden

1.7 Disposition

Chapter 1: Introduction
This chapter constitutes the foundation of the degree project. It covers the problem background, the research gap, research question, purpose, theoretical and practical contribution as well as the delimitations of the study. The aforementioned enhance the philosophy surrounding the chosen field, making it conceivable to grasp the reasoning for choosing it.

Chapter 2: Research Methodology
In this episode the aim is to explain and guide the reader through the philosophical views and approaches that will direct this research. It will range from how the nature of reality and knowledge is viewed upon to the research design itself and why it has been exploited. A summary of how the philosophical choices are connected with one another will accompany to visualize a clear picture to the reader before advancing with the theoretical frame of reference. The chapter will be concluded with an elaborate discussion of ethical implications concerning the study at hand.

Chapter 3: Theoretical Frame of Reference
This part addresses the relevant literature and research that have been conducted by previous scholars in order to produce a concrete theoretical fundament the analytical part can build upon. It aims to demonstrate an in-depth understanding of theories surrounding the given research question and to ultimately establish a coherent groundwork that allows for educing conclusive hypotheses, which provide guidance in solving the research question. It will introduce fundamental traditional capital structure theories as well as non-traditional and their association with market imperfections. Following, further determinants of capital structure are demonstrated together with more neoclassical theories of trade credit. Financial performance measures and their foundation together with SME financing will conclude the chapter. Trade credit can be considered as a component of capital structure, thus is appears logical to place it after the elaboration of capital structure theories and other determinants of it.
Chapter 4: Practical Research Method

This chapter explains the research methods that underlie the practical part of the degree project, i.e. the empirical analysis. It serves to provide a detailed insight into the practical research steps in order to establish an extensive understanding of the decisions and choices made. First, the population and sample are discussed by explaining the qualification criteria. Secondly, all variables are elaborated upon and explained. Third, hypotheses and decision rules are presented. Lastly, elaborations about the statistical tools that are applied to conduct the statistical analyses are formulated together with their given assumptions.

Chapter 5: Empirical Findings

In this chapter, the analytical results obtained are presented and described. To provide an overview as well as a better understanding of the research variables utilized, descriptive statistics together with tables and figures are portrayed. Lastly, the outcomes of the multiple regression model are shown and interpreted briefly.

Chapter 6: Analysis and Conclusion

In the following chapter the empirical results from the previous chapter will be made sense of, with the assistance of the study’s theoretical frame of reference presented in chapter 3. The main objective is to gain an understanding for the findings reported and what the plausible logic behind the results is. The relationships bestowed from the empirical findings will be further discussed in regards to if they met the expectations of the authors or not. In essence, the analysis will argument for if any definite cause(s) can be established for the results. Consequently, concluding remarks about the analysis will be presented before answering the research question in the conclusion.

Chapter 7: Final Remarks

This final chapter evaluates the overall quality of the degree project at hand as well as its theoretical and practical contributions. It starts with a discussion of how the authors have ensured a high quality in regards to the reliability and validity of the research. Subsequently, a discussion on the contributions laid forth by this study is provided. Finally, the chapter is concluded with suggestions for further research within the area of SMEs and their financing decisions.
2. Research Methodology

In this episode the aim is to explain and guide the reader through the philosophical views and approaches that will direct this research. It will range from how the nature of reality and knowledge is viewed upon to the research design itself and why it has been exploited. A summary of how the philosophical choices are connected with one another will accompany to visualize a clear picture to the reader before advancing with the theoretical frame of reference. The chapter will be concluded with an elaborate discussion of ethical implications concerning the study at hand.

2.1 Choice of Topic and Preconceptions

Capital structure, deeply rooted in the theories about corporate finance, is the foundation that this degree project rests upon. This particular topic of interest has developed through the years as both the authors studied business administration and later chose to specialize within finance. Classic and groundbreaking theories, developed within the area of capital structure, have thus been observed and studied firsthand. It is inevitable that most of the theories try to explain and precise what is considered as the “optimal” capital structure. Moreover they try to find where the optimum, or equilibrium, exists in the trade-off between benefits of debt financing and the potential risk of financial distress. Furthermore, there is an extensive amount of research on what type of factors that stimulate the usage of debt financing and how different sources of debt financing affects a firm's financial performance. To view trade credit as an alternative source of debt financing, and to even state that it could be considered a substitute to institutional credit for SMEs, has been discussed over the years but is not widely anchored in theory, yet. Hence, most research related to trade credit anchors upon classic theories that already exist and tries to show the impact trade credit has on financial performance. However, even though it is considered to be of utmost importance as a financing source, most SMEs should prefer institutional credit to trade credit, this since the cost of borrowing is more advantageous. Therefore, this study will take a more narrow perspective and investigate how financial performance affects the usage of trade credit, rather than to investigating the impact on financial performance from the usage of it. This topic becomes relevant, since it will try to explain how financial performance measurements affect the usage of trade credit, and thus also indirectly investigating what credit institutions consider as acceptable financial performance.

Preconceptions regarding the subject will mainly be related to theories connected to financing decisions, with the main preconception being that firms with stable and sound financial performance will more likely seek finance internally, rather than externally. This idea is a result from the signalling theory, and thus also leading up to that the preconception that firms with less stable financial performance most likely will be the biggest users of trade credit. However it is also expected that not all investigated companies will oblige to these theories and findings, and in consequence there will be a variation regarding the connection between usage of trade credit and financial performance. The fact that the authors have a pre-understanding about this could result in that some level of subjectivity might occur. But this also goes the other way around, since some readers might have different academic backgrounds, consequently leading up to different interpretations of the findings from this study.
2.2 Research Philosophy
According to Saunders et al., (2009, p. 107) research philosophy is the “...overarching term relating to the development of knowledge and the nature of that knowledge”. Depending on which research philosophy being applied there will be different assumptions utilized, which will underpin the entire research strategy and methods chosen (Saunders et. al., 2009, p. 108). The two major approaches of research are; epistemology and ontology. Epistemology being the “concerns what constitutes acceptable knowledge in a field of study” (Saunders et. al., 2009, p. 112) and ontology being the “view of the nature of reality or being” (Saunders et. al., 2009, p. 119).

2.2.1 Epistemology
According to Tuli (2010, p. 99) epistemology poses the following questions: “What is the relationship between the knower and what is known? How do we know what we know? What counts as knowledge?” Long et al. (2000, p. 190) attempts to answer these questions by referring to that epistemology is the basis of knowledge, and how it can be transferred to others. Within this philosophy, two different viewpoints can be taken; either positivism or interpretivism.

The approach of positivism encourages the utilization of the methods of natural sciences when studying social phenomena. This will entail the principle of knowledge that is confirmed by the senses, the only knowledge that can be genuinely warranted (Saunders et al, 2009, p. 114). Furthermore, as science has to be conducted in a value free manner and it is the methods of science that are adapted in positivism, it can be considered an objective approach (Bryman & Bell, 2011, p. 15). This is situated in the extreme that positivism is based on that knowledge should be available to all (Long et al., 2000. p. 190) and that this knowledge is anchored on hard observable facts (Remenyi et al., 1998, p. 33), existing apart from personal ideas and thoughts (Tuli, 2010, p. 100). As aforementioned, positivism is built upon the inclusion of one’s own values, however, Saunders et al (2009, p. 114) argues that this is seemingly impossible and that even the mere adoption of a value-free perspective indicates that there is an existence of a certain subjectivity.

Contradictory to positivism, interpretivism also exists as a potential viewpoint within the philosophy of epistemology. This viewpoint does not share the standpoint of positivism that social phenomena should be studied using the methods of natural sciences, it argues that social phenomena is fundamentally different from natural sciences and should be treated accordingly (Bryman & Bell, 2011, p. 16). In essence, interpretivism is an approach that reflects the distinctiveness of humans as against the natural order. Tuli (2010, p. 103) explains that an interpretivists viewpoint is that the world is “complex, socially constructed, and ever changing”. Interpretivism seeks to obtain a deep understanding of human culture activities and experiences and by so, in contrast to positivism, “seeks to understand values, beliefs, and meanings of social phenomena” (Tuli, 2010, p. 103). While the positivist has the assumption of a fixed world, that has a measurable reality external to people. Leading up to, and according to Becker & Niehaves (2007, p. 199), that “interpretivist researchers focus more on the subjective proposition that are regarded to be relevant when individuals strive for knowledge”. Collins (2010, p. 38) further argues that interpretivism is “associated with the philosophical position of idealism, and is used to group together diverse approaches, including social constructionism, phenomenology and hermeneutics; approaches that reject the objectivist view that meaning resides within the world independently of
consciousness”, pointing out the subjective nature of this approach. It is therefore not bold to claim that interpretivism tries to create an understanding of something, while positivism on the other hand tries to explain it.

The relationships being examined in this research are solely from an outside perspective as the purpose is not to understand the actors within the firms responsible for the financial performance, leaving little room for subjectivity. The aim of this study is not to create new ideas or theories. Rather the theory will form the basis from which various hypotheses will be formulated to statistically test if there is a relationship between Swedish SMEs financial performance and their usage of trade credit. Meaning that the theoretical framework and the findings will be supportive to reach a conclusion. Furthermore, this degree project will be based on data extracted from companies’ financial statements that have been officially reported, and reviewed by an external auditors, making this type of hard data difficult to alter. With these facts in mind, the appropriate epistemological approach of this degree project has to be based on positivism.

2.2.2 Ontology
Tuli (2010, p. 99) describes ontology as the concern of the nature of reality. The reasoning behind this according to Bryman & Bell (2011, p. 20) is the question if social phenomenon “can and should be considered objective entities that have a reality external to social actors, or whether they can and should be considered social constructions built up from the perceptions and actions of social actors”. There are two philosophical approaches when dealing with this question, namely objectivism and constructionism. The difference between these two philosophical approaches is that objectivism takes a position that portrays social entities existence as external to social actors, while constructivism claims that social phenomena is the product of the perceptions and consequent actions of social actors (Saunders et al., 2009, p. 110).

Objectivism believes in the existence of the real world, external to humans and independent of their experiences. However, this relies on that there is an existence of reliable knowledge about the world, and that humans strive to gain this particular knowledge. This builds upon that the structure of reality is determined by entities, properties and relations, and that this structure can be modeled. Thoughts are also independent from the human experience and reflect the external reality, a reality these thoughts are governed by (Jonassen, 1991, p. 8-9). Bryman & Bell (2011, p. 21) explains objectivism as an approach believing that social phenomena confronts people as external facts, which are beyond the reach or influence of individuals. Social actors thus exist independent of its denizen. This is related to the view Saunders et al (2009, p. 110) lay out about the matter, they suggest that organizational structure is independent of the individuals employed and that the rules to whom they must oblige are fundamentally equivalent contra all organizations. Supporting the opinion of Long et al. (2000, p.190) that objectivism takes an objective view in terms of the social reality.

Constructionism is a position that challenges objectivism as it suggests that there are no pre-given and set structures in terms of an external reality (Bryman & Bell, 2011, p. 21). This particular approach is concerned with how individuals construct knowledge, as the construction of knowledge is influenced by past experiences, mental structures, and beliefs and it is a product of the individual’s own reality (Jonassen, 1991, p. 10). Furthermore, Remenyi et al. (1998, p. 35) highlights the importance of studying “the
details of the situation to understand the reality or perhaps a reality working behind them”. This is a consequence of the interpretivist philosophy, which is needed in order to investigate the subjective meanings motivating the behavior of social actor to be able to establish what drives these actions (Saunders et. al., 2009, p. 111). Which supports the argument from Long et al. (2000, p. 190) regarding constructionism having a subjective view regarding the social reality.

The data applied in this research will form the basis for the usage of statistical tests to obtain proof, independent of experiences, in order to explain if Swedish SMEs financial performance affects their usage of trade credit. Nevertheless, one has to remember that human beings develop these particular financials and that their norms and perceptions of financial standards are not anchored in natural laws. This might make it hard to adopt a completely objectivist approach, since the involvement of social actors in the particular matter cannot be disregarded. As abovementioned in the epistemology, the research will be based on data extracted from financial statements. To form these specific statements the companies have to oblige to strict accounting standards on how the financials should be calculated, but also on how these financials should be presented. These standards cannot be altered to suit a particular company better, meaning that the standards are fundamentally equivalent for all companies from which data will be extracted. Therefore, the suitable ontological approach utilized is objectivism.

### 2.3 Research Approach

Selecting a research approach raises the question about the relationship between theory and research, and whether or not theory should have a prominent appearance within a study (Bryman & Bell, 2011, p.11). In research there are two building blocks of science, deduction and induction. With deduction being a process where conclusions are reached by already known facts and theories. On the other hand there is induction, which is a process where conclusions are arrived at using the observed phenomena of the research at hand (Sekaran, 2003, p. 27).

According to Bryman & Bell (2011, p. 11), a deductive approach represents the most common view of the relationship between theory and research. Its cornerstone is that a reasoned conclusion is arrived upon by the logical generalization of known facts (Sekaran, 2003, p. 27; Ghauri & Grønhaug, 2010, p. 15). The generalization of known facts originates from what is already known about the particular domain and its theoretical considerations. This existing knowledge deduces hypotheses which can be subject to empirical scrutiny, since concepts or variables gathered through data collection are to be measured. Based on the empirical scrutiny the hypotheses will then later be either accepted or rejected (Ghauri & Grønhaug, 2010, p. 15). Typical characteristics for the deductive approach is that it needs to be possible to measure the data collected and the results obtained. But also to allow controls in the testing of hypotheses and that a highly structured methodology is used to simplify the replicability (Saunders et al., 2009, p.125). Furthermore, the main objective for the researcher taking an deductive approach is not solely to build hypotheses from existing knowledge but rather also to present them in operational terms, i.e. showing how information used in the hypotheses can be collected (Ghauri & Grønhaug, 2010, p. 15). This is done because the researcher wants the generalization of the study to be extensive, and thus the sample used also has to be appropriate and satisfactory for this to be possible (Saunders et al., 2009, p. 125).
Induction in contrast to deduction, as previously mentioned, can be seen as an approach where conclusions are drawn from empirical observations. To illustrate the process undertaken in an inductive approach it can be explained as; observations → findings → theory building (Ghauri & Grønhaug, 2010, p. 15). Which is in line with the arguments of Bryman & Bell (2011, p. 11) that theory is the outcome of the research. However, it is important not to disregard that the conclusions drawn in an inductive study can be faulty (Ghauri & Grønhaug, 2010, p. 15), implying it as an approach more risk prone than the deductive one (Saunders et al., 2009, p. 127). Furthermore, Ghauri & Grønhaug (2010, p.15) argues that an inductive research approach is associated with qualitative research. Research applying an inductive approach is keener with the context in which a certain phenomenon may take place; therefore a study of a small sample of subjects might be more appropriate (Saunders et al., 2009, p. 126). Moreover, the inductive approach is suitable for research with an interest in the understanding for why a phenomena is occurring, rather than the cause-effect relationship without the understanding for why, which is the focus when applying the deductive approach (Saunders et al., 2009, p. 126).

The two main research approaches are deduction and induction, the text might be misleading in the sense that there has to be either or. This is not the case as the combination of the two is possible, culminating in the abductive approach (Saunders et al., 2009, p. 127). When applying an abductive approach the research moves between induction and deduction, thus utilizing both approaches while simultaneously altering back and forth between theory and findings (Suddaby, 2006, p. 639).

Collis & Hussey (2009, p. 188) advocate that if positivism is used as an epistemological approach, the deductive approach is best suited alongside. As the operationalization of ideas and concepts is a crucial characteristic to be able to measure the quantifiable data within the deductive approach, it is quite evident that this particular approach corresponds to the given objective of this study. Commencing with the information available within the area of capital structure, particularly different types of financing decisions, an extensive amount can be found. The goal therefore is not to develop new theories, but rather to review previously published fundamental theories on the subject and then use it as a foundation when building/deducing hypotheses. Furthermore, financial statement data on Swedish SMEs will be extracted using Retriever Business, and later processed using Microsoft Excel to better fit in the statistical test conducted, which then later will accept or reject the hypotheses. Hence, the most suitable approach is the deductive one.

2.4 Research Design

According to Hair et al. (2003, p. 57) the research design of a project can be referred to as the “recipe” of the research, meaning it will guide the basic directions of the study. Furthermore, the researcher stands to make two choices. Firstly, the design being chosen shall be of the character that it provides the information relevant for the research question, and secondly; the chosen design shall make the research the most efficient (Hair et al., 2003, p. 57). In terms of business research design there is one out of three groups that can be applied, which are exploratory, descriptive, and explanatory design (Hair et al., 2003, p. 57).

Following Sekaran’s (2003, p. 120) reasoning in terms of exploratory research design, it is stated that it is most suitable for researchers who obtain little or no information.
Giving it a discovery-oriented character, therefore this type of research design is not intended to test specific research hypotheses (Hair et al., 2003, p. 57). A great advantage of exploratory research in the argument of Ghauri & Grønhaug (2010, p. 56) and Saunders et al., (2009, p. 140) is its flexibility and adaptiveness to change. In essence, when there is a need to gain a deeper understanding for the nature of a problem, due to the lack of previous research, exploratory design is highly applicable (Sekaran, 2003, p. 119). Considering these facts, exploratory design is most suitable for qualitative studies (Sekaran, 2003, p. 119).

A descriptive study aims to describe characteristics of the variables of interest in a particular situation (Sekaran, 2003, p. 121; Hair et al., 2003, p. 60). Williams (2007, p. 66) describes it as a “basic research method” that makes it possible to examine a situation, as it exists in its current state. When conducting a descriptive study it is necessary to have a clear picture of the phenomenon that is the object of data collection (Saunders et al., 2009, p. 140). Ghauri & Grønhaug (2010, p. 57) compares it to the procedure the doctor follows when examining a person's height. “The person has to take his shoes off, stretch his legs, and look straight ahead”. This procedure is than later used on all people measured. Descriptive research thus has three main characteristics, it has to be structured and follow precise rules and procedures (Ghauri & Grønhaug, 2010, p. 57). Saunders et al. (2009, p. 140) further on states that this particular research design has a very clear and natural place within business research.

Research that tries to establish a causal relationship between variables is known as explanatory research design (Saunders et al., 2009, 140). Ghauri & Grønhaug (2010, p. 57) state that the main task of explanatory research is to “isolate the cause(s), and tell whether and to what extent the ‘cause(s)’ result(s) in effect(s)”. Causality is a powerful concept, which requires extremely precise execution and making it quite time consuming (Hair et al., 2003, p. 64). Furthermore, it should be kept in mind that this type of design is possible to combine with descriptive research design. Often times when a research employs a descriptive design it is a forerunner to an explanation, studies of this character are known as descripto-explanatory (Saunders et al., 2009, p. 140).

Just as Saunders et al. (2009, p. 140) pointed out, utilizing a descriptive design is often a forerunner to an explanation. Since this study will anchor on describing financial performance and how it affects trade credit usage, making it evident that the research will connect the cause (financial performance) with the effect (trade credit), the explanatory design applies. Nevertheless, control variables will be used to describe if this particular causality differs between companies, and by so also comparing the cause and effect. Hence, the characteristics of the main variable will thus be described. Furthermore, the descriptive statistics will be used to examine the relationship of the causality, which will follow a precise procedure regardless of company. Leading up to the utilization of the descriptive design as well. With the traits of this degree project a descripto-explanatory design has to be employed.

2.5 Research Strategy
According to Saunders et al., (2009, p. 141) and Creswell (2003, p. 15) there are eight different types of research strategies; archival research, case study, survey, experiment, ethnography, action research, grounded theory and narrative inquiry. These different types of strategies guide the researcher to meet the objective and answer the stated
research question(s). No strategy is superior or inferior to any other; it rather depends on what type of research approach one takes that determines the choice of strategy (Saunders et al., 2009, p. 141).

Archival research is a strategy, which takes the focus of the past and changes over time. When utilizing an archival research approach it is of utmost importance to beforehand establish if the data needed to answer the research question is available (Saunders et al., 2009, p. 150). The most classic sense, according Ventresca & Mohr (2002, p. 806), to apply an archival research strategy is when the research involves the study of historical documents, i.e. documents created in the distant past. However, they further argue that scholars who do not engage in historical investigations are applying the archival approach. Moreover, Ventresca & Mohr (2002, p. 806) states that archival research is applicable in analysis of digital texts, which include electronic databases. Lastly, it is a broad approach that can be applied to all three research designs discussed earlier in this thesis, namely exploratory, descriptive, and explanatory design (Saunders et al., 2009, p. 150).

Robson (2002, p. 178) defines case study as “a strategy for doing research which involves an empirical investigation of a particular contemporary phenomenon within its real life context using multiple sources of evidence”. Meaning that the study does an intensive analysis of a single case (Bryman & Bell, 2011, p. 59). This particular strategy is most often used in explanatory and exploratory research and can also be utilized whether the research is quantitative, qualitative, or a combination of the both (mixed method). It is further stated that that this strategy is a beneficial way of exploring existing theory (Saunders et al., 2009, p. 146-147). But that is also can, if well constructed, challenge existing theory and even be a source to develop new research questions. This goes hand in hand with Eisenhardt & Graebner’s (2007, p. 26-27) statement implying that this is a strategy where the researcher, if there is a lack of plausible existing theory and a broad research question, gains the flexibility to develop new theories regarding the phenomenon. According to Bryman & Bell (2011, p. 59) the flexibility in case studies has paved the way for some of the best-known studies in business.

The survey strategy is a method used in order to collect primary data; it can range from beliefs, opinions, attitudes, and lifestyles to general background information such as gender, age, education, and income (Hair et al., 2003, 130). Furthermore, it is utilized when the researcher wants to answer who, what, where, how much, and how many questions. It is therefore suggested this type of strategy for studies using an exploratory and/or a descriptive research design. However, there are drawbacks in using a survey strategy, as it is extremely timely both in terms of receiving the data and later on analyzing it. Moreover, the biggest concern with this strategy is the danger of conducting it badly (Saunders et al., 2009, p. 144) and thus the risk for bias (Hair et al., 2003, p. 130). Lastly, this research strategy is associated with the quantitative approach (Creswell, 2003, p. 14) as it allows the researcher to collect quantitative data (Saunders et al., 2009, p. 144).

One strategy that can be considered the ‘gold standard’ of strategies is the experiment. However the purest form of it is rarely used in business research since it has it roots in natural science laboratory-based surroundings, thus becoming quite exhausting to utilize in this type of study. This type of strategy is often used when the purpose or the
objective of a research is concerned with whether a change in a particular variable affects another one, and what the likelihood of that would be. I.e. the experiment design is concerned if there is a given linkage between the two (Saunders et al., 2009, p. 141-142). This type of strategy is also often connected with the usage of physical personnel, who are used in either an experimental group or a control one.

The purpose of ethnographic research is to interpret the social behavior through actual life experiences, i.e. be embedded with the research subject(s) at hand (Hair et al., 2003, p.126). This could mean being embedded under periods ranging from days to months (Hair et al., 2003, p. 126), which is in line with the argument from Saunders et al. (2009, p. 149) that this strategy is highly time consuming. Ethnographic research is associated with qualitative research (Creswell, 2003, p. 14) as it is used to gain a better understanding of the research subject(s). However, this type of research strategy is quite rare when studying business (Saunders et al., 2009, p. 144).

Avison et al., (1999, p. 94-95) defines action research as something that combines theory and practice through “change and reflection in an immediate problematic situation within a mutually acceptable ethical framework”. It is further stated that there is “no single type of action research”, but that it can be defined, broadly, as an approach in where the researcher collaborates with a specific client to diagnose a particular problem and develop a solution based on the diagnosis. This type of research is often designed to assist an organization with a solution to a real problem, involving an iterative process of problem identification, planning, action and evaluation, thus is intended to contribute both to theory and practice. Hence, this type of research strategy if often conducted on organizations, since it is viewed as “particularly useful in researching processual problems, such as learning and change” (Bryman & Bell, 2011, p. 413-414). Hence, the emphasis in action research is more on what the practitioners do, rather than on what they say they do (Avison et al., 1999, p. 96) making it suitable for contemplating qualitative research purposes.

Grounded theory is an approach when the researcher aims to build a new theory of a process, action or interaction, which is grounded in the findings from the study at hand (Creswell, 2003, p. 14). When applying grounded theory, data collection starts without a theoretical framework, this will be the product of the data generated during the study. In turn this approach is a great example, even though very simplistic, of an inductive approach (Saunders et al., 2009, p. 148-149). Moreover, grounded theory has become by far the most popular framework for analyzing qualitative data (Bryman & Bell, 2011, p. 577).

According to Ospina & Dodge (2005, p. 143) a narrative inquiry strategy focuses on the study of experience, as it is lived. This strategy directs attention to narratives as a means of studying different aspects of society and to “find meaning in the stories people use, tell and even live” (Ospina & Dodge, 2005, p. 143). McMullen & Braithwaite (2013, p.93) claims that narrative inquiry is based on that stories give meaning to our lives, and that it helps us to understand certain aspects of it. They further on explain that narrative research “has the capacity to reflect the complexity of individual and social lives, the ambiguity and the contradictions” (McMullen & Braithwaite, 2013, p. 93). There are five main characteristics of a narrative research and its information gathering; “(1) accounts of characters and selected events occurring over time with a beginning, a middle, and an end; (2) retrospective interpretations from a particular perspective; (3)
focused on human intention and action; (4) part of the process of constructing identity (the self in relation to others); and co-authored by narrator and audience” (McMullen & Braithwaite, 2013, p. 94). The information obtained by the researcher is later on reorganized into a narrative chronology (Creswell, 2003, p. 15), which supports the argument of Saunders et al. (2012, p. 189) that this strategy is very time consuming. However, this type of research has become significantly more popular in business and management research in recent years, as it is seen as an extremely helpful tool in understanding the organizational sense making (Bryman & Bell, 2011, p. 531). Furthermore, the narrative research approach is associated with the qualitative approach (Creswell, 2003, p. 14-15).

Financial statements, which will form the basis for our research via data extraction and examination, is to be considered as material that has not been created for research purposes, but rather for legal purposes, investors and potential investors. Retriever Business will act as the primary source of data gathering, Ventresca & Mohr (2002, p. 806) explains that archival research is most applicable in term of analysis of digital texts, including electronic databases. Hence, archival research composes the only logical alternative for this type of degree project. Furthermore this choice is beneficial on the grounds that it can be applied to all three research designs presented in section 2.4, making it preferable to the others, especially since this study will combine two of them, descriptive and explanatory: descripto-explanatory.

2.6 Time Horizon
Another issue when conducting research is what type of time horizon approach is utilized; the two of concern are cross-sectional or longitudinal study (Remenyi et al., 1998, p. 47). The cross-sectional approach is applied when the researcher is interested in providing a “snapshot” of certain elements at a given point in time (Hair et al., 2003, p. 61). In contrast to cross-sectional studies, researchers can apply a longitudinal study that aims to generate a picture of certain elements over a period of time (Hair et al., 2003, p. 62). Cross-sectional studies collect data at a specific point in time, which later is summarized statistically (Hair et al., 2003, p. 61). Cross-sectional research is also known as correlational research, which means that data on the independent and dependent variable is collected at the same time and further investigated (Ghauri & Grønhaug, 2010, p. 66-67). Furthermore, Ghauri & Grønhaug (2010, p. 66) explains that this kind of research often control for the potential effect of other factors, i.e. control variables, which for example includes variables such as industry. Moreover, cross-sectional studies are what is most commonly applied for degree projects, as these are under certain time constraints. The data collection required under this type of study is fairly time friendly. Lastly, this approach is applicable to both quantitative and qualitative research (Saunders et al, 2009, p. 155).

Rather than describing business elements at a single point in time, like cross-sectional studies do, the longitudinal approach describes events over time (Hair et al., 2003, p. 62). Making it the ideal approach when research questions and hypotheses are affected by how things vary over time (Hair et al., 2003, p. 62). Hence, the main strength of longitudinal research is that it makes it possible to study change and development (Saunders et al., 2009, p. 155). This type of technique is often used when the researcher wants to understand a particular phenomenon of a particular age group (Williams, 2007,
p. 67), data on the dependent variable is therefore gathered at two different points in time and is therefore not a one-shot kind of study (Sekaran, 2003, p. 135). Longitudinal designs gives the opportunity to exercise a measure of control over variables being studied, evidently this is only applicable if the research process itself do not affect the given variables (Saunders et al., 2003, p. 155).

The sole purpose of this degree project is to examine if the financial performance of Swedish SMEs affect their usage of trade credit. To narrow it down even further a particular setup for control variables will be used to distinguish the usage to different characteristics. Hence, a snapshot will be taken at a particular point in time for it to be possible to examine and compare if the usage of trade credit is indirectly influenced by outside variables, closely related to financial performance. Thus, a cross-sectional approach will be taken in order to answer the research question.

2.7 Research Method
In terms of a research method there are three main methods; qualitative, quantitative, and the mixed method (Creswell, 2003, p. 18). The distinction between the methods, namely between qualitative and quantitative, can be seen as quite limited to the fact that quantitative research employ measurement and qualitative research do not. However, this is not the case, it is argued that these methods go apart in their foundations, such as in epistemology, ontology, and the relationship between theory and research (Bryman & Bell, 2011, p. 26-27). The difference between quantitative and qualitative research method will be further scrutinized, with no particular attention to the mixed method, as it is a product of the two.

When applying the quantitative research method the study is often well anchored in a theoretical framework, which has been obtained from previous research and literature (Remenyi, 1998, p. 134). Moreover, this approach investigates cause and effect relationships, uses specific hypotheses, and tests theories, and the data is collected with predetermined instruments that yield statistical data (Creswell, 2003, p. 18). Thus, quantitative research can be seen as an approach in which quantification in collection and analysis of data is emphasized. Furthermore, the quantitative approach is associated with certain methodology characteristics, these characteristics are the following; it is of the deductive nature, it has a positivistic orientation in terms of epistemology, and lastly is has an objective orientation with regards to ontology (Bryman & Bell, 2011, p.26-27).

In contrast to quantitative research, Gorman & Clayton (2005, p. 3) describes qualitative research as “(...) a process of enquiry that draws data from the context in which events occur, in an attempt to describe these occurrences, as a means of determining the process in which events are embedded and the perspective of those participating in the events, using induction to derive possible explanations based on observed phenomena”. Williams (2007, p. 67) further explains it as the social phenomena being investigated from the participant's viewpoint. As opposed to quantitative research a qualitative researcher is more likely to use words in the presentation of analyses of society, and the perspective of those being studied provides the point of orientation (Bryman & Bell 2011, p. 410). Hence, it is more likely that qualitative research concepts and theoretical elaborations emerge out of the data gathered, rather than from a pre-existing theoretical framework (Williams, 2007, p. 68). Sekaran (2003, p. 5) describes qualitative data as something that has been generated through broad answers to specific questions in interviews, or open-ended questions in a questionnaire, or through observations, or from
already available information gathered via various sources. The main objective with a qualitative research is often to gain a deeper understanding of a specific phenomenon via a smaller sample (Bryman & Bell, 2010, p. 411). Furthermore, the methodological characteristics for qualitative research are the following; it is of the inductive nature, it has an interpretivist orientation in terms of epistemology, and lastly is has a constructivist orientation in regards to ontology (Bryman & Bell, 2011, p. 27).

This particular study will investigate if Swedish SMEs financial performance affects their usage of trade credit. In order to measure this, a vast amount of data has been collected through secondary sources such as Retriever Business. This data will later form the basis for the statistical analysis that will be carried out to test the formulated hypotheses, and to statistically test the possible relationship between financial performance and usage of trade credit through selected measurable variables. Nevertheless, in order for possible readers to understand the models developed, descriptive text will accompany the findings presented. It is in this study's interest to be able to generalize its findings, thus the findings presented are hoped to be applicable to SMEs not being a part of the sample. Leading up to that, evidently, the quantitative method is the most suitable approach, and the one that will be utilized.

2.8 Literature & Data sources
When conducting a literature search in order to obtain data sources, which supply the data (information) necessary to fulfill the purpose of the study there are two types of sources; primary and secondary data (Ghauri & Grønhaug, 2010, p. 90). The distinction between these two types of data sources are the following; primary data is original data collected by the researcher for the specific problem at hand and secondary data is information collected by others for problems that may differ from the problem of the study at hand (Ghauri & Grønhaug, 2010, p. 90). Types of secondary data as defined by Sekaran (2003, p. 223), which will be utilized in this degree project are; databases, annual reports, and other archival records. Moreover, she argues that secondary data has advantages such as it is cheap and fast to acquire. However, it also has some drawbacks in terms of becoming obsolete and not meeting the requirements of the specific purpose of the study, it is therefore important to use up-to-date information. It is also highly recommended to establish keywords, which are used in the search for data, as it is highly unlikely that you will find exactly what you are searching for by typing in long phrases or whole sentences in the search engines (Bryman & Bell, 2011, p. 109).

In order to find relevant sources, a comprehensive literature search has been conducted using databases such as Google Scholar, SSRN, EBSCO with Business Source Premier in particular, and Digitala Vetenskapliga Arkivet (DiVA), as well as searches through internet based search engines. To find relevant sources that live up to the abovementioned criteria, recurring keywords in the research process were; “SMEs”, “Capital Structure”, “Financial Performance”, “Trade credit”, “Debt Financing” and “Institutional Credit”. The search preference was also changed in order to obtain studies conducted within Sweden. To assure that similar studies had not been conducted searches like: “Financial Performance and Trade Credit”, “Financial Performance correlation with Trade Credit” and “Financial Performance affect Trade Credit” were made. It was inevitable that inspiration was found from sources that similar studies have used. Nevertheless, the main objective has always been to use first hand references to the furthest extent. Given the reason that secondary sources could, and might lead to misinterpretation of the original source (Thurén & Strachal, 2011, p. 16). When
searching for literature English have been the primary language used. Nevertheless, in the context of finding a framework for source critique, Swedish sources have been utilized.

After reviewing the literature, it stood clear that previous studies had not investigated what this degree project intends to capture. However, the same topic has been scrutinized, but working with the causation that the usage of trade credit affects financial performance. This study will take the opposite stance, i.e. work with the reverse causation that financial performance rather affects the usage of trade credit.

2.9 Source critique
It important to have a critical approach when reviewing the literature, this should however not be confused with simply criticizing the work of others. This is rather an approach that is necessary to develop if the study is to be viewed as credible or not (Bryman & Bell, 2011, p. 94). This quantitative research will present an objective view about reality and its phenomena, thus this critical approach of reviewing existing literature is of utmost importance, since the utilization of irrelevant sources would rather harm the study than improve it.

When critically reviewing sources there are four aspects that should be taken into consideration according to Thurén (2005, p. 13), which are the following; authenticity, temporal association, independence, and tendency freedom.

The first principle of consideration, authenticity, is concerned with if the source actually tells what it says it is telling (Thurén, 2005, p. 13). This can be hard to measure, since the studies utilized have all used a lot of tests to arrive at their conclusions, which means that the studies would have to be conducted in the exact same manner once again to confirm the authenticity. However, a simpler way to overcome this obstacle is to use several sources of the same kind and see if they point towards the same relationships and if they do, they can be seen as authentic.

As for the second principle of temporal association, the main concern is time, it states that the longer time there has been between the presentation of an event and the findings of the event, the more doubt one should have regarding the findings (Thurén, 2005, p. 13). Thurén (2005, p. 30) further argues that this is due to the tendency of forgetfulness, since it is obvious that people tend to forget more the longer time has passed from an event. Therefore, the sources utilized in this degree project are going to be selective to the more recent studies conducted in the area of investigation. However, some older sources have been applied as well, though for more fundamental theories and knowledge that can be considered not alter over time.

Independence, being the third principle, is quite straightforward in its interpretation. According to Thurén & Strachal (2011, p. 15-17) this principle states that there shall be no witness tampering while information is gathered, and nor shall the source be copied. To avoid the latter of the two, primary sources have been used as far as possible in the information gathering process, this since Thurén & Strachal (2011, p. 15) stress the concept that “to claim that a statement is reliable, at least two sources must confirm the same thing, independent of each other”. However, to confirm the validity of secondary sources, when used, the focus has been to primarily locate the primary source, to confirm that the interpretation of it is correct. Given the reason that secondary sources
could, and might lead to misinterpretation of the original source (Thurén & Strachal, 2011, p. 16). Witness tampering when gathering information is however irrelevant for this study. This since all the data will be collected from Retriever Business, considered being a valid database.

The last principle that needs to be taken into consideration is tendency freedom. According to Thurén (2005, p. 13) this principle means that one should not have any reason to suspect that the source gives a false picture of reality because of someone’s personal, financial, political or other interests that distort the concept of reality. This particular principle is however quite arduous to scrutinize. A researcher's personal interest is rarely, or often never, stated in studies. This specific principle is however not seen as a concern for this study. Most scientific sources reviewed have been of quantitative nature with an objective view regarding reality, i.e. personal ideas and opinions have been left out.
2.10 Summary Methodology

**Research Philosophy**
- Epistemology: Interpretivism & **Positivism**
- Ontology: **Objectivism** & Constructionism

**Research Approach**
- *Deduction*, Induction, and Abduction

**Research Design**
- Explanatory, Descriptive, Exploratory, and *Descripto-Explanatory*

**Research Strategy**

**Time Horizon**
- *Cross-sectional*

**Research Method**
- *Quantitative* & Qualitative

**Literature & Data Sources**
- Primary Data & *Secondary Data* (Scientific Articles, Books, and Databases)

*Figure 1. Summary of Methodology*
2.11 Ethical and Moral Considerations

In the words of Creswell (2003, p. 62) “(...) researchers need to anticipate the ethical issues that may arise during their studies”. Hair et al. (2003, p. 104) states: “Ethical dilemmas arise from questions of fairness or justice, potential conflicts of interest, responsibility issues, power discrepancies, and honesty issues”, all of whom may especially occur in business research. The previously mentioned issues are not exclusive for one particular research approach; it applies to all whether it is qualitative, quantitative, or mixed methods research (Creswell, 2003, p. 63). Furthermore, the discussion regarding ethics will not discuss all issues that may occur, it will rather focus on the main ethical issues concerning this degree project. These main concerns, following Creswell’s (2003, p. 62-67) lead, will be: ethical issues in the research problem statement, in the purpose statement and research question, in data collection, in the data analysis and interpretation, and lastly in writing and disseminating the research.

For the first main concern of ethical issues in the research problem statement, it is important to identify a problem that will benefit the subjects of the study at hand (Creswell, 2003, p. 63). Saunders et al. (2009, p. 187) furthermore states that it is important to include quality research which takes account of existing knowledge in the initial stages of formulating and clarifying the research topic. This is done to ensure the ones that are being researched that the overall topic is rooted in pre-existing research that is of high quality, and thus reliable. This degree project’s research question is well rooted in previous research and the obvious gap that exists due to careful scrutinization of similar topics, thus this ethical consideration has to be seen as fulfilled. Moreover, the problem identified in this particular degree project is something that can contribute to Swedish SMEs trying to obtain traditional sources of financing rather than trade credit, hence it will contribute to pre-existing knowledge and be beneficial regarding the subject of capital structure.

Ethical issues in the purpose statement and research question have been identified as the second main issue, as it is extremely important to clearly state the purpose of the study in order to eliminate the risk of deception (Creswell, 2003, p. 63-64). The sole purpose of this degree project will be to answer the research question: How does the financial performance of SMEs in Sweden affect their usage of trade credit? I.e. its purpose aims to investigate whether or not Swedish SMEs financial performance has an impact on their usage of trade credit. Given that there will not be an issue to find relevant data sources, an analysis will be carried out and a conclusion will be presented based on the findings. This is possible since both the research question and the purpose of this degree project is straightforward, making it highly unlikely that the authors will have to take a stand on a moral dilemma that could alter the purpose of it, as it is conducted. To find oneself in a moral dilemma is more likely to occur in a qualitative research where the purpose is to investigate a sensitive subject that might show unexpected or drastic results (Ghauri & Grønhaug, 2010, p. 20). This becomes problematic since the researcher then has to ensure that the research did not cause embarrassment or any other disadvantage to the people involved. Hence, the moral dilemma created might lead to an alteration of the findings, which contradicts the original purpose (Ghauri & Grønhaug, 2010, p. 20). Having the abovementioned in mind, it is implausible that this degree project will be a subject of deception.

The third main issue in terms of ethics is in the data collection, is that the researchers have to respect the participants and the sites for the research where many ethical issues
may arise (Creswell, 2003, p. 64). It is further argued by Creswell (2003, p. 64) that participants shall not be put at risk and that vulnerable populations have to be respected. Also, it is outlined that the research plans should be reviewed by an Institutional Review Board (IRB), so that the IRB can determine “(...) the potential for risk, such as physical, psychological, social, economic, or legal harm to participants in a study” (Creswell, 2003, p.64). Moreover, the researchers have to keep in mind that sensitive information may be disclosed in the data collection process (Creswell, 2003, p. 65). Lastly in terms of data collection, for the research to be considered ethical the researcher have to apply the ethical code and protect the privacy of the participants or subjects of the study (Creswell, 2003, p. 65). As these issues are more likely to occur in a qualitative study, and this degree project being a quantitative study, it is not as big of a concern. In terms of respecting the participants and the sites of research, these criteria will be fulfilled, as the information used is quantitative and publicly available from an online database. The research population is also unaware that they are the subject a research, implying that the site of research will be unaffected by the study at hand. Since it is legal entities that are being investigated and not human beings it is not as sensitive, although it could be delicate in the sense that harmful information could be exposed for the corporations in the sample. However, as no specific names will be addressed in the study and the sample is extremely large it will be near impossible to figure out if the information comes from a specific corporation or not. Hence, the subjects (participants) of the study are protected. Furthermore, the research should be reviewed by an IRB, which this degree project will not be. Nonetheless, as this degree project is supervised by a professor with many years of experience and expertise in finance and research, it will be kept in line and the potential risk to harm anyone or anything can be considered low.

Ethical issues that have to be considered in the data analysis and interpretation is the fourth area, which will be examined. Creswell (2003, p. 66) argues that the researcher has to determine good ethical calls, whether it is a quantitative or qualitative study. To be more specific, what has to be considered is that the anonymity of the subjects in the study is protected (Creswell, 2003, p. 66). Furthermore, the interpretation of the data must be an accurate account for the information at hand (Creswell, 2003, p. 66). As for the anonymity of the subjects of this research it has been discussed in the paragraph above regarding ethical issues in data collection. It can be concluded that the anonymity of the subjects are well protected. Regarding the interpretation of the data, it will be the aim of this study to give an as accurate account as possible of it. As the purpose of the study is to gain an understanding of the relationship between financial performance and the usage of trade credit, it will be of utmost importance to interpret the data as accurately as possible, otherwise the findings of this study will be of no use. In conclusion, the issues arising when analyzing and interpreting the data can be seen as modest for this degree project.

Ethical issues do not stop with data collection and analysis; they extend into the actual writing and dissemination of the report (Cresswell, 2003, p. 66). Leading up the fifth ethical consideration; ethics in writing and disseminating the research. It is important to not use language or words that are biased against people because of gender, sexual orientation, racial or ethnic group, disability, or age (Creswell, 2003, p. 67). This constitutes no ethical dilemma for this degree project, since it will be conducted on legal entities and not actual people per se. Hence, it will not be possible to use language or words that are biased and directly linked towards human beings. This because of the simple fact, that personal characteristics are not directly applicable to legal entities.
Another pressing ethical issue according to Creswell (2003, p. 67) involves the potential of suppressing, falsifying, or inventing findings to meet a researcher’s or an audience's needs. It speaks for itself that this type of behavior is not acceptable in any type of professional research, and would be classified as scientific misconduct. This degree project will try to explain the objective reality of a particular phenomenon, thus to engage in the aforementioned behavior would alter the objective approach to the extreme, making it impossible to generalize the findings of the study. Hence, this type of misconduct will not be an issue. Nevertheless, potential readers can only take the author's word for it. Which in itself is a dilemma.

Finally, it is of utmost importance to release details of the study design, so that it gives the reader a fair chance to determine the credibility of the study (Creswell, 2003, p.67). Given the extensive methodology section, explaining and outlining the specific design of this degree project, this particular ethical issue has to be seen as tackled accordingly.
3. Theoretical frame of reference

This part addresses the relevant literature and research that has been conducted by previous scholars in order to produce a concrete theoretical fundament the analytical part can build upon. It aims to demonstrate an in-depth understanding of theories surrounding the given research question and to ultimately establish a coherent groundwork that allows for educing conclusive hypotheses, which provide guidance in solving the research question. It will introduce fundamental traditional capital structure theories as well as non-traditional and their association with market imperfections. Following, further determinants of capital structure are demonstrated together with more neoclassical theories of trade credit. Financial performance measures and their foundation together with SME financing will conclude the chapter. Trade credit can be considered as a component of capital structure, thus is appears logical to place it after the elaboration of capital structure theories and other determinants of it.

3.1 Market imperfections

Rationality and market efficiency are the two building blocks of traditional finance. The vast majority of theories developed in the area of capital structure assumes these two aspects, leading to what is known as the perfect capital market. Jensen & Meckling (1976) oppositely showed that circumstances in the real capital markets are more complex than the aforementioned assumptions. Genuinely, financial markets are imperfect and associated with agency conflict costs, moral hazards, and information asymmetry (Myers & Majluf, 1984).

For large, publicly traded corporations, these market imperfections can be considered to be mild. These types of firms typically face only modest interest rate spreads between their borrowing and lending rates. Even so, given that they still have some possibility of going bankrupt, large corporations’ required expected borrowing costs of capital are probably fairly close to the expected rates of return they could earn if they invested in bonds with similar characteristics to bonds they could issue themselves. Henceforth, large public corporations can often assume to live in a perfect market, to a reasonable extent (Welch, 2008, p. 328-329).

In contrast to large publicly traded corporations there are SMEs, which cannot assume efficient markets and rationality. Out of the 20 million SMEs in Europe only a small percentage are publicly traded (FESE, 2012, p. 2), and in turn will generate problems in assuming a perfect capital market for SMEs. Particularly in terms of an efficient market obstacles will arise in regards to SMEs as they are characterized by information asymmetry (Serrasqueiro et al., 2011). In effect, the access to traditional financing will be slimmer and credit grantors will account for this aspect when pricing the loan, which will result in a higher cost of borrowing that is hard for SMEs to absorb (Raju & Rajan, 2015, p. 100). In turn SMEs have no choice but to utilize alternative financing and especially trade credit. The reliance of trade credit might seem irrational, as it is one of the most explicitly expensive debts in the market with an implicit interest rate of 43.9% (Huyghebaert et al., 2007, p. 435-437). However, as it is one of the few available sources of finance for SMEs, they many times have no choice but to employ trade credit.

Furthermore, even though traditional debt is the cheaper alternative when considering the explicit costs only, there are some implicit costs that have to be taken into account. As credit institutions tend to follow a strict liquidation policy in the case of default, the
ultimate price to pay could be the liquidation of the entire firm. In contrast to this, alternative financing (i.e. trade credit) do not employ the same strict liquidation policy, as the suppliers of trade credit have an implicit stake in the borrower. Moreover, as entrepreneurs value to obtain the control of the firm and the benefits that comes with it, which would be lost in the case of liquidation, the rationale behind trade credit is to maintain control (Huyghebaert et al., 2007, p. 435-436).

When keeping the aforementioned in mind, it is quite clear that financing decisions for SMEs are much more complex than what is portrayed in traditional theories. However, they lay the foundation for theories within non-traditional financing decisionmaking. Hence, it is important to grasp the general concept they explain.

3.2 Capital Structure
In order for corporations to finance their operations the firm must decide upon the sources of financing, more precisely their capital structure. As is illustrated by Brealey et al. (2014, p. 348-349), there are three main sources of capital; internal funds, debt, and equity. They further argue it is most common for corporations to generate the needed capital internally, especially via retained earnings. Internally generated funds are occasionally sufficient to cover operations and investments, yet more often it is not, resulting in a financial deficit. To cover the deficit the firm has two options, either they must increase retained earnings or turn to outside sources for funding. However, a notation has to be raised in regards to other factors influencing the choice of capital structure. These factors include managers’ incentives to obtain outside debt and the ability of firms’ access to capital markets (Brealey, 2014, p. 349), which for SMEs many times are limited. In essence, the capital structure determines the balance between debt and equity financing of the firm, and the potential trade off between the two have gained vast attention by scholars.

Presenting capital structure is therefore of substance for the degree project at hand, since it forms the fundamental core to establish an understanding of SMEs financing decisions. Particularly as SMEs ability to generate internal funds and acquire external financing differ substantially from those of larger corporations. Trade credit is considered as a source of financing for SMEs, making it an integral component of their capital structure. As the purpose of this study is to investigate the effect of financial performance on the usage of trade credit, it will indirectly investigate their capital structure. Consequently, the capital structure also provides valuable information concerning firms’ financial performance. Which stems from the fact that the better a firm is performing, the more likely it is to access a wider spectrum of financing sources.

To best describe capital structure several traditional and nontraditional financial management theories will be further introduced. Moreover, additional determinants that might influence SMEs choice of financing will be examined.
3.2.1 Traditional Financial Management Theories

**Modigliani & Miller’s Propositions**
To understand how firms’ decide upon their capital structure, a good starting point is to grasp the revolutionizing propositions of Modigliani & Miller (MM). The first proposition presented is arguing that in market equilibrium, the value of the firm will be independent of its capital structure (Modigliani & Miller, 1958, p. 268). In addition, MM also developed a second proposition under which it was stated that the expected return on equity of a firm will rise in a linear manner with the Debt/Equity-ratio (Modigliani & Miller, 1958, p. 271). Furthermore, these two propositions rely on the well-known perfect-market assumptions, insinuating the absence of; taxes, transaction costs, asymmetric information, and bankruptcy cost (Welch, 2008, p. 578).

However, the propositions received critique as the assumptions of perfect capital markets cannot be fulfilled in reality. As a response, MM extended the propositions in a correction paper published in 1963. In the correction, the assumptions of a perfect market were modified, corporate taxes were taken into consideration since interest payments are tax deductible. Therefore, MM (1963, p. 434) explained that there is a tax advantage when utilizing debt-financing.

When reviewing the propositions in the “formal way”, meaning no corporate taxes, Proposition I states that the value of the firm is independent of how it is financed (Welch, 2009, p. 578). To put it in Modigliani & Miller’s (1958, p. 268) own words “(...)the market value of any firm is independent of its capital structure(...)”. To illustrate this relationship, MM (1958, p. 269-271) uses an example of investing in either a levered or unlevered enterprise, both of whom generates the same stream of operating income. The levered firm’s capital structure will therefore consist of both debt and equity, whereas in contrast the unlevered firm’s capital structure only consists of equity. Apart from utilizing different capital structures the firms’ assets and operations are exactly the same. Hence, if you choose to invest in either firm, the payoff will be the same. Which implies that the value of the levered firm ($V_L$) must equal the value of the unlevered firm ($V_U$). Therefore, proposition I can be summarized in Equation 1.

$$V_L = V_U$$  \hspace{1cm} (1)

After MM revised the theory of capital structure irrelevance in 1963 and included corporate taxes, Proposition I states that financial leverage indeed have an impact on the value of the firm. As is stated by the authors (1963, p. 434) there is a tax benefit when employing debt-financing. Which stems from the fact that interest is tax deductible and will ease the tax burden for the levered firm, this tax saving is referred to as a tax shield (Ross et al., 2010, p. 520). In contrast, the unlevered firm will not experience any ease on its tax burden, as interest on equity isn’t tax deductible. This in turn, insinuate that the value of the levered firm ($V_L$) must exceed the value of the unlevered firm ($V_U$). Also, the tax shield for the levered firm has to be taken into consideration, and can be expressed as $T_cD$. Which will give rise to Equation 2.

$$V_L = V_U + T_cD$$  \hspace{1cm} (2)

Moving along to Proposition II, without considering corporate taxes it is stated that the expected rate of return is a linear function of leverage (Modigliani & Miller, 1958, p.
Implying, as debt financing increases so will the cost of equity. It is further stated that earnings per share will increase with leverage, however the share price will be unaffected, hence the value of the firm is unchanged. This stems from the fact that any expected increase in the rate of return is offset by the risk of leverage (Brealey et al., 2014, p. 453). Essentially, it is the risk premium shareholders require for the extra risk obtained with leverage.

Proposition II can be illustrated with the help of the Weighted Average Cost of Capital (WACC) formula, which is the required rate of return on the firm’s assets (Ross et al., 2010, p. 516).

\[
R_A = \frac{E}{E+D} \times R_E + \frac{D}{E+D} \times R_D
\]  

(3)

To arrive at Proposition II the WACC-formula has to be rearranged into the following formula.

\[
R_E = R_A + (R_A - R_D) \times \frac{D}{E}
\]  

(4)

From Equation 4 it is evident that the cost of equity is dependent on three variables, which are: the required rate of return on the firm’s assets, \(R_A\); the firm’s cost of debt, \(R_D\); and the firm’s Debt/Equity-ratio, \(D/E\) (Ross et al., 2010, p. 516). The equation shows that as the firm increases its debt-equity ratio, the risk of equity follows and therefore the cost of equity. However, it is argued by Ross et al. (2010, p. 516) that the WACC is independent of the debt-equity ratio, which is in line with the argument of MM “(...)the average cost of capital, to any firm is completely independent of its capital structure(...)” (Modigliani & Miller, 1958, p. 268-269). As illustrated in Figure 2, the lower cost of debt is offset by the increase in cost of equity, which is a consequence from obtaining leverage. Therefore, the capital structure is irrelevant and the WACC is constant no matter what debt-equity ratio the firm has.

![Figure 2. Modigliani & Miller Proposition II without corporate taxes. Source: Adaption from Ross et al. (2010, p. 517)](image-url)

As well as with their first proposition, Proposition II was corrected in 1963. The correction acknowledged corporate taxes and the tax benefits that comes with it.
(Modigliani & Miller, 1963, p. 439-441). Therefore, the WACC-formula now has to incorporate the tax shield \((1-T_c)\) offered (Ross et al., 2010, p. 522).

\[
WACC = \frac{E}{E+D} \times R_E + \frac{D}{E+D} R_D \times (1 - T_c)
\]

(5)

In order to reach Proposition II incorporating corporate taxes, Equation 5 has to be rearranged into the following formula:

\[
R_E = R_U + (R_U - R_D) \times \frac{D}{E} \times (1 - T_C)
\]

(6)

From Equation 6 it can be derived that the same relationships stand as when corporate taxes are not considered. However, the WACC will decrease as the tax burden increases, therefore the WACC is not constant and has a negative relationship with the debt-equity ratio. In essence, the cost of equity will increase with the risk of leverage, however due to the tax shield the WACC will decline. Moreover, the tax shield will add value to the firm by the amount of its present value. The relationship is illustrated and summarized in Figure 3.

Figure 3. Modigliani & Miller Proposition II with Corporate Taxes
Source: Adaption from Ross et al. (2010, p. 522)

In conclusion, under the assumptions of perfect capital markets it can be stated that the capital structure of a firm is irrelevant, which MM argued for in 1958. Implying no matter how the firm is financed, the value of the firm and the cost of capital will be constant. However after the correction in 1963, MM loosened the perfect market assumptions and assumed corporate taxes. When incorporating the tax shield, the capital structure is indeed of relevance. This in turn insinuate that the firm value will increase as the WACC will decline with leverage, i.e. the firm value will increase with the present value of the tax shield. In essence, after the correction capital structure is relevant.

Keeping these considerations in mind will be of importance for this degree project, as it has some explanatory power for financial performance. Debt can be seen as an
instrument to add value and in essence increase the performance of the firm. Since the study's objective is to investigate if debt-financing is impacted by financial performance and MM is the foundation of the discussion, it is of utmost relevance to grasp and include these propositions.

However, as groundbreaking as these propositions have been, they have also received critique due to its less practical applicability. Even though they were revised to loosen the assumptions of perfect capital markets, the reality is much more complex than just assuming for corporate taxes. If one were to rely on the findings of MM, it is stated that one should utilize debt only as it increases the firm value. This argument has raised disbelief and has given rise to the trade-off theory.

**Trade-off Theory**
The traditional *trade-off theory* can be traced back to Kraus & Litzenbeger (1973), insinuating the possibility of an optimal capital structure for an enterprise. Myers (1984, p. 575) further argued that the propositions developed by MM encompassing capital structure failed to justify the factual financing behaviour of firms. He explains that a firm’s optimal debt ratio is determined by the trade-off between the costs and benefits of borrowing, holding the firm’s assets and investment plans constant (1984, p. 577). This trade-off can be portrayed as a firm balancing the potential value of interest tax shields against the present value of financial distress. By weighting these factors against each other an optimal capital structure can be achieved, but only at the point when the present value of interest tax shields are just offset by the present value of financial distress costs. Thus, by choosing the ultimate level of equity and debt the firm will be able to maximize its market value (Myers, 1984, p. 579-580). This relationship can be justified by adjusting equation 2, introduced by MM in the context of proposition I, including corporate taxes. Recurrently, $V_U$ equals the market value of an unlevered firm, $V_L$ the market value of a levered firm, and $T_C D$ the present value of interest tax shields.

$$V_L = V_U + T_C D - (PV \text{ of Financial Distress Costs})$$  \hspace{1cm} (7)

Figure 4 visualize the static trade-off relationship under the assumption of a perfect capital market with corporate taxes.

![Figure 4](image_url)

**Figure 4.** The static trade-off theory of capital structure
Source: Adaption from Myers (1984, p. 577)
The actual value of the firm incorporating the tax shield weighted against the financial distress costs can be described by the curved line. As soon as the firm deploys debt it starts to rise, implying that with higher leverage follows a higher market value of the firm. At the optimum the market value of the firm is completely maximized, hence the value gained from the interest tax shield is completely offset by the costs of financial distress acquired by deployed debt. However, if the amount of debt exceeds the optimum the costs of financial distress outweigh the benefits gained from the interest tax shield, and as a direct consequence the market value of the firm starts to decline (Ross et al., 2010, p. 526-527).

Ross et al. (2010, p. 527) further states that a capital structure that maximizes the market value of the firm is also the one that minimizes the cost of capital. The static trade-off theory of capital structure is thus directly applicable to the WACC. Figure 5 is much the same as figure 4 except that a new line for the WACC has been added. This line, corresponding to the static trade-off theory, declines at first. This as a consequence explained by that the after-tax cost of debt is cheaper than equity. Hence, initially the WACC declines as the firm starts to deploy dept. This continues until the optimum is reached, illustrating that the minimum WACC has been achieved. Further increases in debt from this point actually increases the WACC. Ergo, the cost of debt begins to rise, and the fact that debt is cheaper than equity is outweighed by the financial distress costs acquired.

**Figure 5.** The optimal amount of debt and the WACC.
Source: Adaption from Ross et al. (2010, p. 527)

Concluding, the trade-off theory contends that the market value of a firm is dependent and directly connected to its capital structure. Thus, the possibility to attain an optimum level of debt and equity exists. This optimum composition of debt and equity is determined by the static trade-off between the interest tax shield gained from debt and financial distress cost acquired from debt. Consequently, the trade-off theory shows that debt has an overall impact on a firm's financial performance and market value. The relationship between debt and financial performance is of interest for this degree
project. It provides an explanation on the positive impact debt have, to a certain extent, on financial performance. This further on supports the investigation of a reverse causation between the two. Implying that the financial performance affects the usage of debt, and trade credit in particular.

**Agency Theory**

Adam Smith described back in 1776, that directors of joint-stock companies should watch over the invested money with the same anxious vigilance as partners in a private corporation watch over their own (Cannan, 1904, p. 700). This particular reasoning became the foundation for what today is known as agency theory. Constitutionally, the agency relationship is a specific contract under which a principal grants an agent to perform a service on their behalf. Ergo, the principal delegates, to a certain extent, some decision making authority to the agent (Jensen & Meckling, 1976, p. 308). However, it is virtually impossible for the principal at zero cost to ensure that the agent will make optimal decisions. This may result in managers exerting insufficient work effort, indulging in perquisites, not maximizing the welfare of the principal, or failing to maximize firm value (Berger & Bonaccorsi di Patti, 2006, p. 1066; Jensen & Meckling, 1976, p. 308). Thus, agency costs is a direct byproduct from the separation of ownership and management, materializing from aligning the interests of the two.

Jensen & Meckling (1976, p. 308) further describes agency cost as the sum of three variables: the monitoring expenditures by the principal, the bonding expenditure by the agent, and the residual loss. Hence, they describe that in most agency relationships the principal and the agent will incur positive monitoring costs. In addition, stemming from the monitoring and bonding activities, some divergence between the agent’s decisions and the ones maximizing the welfare of the principal will occur. This divergence will than ultimately lead to a reduction in welfare experienced by the principal, symbolizing the residual loss. Henceforward the principal has to contemplate the trade-off between the agency costs of mitigating the residual losses, versus the potential event where the agent act against the incentives of the principal.

This agency relationship is however not exclusively connected to the divergent interests between the principal and agent. John & John (1993, p. 951) showed that heterogeneous incentives and a diverse risk appetite among shareholders and external debtholders are also in conjunction with a potential agency relationship. Shareholders, evidently, encourage a maximization of firm value, resulting in a higher share value. Debtholders, on the contrary, advocate for stability since it is in their interest to secure debt claims outstanding. Clearly this relationships indicate a conflict of interest between shareholders and debtholders, consequently producing an agency cost trade-off between equity and debt (John & John, 1993, p. 951). Further on the authors imply that the framing of control systems or compensation plans could mitigate the agency costs related to equity. However, this could shift the manager’s incentive to take on risky debt, hence the mitigation related to equity agency costs would rather increase the ones for debt. This because when leverage becomes relatively high further increases may generate significant agency costs of outside debt. Stemming from risk shifting or reduced effort to control risk, resulting in higher expected costs of financial distress, bankruptcy, or liquidation. Ultimately the agency costs will result in higher interest expenses for the firm, to compensate debtholders for their expected losses (Berger & Boneccorsi di Patti, 2006, p. 1066). A proposition to incorporate incentives towards the
agency costs surrounding the capital structure as one is thus laid forward, integrating equity as well as debt (John & John, 1993, p. 569).

Eisdorfer et al. (2013, p. 550) found that when the compensation leverage is lower than firm leverage, investment distortion is more likely to increase the value of equity. When compensation leverage on the other hand exceeds firm leverage, investment distortion is more likely to increase the value of debt. This indicates that managers have personal incentives to deviate from an optimal investment policy in order to increase their own compensation, rather than firm value. As follows, shareholders stand against an additional trade-off, the leverage ratio optimal to the firm, and the optimal compensation leverage for the manager. Indicating that a firm’s capital structure plays an important role when mitigating agency costs. Hence, firms may be able to mitigate agency costs by setting the manager’s compensation leverage as close as possible to the firm’s capital structure leverage ratio (Eisdorfer et al., 2013, p. 561).

Theory thus suggest that the choice of capital structure may help to mitigate these agency costs. The agency cost hypothesis imply that high leverage or a low equity/asset ratio reduces the agency cost of outside equity and increase firm value by constraining managers to have similar incentives as shareholders (Berger & Boneccorsi di Patti, 2006, p. 1066). Henceforward, the agency theory, if debt is taking into consideration as an agency cost, may prove useful when exploring the capital structure of SMEs with limited external equity issued, and particular what type of debt they can obtain. It further on supports the investigation about how financial performance affect the usage of trade credit. Principally because of the agency relationship concerning monitoring costs for capital providers towards the shareholders of SMEs. This relationship makes SMEs less favorable recipients of traditional financing (Ang, 1992; Berger & Udell, 1998; Michaelas et al., 1999) and can be further explained by the information asymmetry surrounding SMEs.

Information Asymmetry
The foundation of asymmetric information and what it is, is laid out in the article “The Market for “Lemons”: Quality Uncertainty and the Market Mechanism” by George Akerlof in 1970. Essentially what he shows in this illustrative article is that many times there is a mismatch in knowledge between seller and buyer. He further describes this mismatch scenario with the help of the automobile industry, where good quality cars and low quality cars (i.e. “lemons”) are considered. These cars are further divided into new cars and used cars, for simplicity used cars of low quality will be of focus. For instance, if a buyer is in the market for a used car, the seller will be more likely to have superior knowledge regarding the quality of the product than the buyer is. This in turn can create the issue of adverse selection, meaning the seller may take advantage of the asymmetric information and intentionally sell a low quality product to the price of a high quality product, without the buyer being aware. Therefore, asymmetric information comes with a cost, which is not only the amount the buyer has been cheated by. The cost of dishonesty also have the tendency to drive out legitimate business, as the dishonest dealings makes it impossible for buyers in the market to tell if the quality of the product is of good or inferior quality (Akerlof, 1970, p. 495). As a consequence according to Akerlof (1970, p. 496), it is of utmost importance “(...)to be able to identify the quality of inputs and to certify the quality of outputs”.
To further illustrate the “Lemons Principle” Akerlof utilizes another example connected to the credit markets. In this particular example, Akerlof (1970, p. 498-499) explains that interest rates may be extraordinary high depending on the type of lender. Which stems from the fact that the grantor of credit may have insufficient information about the borrower. Nevertheless, there are counteracting instruments for this asymmetric information. The main instrument can be seen as the brand name of an enterprise (Akerlof, 1970, p. 499-500), since many established brands have a history of quality it works as an assurance towards the buyer.

It is particularly important to keep information asymmetry in mind when dealing with SMEs and their access to financing. As SMEs tend to be less transparent than large corporations it is evident that information is not as accessible of SMEs as for large corporations. Consequently, SMEs (i.e. the seller) will have more information than the financier (i.e. the buyer), which in turn will create obstacles for the financier to grant credit. This is related to the argument of Akerlof (1970, p. 499), that the grantor have insufficient information about the borrower and as a consequence deny the access to credit. Moreover, this insinuate that SMEs experience higher interest rates or ultimately are dismissed of traditional financing altogether. Due to these facts, alternative financing is what SMEs have to utilize, such as in the form of trade credit. Therefore, information asymmetry dictates how SMEs can obtain financial leverage, hence it will ultimately impact the capital structure of the firm. However, trade credit can be employed as a counteracting instrument of asymmetric information, since it can be viewed as a signaling mechanism in terms of their ability to meet credit payments.

3.2.2 Non-traditional theories

Signalling Theory
The signaling theory was described in 1973 by Michael Spence in the article “Job Market Signaling”, where he illustrates the signaling mechanism with the help of the job market. He begins with the argument that when an employer is in the market to employ, the employer will be uncertain regarding the employee’s capabilities at the time of hiring. As it is unknown to the employer what capabilities the employee is obtaining, it can be seen as an investment decision. Therefore, Spence further illustrates it in comparing the hiring of an individual to the lottery. However, the employer do not operate entirely in the dark, as she may observe other attributes of the potential employee. What she can observe is an excess of personal data in the form of observable characteristics, which will be the foundation of the assessment whether or not to buy the lottery. There observable characteristics can be of two natures, alterable and unalterable. The alterable attributes are referred to as signals and these are subject to manipulation, meanwhile the unalterable are referred to as indices who are not changeable. Consequently, in terms of indices there is not much the potential employee can do. In contrast to the indices, the signals are alterable and are under the manipulation of the potential employee. In consequence, the potential employee can try to maximize her signals in order to convey the employer that she obtains the desirable capabilities required.

Spence (1973, p. 361-368) further exemplifies the model where two groups of workers are compared, good workers and bad workers. He explains, as stated before, there is virtually impossible beforehand hiring to tell under which category the potential employee will be classified. Which is appreciated by the poor worker, as they will “free
ride” on the solid work of the favorable worker. Due to the “free ride”, the better workers are inclined to invest in signals in order to signal their superior, which in this example is education. These investments are what can be considered signaling costs, they can take other forms than monetary as well, such as psychological and other costs (Spence, 1973, p. 358-359).

The connection between the aim of the study at hand and signaling theory laid out by Spence (1977) is quite evident. To use the terminology of Spence, SMEs can be considered the potential employee and credit grantors are seen as the employer. Much like an individual, SMEs also come with attributes that are both alterable and unalterable. It is from these attributes the credit grantor will decide whether or not to grant financing. As the characteristics of SMEs such as age, firm size, and industry affiliation are not alterable, they will be considered indices. However, the creditworthiness of an SME is an attribute that can be altered and can be seen as a signal. To use the example of Spence, where he compares good workers and bad workers, there can be two groups of SMEs, i.e. the ones able to meet credit payments and the ones not able to meet them. Instead of the “bad” SMEs free riding off the “good” SMEs, it seems as if the case is reversed when seeking financing. Meaning, the SMEs who actually are capable of meeting credit payments suffer from the ones not able to meet them, which ultimately leads to them being denied financing. Therefore trade credit can be used as a signal, as the utilization of it will prove their creditworthiness. In turn they differ themselves from the ones with poor creditworthiness. Moreover, trade credit can be seen as an investment to generate traditional debt, hence being the signaling cost. Essentially, trade credit will not only be used as a substitute to create financial leverage, it will also be a tool (i.e. signal) to obtain traditional debt.

Furthermore, Ross (1977) used the theory of capital structure irrelevance by Modigliani & Miller and included information asymmetry. Where he raises the concern of if all players in the market do not obtain equal information, since managers of firms tend to have more information than outsiders regarding future prospects for the firm. Therefore it will make the market incapable to separate firms with bright future prospects from the ones with poorer future prospects, and as a consequence the market will value all enterprises equally. Consequently, Ross investigated if there were any possibilities for the managers of firms with bright futures to signal their superiority. In his investigation he shows that the capital structure of the firm plays a signaling role, where he states that debt signals a bright future. There are two reasons for why debt is considered to have a positive signal to the market:

- Firstly, it commits the firm to periodic interest payments, insinuating solid liquidity and thus favorable financial performance.
- Secondly, debt financing is too costly for firms with poor outlooks, implying less favorable financial performance.

These relationships are further explained by Ross et al. (2010, p. 533), where the implications of using debt and equity are elaborated. When the firm is trying to signal that it has a bright future and consider itself to be undervalued, the last option of financing is to issue equity as it would be to sell it too cheaply. Therefore, debt is preferred as the firm’s stock is undervalued. Consequently, the firm value will increase as the market realizes that the firm is currently undervalued. Furthermore, equity
contains a signaling effect as well, the same logic as in issuing debt can be used but reversed. If the firm is overvalued it is preferable for the firm to issue equity, since it is at an inflated price. However, it will send the signal of the firm being overvalued to the market. In consequence the market will realize this and the firm value will decrease.

From the aforementioned, it is a direct connection between financial performance and capital structure. Since the aim of this study is to investigate what affect financial performance has on trade credit (i.e. capital structure) it is crucial to grasp the different signals. In essence, an enterprise signals information when altering their capital structure. Meaning, sending positive signals when issuing debt and negative signals when issuing equity.

**Pecking Order Theory**

In 1961 Donaldson published a study confronting one of the basic financial choices, whether a corporation should choose between debt or equity as their long-term source of capital. He observed that “Management strongly favored internal generation as a source of new funds even to the exclusion of external funds except for occasional unavoidable ‘bulges’ in the need for funds” (Donaldson, 1961, p. 67). The aforementioned served as the foundation for Myers (1984) when he developed *The Pecking Order Theory*, insinuating that corporations have a hierarchical preference order when financing their capital structure. This particular preference order is further built upon the concept of asymmetric information developed by Akerlof (1970) as well as the work carried out by Ross (1977) about the signalling mechanism behind issuing debt or equity.

Myers (1984, p. 581-582) further points out that the choice of issue is related to the subsequent cost. However, these cost does not only arise due to the new issuance of securities, but also because of asymmetric information. Transaction costs are dependent on the type of capital issued, consequently leading up to that the type of capital with the lowest costs are ranked the highest. Evidently, the highest ranked capital issues should be exhausted before turning to alternatives with higher costs. Firms prefer to utilize internally generated funds firsthand, they face the lowest transaction costs and are thus ranked as the highest financing alternative. Internal funding should be followed by the issues of debt, rather than equity, in the hierarchy. Originating from that debt is superior to equity, it is a cheaper alternative by the reason of the lower default risk in times of financial distress of bankruptcy. In the case of bankruptcy, creditors are provided with a senior claim, henceforward requiring a lower rate of return on their investment.

Debt can also be considered advantageous to equity by virtue of the abovementioned signalling effects laid forth by Ross (1977). As a direct reaction, equity is viewed as the lowest ranked financing alternative and is only to be issued when all other sources have been exhausted, or when the debt capacity is fully exploited (Myers & Majluf, 1984, p. 219). The pecking order theory further explains that the safest securities should be issued first. Comparatively, straight debt is safer to issue than hybrid securities and is accordingly the one to be exhausted first (Myers, 1984, p. 581).

Lindblom et al. (2011, p. 25) empirically proved that the main principles of the pecking order correspond to actual financing behaviour. However, their study shows a more exhaustive hierarchy in terms of different types of securities issued by a firm for financing purposes. Retained earnings, or internal funding, are still ranked as the highest source of financing followed by debt. Long-term bank loans are ranked as senior closely
compared to short-term debt securities. The authors also find that managers prefer leasing to equity, and that it can be viewed as a substitute to bank loans. Equity is on the contrary a preferred type of financing when weighed against hybrid securities such as convertible bonds, implying that the issuance of pure equity is ranked higher in the hierarchy. Lindblom et al. (2011, p. 25) further reason that this could imply that issuance of hybrid securities is followed by a higher content of asymmetric information and transaction costs.

Concludingly, the pecking order theory imposes a historical preference order for firms when financing their capital structure. Internally generated funds are the preferable choice over debt, implying that firms with solid financial performance are able to build up financial slack. Hence, firms with weaker financial performance do not have the ability to build up internal funds and are more dependent on bank loans. Lindholm et al. (2011, p. 25) found that SMEs in particular do not have this ability, debt thus seems nearly as important for them as internal funding for larger corporations. They further observed that non-listed firms, often being the case for SMEs, are interested in using alternative sources of financing, namely trade credit, and not only short-term bank loans. This further proves that SMEs use trade credit as a signalling mechanism to demonstrate a favorable financial performance to the market. These relationships are to be taken into consideration in this study, as it provides additional support for the investigation if financial performance affects SMEs usage of trade credit.

3.2.3 Determinants of Capital Structure

Financial Performance

Voulgaris et al. (2004, p. 247) showed that financial performance is a major determinant of the financing decisions for SMEs, especially the ones with high profit margins induced higher use of short-term debt. However, it is further determined that financial performance correlates negatively with overall leverage, indicating that the pecking order hierarchy is followed by SMEs (Voulgaris et al., 2004, p. 257). This is supported by Forte et al., (2013, p. 365) who demonstrated a strong and robust negative relationship between financial performance and leverage.

Having solid financial performance does however not imply that firms disregard external debt all together. Firms that readily obtain institutional finance are generally the one with best financial performance, the most solvent and the largest. These features provide them with credit quality, facilitating access to financing in more beneficial conditions compared to firms with economic and financial problems. In conjunction with this, the worse financial performance of a firm the more likely it is to resort to supplier finance, since higher chances of bankruptcy or non-payment result in institutional finance constraints (Rodríguez-Rodríguez, 2006, p. 105). Berger & Udell (1998, p. 627) furthermore point out the relationship between financial performance and external finance. They found that the dependence on trade credit is negatively related to the strength of the firm’s relationship with its bank, which is highly correlated with its financial status.

Even though there seems to be a negative relationship between financial performance and overall leverage, some evidence points towards that firms with a solid financial performance turn towards institutional debt. One can therefore expect that firms with mediocre financial performance rely more on, and turn towards, alternative financing.
This is of interest for this degree project as it aims to investigate if financial performance affect the usage of trade credit for SMEs. Thus, controlling for financial performance will make the authors aware of why capital structure among SMEs differ.

**Firm Size**

Berger & Udell (1998), investigate the matter of firm size and how it impacts the capital structure of the firm. When small firms seek financing they are surrounded by the problem of information asymmetry, in contrast to large corporations. As a result smaller enterprises have a more difficult time to convey their quality and overcome the troubles of information asymmetry, slimming their access to financing opportunities (Berger & Udell, 1998, p. 616). Due to these aspects, smaller firms have a tendency to rely more on alternative sources of financing, such as trade credit. However, the larger the firm gets the wider its spectrum of financing alternatives will be, including everything from bank financing to public equity (Berger & Udell, 1998, p. 622). It is further argued that to obtain bank or commercial financing, it is required of the firm in question to have assets in its balance sheet that are substantial enough to be considered collateral. Although, small firms many times have a hard time fulfilling these requirements and therefore fall short of this kind of financing (Berger & Udell, 1998, p. 624). Another important aspect to keep in mind when dealing with firm size is the ownership structure, as this differs between small and large firms. The majority of small firms do not separate management and ownership, which insinuate some agency problems in capital structure decisions. More particularly these problems arise from the fact that the owners of small firms do not want to lose their controlling power (Berger & Udell, 1998, p. 628-629). However, it should also be noted that García-Teruel & Martínez-Solano (2010, p. 226) observed a positive relationship between accounts payable (i.e trade credit) and firm size in their study.

With the aforementioned in mind, it is clear that there is a difference in the capital structure of firms with different sizes. Smaller firms do not have the same access to financing as large firms, indicating that they have to rely on alternative sources of financing to create financial leverage. Therefore one can expect, the larger the firm the higher the debt-equity ratio will be. It will be relevant for the study at hand to bear this in mind as the main objective is to investigate the amount of alternative financing (i.e. trade credit) for SMEs in connection to their financial performance. When controlling for firm size, it will be easier for the authors to understand the underlying factors affecting the utilization of alternative financing.

**Age**

Serrasqueiro & Nunes (2012, p. 627) imply that a firm’s age is an important factor in the study of SMEs’ financing decision, especially regarding adjustments of debt. This can be explained by the information asymmetry, young SMEs have often not acquired a sufficient level of reputation to obtain credit on favorable terms (Berger & Udell, 1998, p. 626). Myers further on argues in his paper from 1977 that SMEs at the start of their life cycle with low or no retained earnings may become unreasonable dependent on short-term debt. Petersen & Rajan (1994) thus imply that SMEs must finance their activities with retained earnings rather than with borrowing. However, young SMEs rarely have the ability to generate internal finance, and as a result they have to turn towards debt.
As argued by Myers (1977), Berger & Udell (1998, p. 635) showed that short-term debt, and especially trade credit, stands for a sizable amount of SMEs financing. This further insinuate that trade credit in particular is extremely important for SMEs, and notably in the start of their life cycle. However, as SMEs age their reputation becomes stronger and their credibility and tangible business assets can substantially diminish problems related to information asymmetry (Berger & Udell, 1998). Hence, the possibility to replace short-term debt with long-term debt increases.

Thus, as SMEs age they become more informationally transparent, and their relationships with financial institutions mature. Resulting in that they tend to pay off their accounts payable, becoming less dependent on trade credit (Berger & Udell, 1998, p. 635-636). This is possible due to relationship lending; emerging from that information is gathered by financial institutions through continuous contact with the firm. The information is than later used to help make additional decisions over time about the evolution of contract terms and monitoring strategies, resulting in more favorable long-term borrowing conditions for SMEs (Berger & Udell, 1998, p. 645). Concludingly Berger & Udell (1998, p. 660) show that SME finance through a growth cycle paradigm, “in which different capital structures are optimal at different points in the cycle”. Early in the life cycle SMEs typically rely upon external credit granted by suppliers, but as time progresses they often form long-term relationships with banks. This postulates a substituting effect from short-term debt to long-term debt.

Ultimately, one can establish that age seems to have the same correlation as size when it comes to the firm's financing decision. Young firms often have to rely upon short-term debt in their capital structure. But as the firm matures the access to institutional debt becomes wider, and there seems to be a substitution effect where they go from short-term debt to long-term debt. Lastly, and in accordance with the pecking order theory, the firm is of such age that it can finance itself through retained earnings. Hence, this growth cycle paradigm will be of importance to bear in mind when investigating the usage of trade credit (i.e short-term debt) and its relationship to the financial performance of the firm. Controlling for age will assist the authors in grasping SMEs financial decision making.

Industry
In the article “Hierarchical determinants of capital structure” from 2010 Kayo & Kimura aims to explain the importance of including industry as a determinant of capital structure. As they put it in their introduction, firms who operate within the same industry will most likely have similar behavior patterns, and therefore similar leverage ratios. As a result, these firms will have a strong within-cluster correlation, however firms across industries may have significant differences (Kayo & Kimura, 2010, p. 358). The three main aspects Kayo & Kimura investigate in relation to industry determination of capital structure are munificence (i.e. abundance of resources within an industry), dynamism (i.e. the volatility of the industry), and industry concentration (i.e. the competition within an industry). When accounting for these aspects, one should get a clear picture of how different industries may impact the capital structure of the firms operating within the given industry. These industry characteristics explain 12% of leverage variance, which could imply that they are of lesser importance. However, Kayo & Kimura (2010, p. 359) stresses the fact that these three aspects are of significance when investigating firm leverage. Therefore it is reasonable to believe that particular traits of a given industry might have an impact on the capital structure of firms.
In connection to the three aspects mentioned above, Kayo & Kimura (2010, p. 360-361) argue for certain relationships between them and the leverage ratio. Industries with high dynamism can be seen as industries with high volatility, which can result in financial distress. Due to the aforementioned relationship, firms operating within these firms are expected to have lower levels of leverage. In terms of munificence, industries with a high degree of this aspect have considerable resources and slim competition, which will result in high profitability. Here, Kayo & Kimura (2010, p. 361) makes an interesting point in connection to the pecking order theory and the trade-off theory. The pecking order theory argues for a negative relationship between leverage and profitability, meanwhile in contrast the trade-off theory argues for a positive relationship. However, in their results they found that the negative relationship of the pecking order theory prevails, as firms with the highest profitability had the lowest leverage ratio (Kayo & Kimura, 2010, p. 367). Lastly, in regards to industry concentration leverage is found to be high if the industry is highly concentrated.

In regards to the reasoning above, it can be reasonable to control for different industries and to what degree they fulfill these aspects. Since it is stated by Kayo & Kimura (2010) that these three aspects have an explanatory power towards capital structure of firms, it would be foolish to exclude them. As the purpose of the study at hand is to investigate how financial performance affects the usage of trade credit, which can be seen as part of the capital structure, it is of utmost relevance for this study to control for industry. If this was to be excluded, the analysis would most likely be of lesser quality and understanding.

3.3 Trade Credit
A sizable amount of total SME assets is funded by trade credit, if measured by accounts payable. Trade credit is thus undoubtedly an extremely important source of finance for SMEs, it has however received much less research interest than commercial bank lending, which provides only slightly more credit to SMEs (Berger & Udell, 1998, p. 635).

The hard cut definition of trade credit is quite straightforward. It is the delay between the delivery of good or the provision of services by a supplier and their payment. Trade credit literature offers various theories to explain the usage of it, there are advantageous aspects both for suppliers and for customer from the operational, commercial and financial perspective (García-Teruel & Martínez-Solano, 2010, p. 215). As per mentioned, this particular degree project will take the financial focus on trade credit. More literally, it will view it as a possible source of financing for SMEs capital structure.

As mentioned by Emery (1984, p. 273-274) the financial motives behind trade credit are grounded in market imperfections, often mild for larger corporations but very present for SMEs. Firms (suppliers) with better access to capital markets and with lower costs can act as financial intermediaries and grant financing to firms (SMEs) that have a more difficult time obtaining credit. Biais & Gollier (1997, p. 903) further explain that trade credit can alleviate the problem of asymmetric information, since it transmits information about the firm’s creditworthiness to financial institutions, thus helping them to obtain traditional financing. Trade credit evidently then becomes an important source of financing for firms having a difficult time funding themselves through financial
institutions, often being the case for SMEs. This because of that their access to capital markets is often very limited (Petersen & Rajan, 1997, p. 661), a market imperfection that larger corporation hardly notice.

Countless theories regarding trade credit take into consideration that accounts receivables are positively correlated with firm performance. This is a direct contrast to that accounts payable then are used to finance the firm. This makes sense since each account payables cannot be used to finance the firm when the firm provides the same amount as accounts receivables to a customer. However, this argument does not hold up, the main reason for this is that firms are willing to offer large amounts of accounts receivables because banks then are willing to provide bank loans. This originates in that firms then can pledge to put up the accounts receivables as collateral, often being the case when firms insure their receivables against the probability that the customer will default (Ferrando & Meulier, 2013, p. 3038).

This degree project will thus not take the perspective that accounts receivables compensate accounts payable in the matter of considering them as a source of financing. Hence, it will assume that firms grant accounts receivables to obtain traditional financing and that the overall firm performance is unaffected by it. Put more accurately, it will assume that customers do not default on their outstanding debt, making the acquired bank loan unnecessary. Hence, it is not a reason to not view accounts payable as a source of financing.

### 3.3.1 Neoclassical Theories of Trade Credit

Carvalho & Schiozer (2015, p. 209) explains that “trade credit is an important financing and investment channel that companies commonly demand and supply to one another”. As previously explained, trade credit is embodied in a contractual arrangement where a buyer and a supplier agree upon that the payment may be deferred until a predetermined date. Both the financial and economics literature highlights the importance of trade credit among companies. Carvalho & Scholzer for example showed in 2012 in that 75% of Brazilian SMEs make more than 50% of their purchase as forward purchases. In addition, trade credit plays an important non-financial role for SMEs as it can reduce transaction costs (Ferris, 1981) and promote long-term relationships with customers (Summers & Wilson, 2000). Trade credit is also, as already mentioned, a type of quality assurance when customers are unable to evaluate the product in advance.

In this context, Petersen & Rajan (1997) exhibited that American firms bear an effective opportunity cost of capital of approximately 40% per annum, if the discount offer for cash payments were unutilized. This is quite the burden for SMEs to bear, especially since the market for short-term bank loans has substantially lower interest rates. SMEs are however often unable to take advantage of these advantageous rate, hence market imperfection takes a step into the picture. Information asymmetry, transaction and monitoring costs often prevent bank credit from flowing to all companies. Trade credit thus becomes the capital that managers seek from suppliers in the supply chain in which they operate. Based on this scenario, Carvalho & Schiozer (2015, p. 209) insinuate that trade credit is a resource substitute for bank loans.

SMEs demand for trade credit stems from that the financial industry consider them as high-risk borrowers. This is because the information opacity, uncertainty regarding management quality and the lack of public data surrounding SMEs (Ang et al., 2000) as
well as the lack of real guarantees as collateral for loans (Carvalho & Schiozer, 2015, p. 209). Hence, the more direct operational relationship between suppliers and customers allows the former to invigilate the latter at lower cost compared to banks. Trade credit might thus be an indicator of applicant quality, information that later can be used as part of a credit evaluation by financial institutions (Alphonse et al., 2004). Trade credit can therefore also operate as a compliment to traditional bank loans (Carvalho & Schiozer, 2015, p. 209).

Hill et al. (2010) further showed that operational and financial conditions are determinants of trade credit supply and demand policy. Companies that have greater access to capital markets and external finance use these resources to fund the supply of trade credit, firms that are more financially constrained mainly use their accounts payable to fund their long-term assets. Hence, the demand for trade credit is driven by market imperfections. Firms who are unable to fund themselves internally are also often the ones with a restricted access to capital markets, increasing the demand for alternative financing sources. Additionally, the supply for trade credit stems from market imperfections; the more firms that have access to external financing, the bigger the supply of trade credit in the market.

SMEs demand for trade credit can thus be connected to Majluf (1984) and the pecking order theory. This get particularly clear as SMEs grow, and their sales with them. Hill et al. (2010) demonstrated that when the firm’s working capital, required to finance its operations is positive, they adopt a conservative policy. In this scenario, the additional capital to finance the growth can be obtained from internally generated funds, or externally by lines of credit Hill et al., 2012). Hence, internally generating significant amounts of cash lead to accumulated retained earnings who supports the increase in sales (Carvalho & Schiozer, 2015, p. 210). This is supported by Titman & Wessels (1988) findings, demonstrating a positive correlation between growth opportunities and internal capital for US firms. Consequently, the larger the firm, the less dependent on trade credit it becomes. This relationship can be explained by the pecking order theory, showing that if a firm has the ability to generate sufficient internal capital, debt will be a secondary choice of financing.

Another determinant considering the demand and supply function of trade credit are credit institutions. Nonetheless, traditional bank credit lines are a scarce resource for many SMEs. Funds from business partners in the supply chain thus becomes a vital financing alternative, not only because of the capital it provides, but also since it can act as an intermediate to minimize the friction resulting from limited access to bank loans (Carvalho & Schiozer, 2015, p. 211). SMEs does however have very little reputational history and vague economic and financial disclosure, which might explain the hurdle for them to obtain loans in the traditional credit market (Petersen & Rajan, 1994). Surprisingly, Carvalho & Schiozer (2015, p. 211) does on the contrary claim that there is evidence showing that SMEs’ degree of access to bank loans is heterogenous and that banks, and not trade credit suppliers, are the main source of third-party capital to SMEs.

Given this scenario, it is expected that firms with more access to bank loans are the ones with the highest creditworthiness. This stems from that they have more liquidity, and are more likely to pay their suppliers on time. Another possible explanation is that additional funds generated from revenue growth is insufficient to ensure payments to suppliers, giving rise to an increased demand for external funding. Under this condition,
the employment of bank loans can enable firms to pay their debts to suppliers (Carvalho & Schiozer, 2015, p. 211). Hence the utilization of more traditional debt is not only connected to a solid financial performance. It can also be explained by the need for SMEs to pay off their suppliers, given that internally generated funds are insufficient. Once again this is in line with the pecking order theory, where the issuance of debt ranks higher than equity when external capital is needed.

Trade credit can thus work as an indicator of a firm’s credit quality and alleviate access to bank loans. Alphonse et al. (2004) found evidence that trade credit used by firms might help to improve their reputation and thus enable them to obtain bank loans. Atanasova (2014) found strong evidence that trade credit alleviate access to conventional bank loans, especially for firms with high agency costs. This result authenticate the findings of Alphonse et al. (2004) and is consistent with theories based on that trade credit plays a signalling role, due to the advantages of suppliers liquidating product (Carvalho & Schiozer, 2015, p. 212). In addition, Petersen & Rajan (1997) showed that trade credit is positively associated with the availability of credit lines. Carvalho & Schiozer (2012, p. 212) thus lay forth that firms begin to rely on external financing sources to invest in receivables and inventory, as a result of growing operations.

Carvalho & Schiozer (2012, p. 220) however established that suppliers face aspects of adverse selection and moral risk regarding their customers, as SMEs suffer credit restrictions as direct consequence to their limited access to bank loans. Their study further supports the theory of trade credit complementarity in SMEs, developed by Ogawa et al. in 2011. This demonstrate that trade credit can act as a substitute to traditional debt to create financial leverage. It is further stated that trade credit has a positive impact on bank credit and vice-versa. Firms may also demand trade and bank financing, in addition to longer payment terms to suppliers. This is because they then can redistribute these funds to their customers as a mean to increase credit sales. The supply and demand function of trade credit is thus proven to be wide. However, the demand for trade credit by SMEs are mainly connected to their limited access to capital markets and the market imperfections that comes with it. Thus, trade credit has to be viewed as an extremely important component in SMEs capital structure and a vital financial alternative for their future growth and survival.

3.3.2 Explicit costs
As has been discussed throughout the text, there are two main options for SMEs when seeking financing, bank debt or trade credit. However, the two come with different levels of costs. In terms of explicit costs, bank debt can be considered the cheaper alternative. The most common credit term suppliers of trade credit use is “2/10 net 30”, which comes with an implicit interest rate of 43,9% (Ng et al., 1999, p. 1110). An interest rate quite much higher than those offered on traditional bank loans, making bank financing the cheaper alternative (Huyghebaert et al., 2007, p. 436). Therefore, one can arrive at the conclusion that trade credit is the more expensive source of financing in terms of explicit costs and bank debt should be preferred.

However, as most SMEs don’t separate ownership and management other factors than explicit costs influence their choice of financing. Entrepreneurs tend to value the controlling rights over the firm highly and these rights could be at risk if bank debt is to
be utilized (Huyghebaert et al., 2007, p. 436). Therefore the implicit costs have to be considered as well, which will be further discussed in the next section.

### 3.3.3 Implicit costs

When a firm decides upon what kind of financing to take on, it might not be as intuitive as it seems. One could argue for choosing the financing with the lowest cost as above, however, one also have to consider the implicit costs that are not self evident. The alternative for SMEs is either to utilize bank debt or trade credit, and as bank debt is difficult to secure for SMEs it leaves them with trade credit. Although, many times entrepreneurs prefer trade credit over bank debt, due to the implicit cost of bank debt (Huyghebaert et al., 2007, p. 448). As discussed earlier, bank debt is the cheaper alternative but do not hold a large “implicit equity stake” within the firm. Consequently, banks tend to follow a strict liquidation policy when the borrower is experiencing financial distress, meaning the whole firm is liquidated in order for the bank to receive what is owed by the borrower. Due to the lack of an implicit equity stake, the bank do not want to risk a loss and as a consequence will discontinue the lending. Therefore, utilizing bank debt is implicitly more expensive than trade credit as it risks the liquidation of the firm. As a consequence, entrepreneurs might be more eager to utilize credit that do not bear the risk of losing control over the firm (Huyghebaert et al., 2007, p. 437-438).

In contrast to bank debt, trade credit can be seen to have some implicit benefits in comparison. Petersen & Rajan (1997) argues as trade credit is intermediated by suppliers the implicit equity stake is much larger than for banks. Consequently, the suppliers will be more willing to renegotiate the terms of funding for firms in financial distress. Since the borrower is a customer and purchasing the products of the supplier, they would not only lose current stakes they would also lose future business. Therefore, suppliers typically increase the amount of credit during periods of distress (Franks & Sussman, 2005, p. 87). As a result, according to Petersen & Rajan (1997) if the restructuring is successful, suppliers will earn more future profits. In consequence, suppliers will not follow the strict liquidation policy of banks, which further insinuate that the entrepreneur do not stand to lose control over the firm. Due to the aforementioned trade credit can be seen as riskier than bank debt from a lender’s viewpoint, which explains the more expensive pricing as it includes a default premium (Huyghebaert et al., 2007, p. 438). However, entrepreneurs tend to be willing to pay for the default premium if they do not have to risk losing control over the firm.

In conclusion, trade credit can be viewed as the more expensive alternative explicitly. Although, when including the implicit costs/benefits it might not be considered as expensive as at first sight. Mainly due to the fact that owners of SMEs do not want to lose control over the firm, they are willing to utilize trade credit. Therefore, it will be of importance for the thesis at hand to have these aspects in mind when analyzing the capital structure of SMEs and their utilization of trade credit.

### 3.3.4 Trade Credit and Taxes

In 1984 Brick & Fung investigated the relationship between trade credit and taxes in their article “Taxes and the Theory of Trade Debt”. In their article they scrutinize the suggestions of a cash accounting system, meaning revenues aren’t taxed until they have been collected. Brick & Fung found that in such an environment corporations with high taxation will have an inducement to grant credit to corporations with lower taxation, in
order to delay the collection of revenue and hence the tax liabilities accompanied with it. However, most corporations are required to use accrual accounting standards for tax purposes (Desai et al., 2016, p. 133). Therefore, the tax liability will occur simultaneously as the revenue is recognized, which both Mian & Smith (1992) and Brennan et al. (1988) further investigated. Mian & Smith pointed out that the utilization of installment sales, for highly taxed firms, could defer the tax liability until the actual revenue was received. Which according to Brennan et al. (1988, p. 1139) was not the case, as it doesn’t reduce the present value of the tax liability.

In order to understand the impact taxes actually have on trade credit Desai et al. (2016) takes the accrual accounting method into account. As they explain, corporations must apply accrual accounting when calculating its tax liabilities. Which implies that a corporation must pay taxes when the revenue is earned, not when it is received (Desai et al., 2016, p. 133). Due to this setting, there could arise incentives to utilize trade credit. Desai et al. (2016) uses an example of a parent company and its affiliate reallocating capital, with the help of trade credit. It is also stated that the same relationship between unrelated parties is significant (Desai et al., 2016, p. 137). In their example, the parent company \(i\) will buy a good worth $1 from its affiliate \(j\). Now firm \(i\) has to make the choice of either paying immediately or delay the payment (i.e. purchase on trade credit), if they chose to delay the payment they will accrue an account payable. Due to the delay in payment they will settle their account payable in the future for the original dollar plus interest \((1+r)\). Consequently, firm \(i\) will have an additional dollar of capital until payment is due, hence their financial capital \((Ki)\) will increase. In contrast, firm \(j\) will decrease its financial capital \((Kj)\) as it provides credit for firm \(i\). Furthermore, firm \(i\)’s production function can be viewed as \(Qi(Ki)\). The delay in payment firm \(i\) has incurred will be netted out after taxes, which is summarized in the following equation:

\[
[Q'_i(K_i) - r](1 - T_i) 
\]

From the expression above, where \(T_i\) is the tax rate for firm \(i\), it is illustrated that the additional dollar in \(Ki\) is taxable. However, it further illustrates that it is tax deductible as well, as a consequence of the utilization of trade credit granted from firm \(j\). Comparably, firm \(j\) will be exposed to the same expression but reversed as they will lose a dollar when granting trade credit to firm \(i\). Nevertheless, the “lost” dollar will generate interest, which after taxes nets:

\[
[r - Q'_j(K_j)](1 - T_j) 
\]

From expressions 7 and 8, one can conclude that there are incentives for both parties to utilize trade credit when firm \(i\)’s production function is higher than the interest rate and firm \(j\)’s production function is lower than the interest rate. In summary, when firm \(i\) delays the payment they are essentially borrowing from firm \(j\) and benefits from this trade as a consequence of the difference in pre-tax marginal products of capital.

The joint benefits of utilizing trade credit can be summarized in the following expression:

\[
Q'_i(K_i)(1 - T_i) - Q'_j(K_j)(1 - T_j) + r(T_i - T_j) 
\]
As is illustrated from the equation above, the joint benefits arises from the difference between the after-tax marginal products of capital, and the tax benefits from interest payments and receipts. If after-tax marginal products of capital for firm $i$ and firm $j$ are equal, the first two terms of equation 9 will offset each other and there is a benefit to the transaction if the tax rate for firm $i$ is higher than the tax rate for firm $j$. Keeping everything else equal, larger tax spreads will give incentives to relocate capital.

In conclusion, Desai et al. (2016, p. 135) states that there is a higher utilization of trade account borrowing in environments with high taxes compared to environments with lower taxes. Which is in line with the interest expense deductions in heavily taxed locations. Therefore, it can be stated that higher taxes will endorse the funding through trade credit, much like traditional debt encourages it. As stated earlier in the section, the relationship applies to unrelated firms as well (Desai, 2016, p. 138). This will be of interest for the thesis at hand, as the focus will be the Swedish market which is known for its high taxes. Due to this characteristic of the Swedish market, it will be important for the authors to understand the relationship between trade credit and taxes in order to carry out an analysis of quality.

3.4 Financial Performance
To determine a firm’s financial performance an analysis of financial statements is often carried out. It is the systematic numerical calculation of the relationship between facts in order to measure profitability, operational efficiency and growth potential of the business (Damjibhai, 2016, p. 30).

Many tools have been developed and are available for this type of analysis, among them is the ratio analysis. It is considered a powerful analytical tool, useful for measuring the performance of an organization. Ratio analysis, for example, allow interested parties such as shareholders, investors, creditors, government and analysts to scrutinize certain aspects of a firm’s performance (Damjibhai, 2016, p. 30-31).

Financial ratios not only measure the performance of a firm, they can also be of help when taking strategic decisions on how to improve performance. Ratio analysis is a widely used tool of financial analysis. Primarily by virtue of its ability to interpret financial statements so that the strengths and weaknesses of a firm as well as its historical performance and current condition can be determined (Damjibhai, 2016, p. 31).

3.4.1 Return on Sales
Profit margins, also noted as return on sales, are metrics that measure the profitability of an enterprise. More precisely, they measure how much a firm earns in relation to its sales, i.e. how much profit each dollar of revenue generates. The two most common profit margins are gross profit margin and net profit margin, which will be further explained.

Starting with the gross profit margin, this metric is a measurement of how much is retained within the company after the direct costs of producing the goods or services offered by the firm. Essentially, the higher the gross margin is, the better. The gross margin is expressed as a percentage, according to the following formula:

$$\text{Gross Margin} = \frac{(\text{Revenue} - \text{Cost of Goods Sold})}{\text{Revenue}}$$

(10)
Moving on to the net profit margin, which also is a measurement of how much is retained within the company, however after the deduction of more items than the gross margin. The gross profit margin only deducts the cost directly related to the production of the goods or services. Meanwhile, the net profit margin deducts other operational expenses that are not directly connected to the production. Therefore, the net profit margin is a more rigid metric of firm profitability. The net profit margin is calculated as according to equation 11:

\[
Net \ Profit\ Margin = \frac{Net\ Income}{Revenue}
\] (11)

Even though net profit margin is seen as the more robust measurement of firm profitability the gross profit margin will be included in the analysis of the study. Since the gross margin is directly related to the production itself, it can help to gain a deeper understanding for performance alternations. Accounts payable (i.e. trade credit) is commonly used by SMEs for them to be able to keep their production running. As a consequence, a negative relationship between gross margin and trade credit can be expected, due to the fact that the more trade credit utilized in production the higher the cost of goods sold. Hence, the gross margin is expected to be lower for SMEs utilizing high levels of trade credit, and vice versa.

The net profit margin has been used by Petersen & Rajan (1995, p. 672) previously as a proxy for an internal cash generating function. Which is self-explanatory, the higher the net profit margin, the more earnings will be retained within the firm. Therefore, one could expect a negative relationship between the net profit margin and utilization of trade credit, and vice versa.

In conclusion, return on sales is a riveting metric when measuring financial performance of a firm, as it is the true bottom-line result. As stated above, the relationship between trade credit and return on sales is expected to be negative. Moreover, as the aim of the study is to answer what impact financial performance has on the utilization of trade credit, this metric is critical to include in the analysis.

### 3.4.2 Return on Assets

Return on Assets (ROA), developed by DuPont in 1919, represents a fundamental method used to evaluate a firm's profitability. It determines a company’s ability to utilise its assets. In other words, ROA evaluates how efficiently a firm uses its assets in order to generate an income stream (Tangen, 2003, p. 349). The original DuPont model recognizes the profit margin and the asset turnover as the value driver of ROA, and the return is calculated by multiplying the two components (Welch, 2008, p. 529). Ross et al. (2010, p. 62) however states that the most common approach to compute a firm’s ROA is simply by dividing its net income with the book value of total assets. Both calculations generate the same return, the DuPont model on the other hand may usefully inform one on how to raise the ROA (Welch, 2008, p. 529).

\[
ROA = \frac{Net\ Income}{Revenue} \times \frac{Sales}{Total\ Assets} = \frac{Net\ Income}{Total\ Assets}
\] (12)

Concludingly, the DuPont formula illustrates that ROA can be improved, everything else equal, by increasing either the net income or the effectiveness of the firm’s assets (Welch, 2008, p. 529). Consequently, ROA is a widely used financial metric to assess a
firm’s financial performance and is frequently employed in research (see for example Gleason et al. 2000, p. 190; Li & Simerly, 1998, p. 173; Darush & Öhman, 2015, p. 106). In particular, interrelation between ROA and ROE will be of interest for this degree project. This since a ROE higher than ROA reflects upon the firm’s use of financial leverage, reversely a lower ROE than ROA reflects upon that the firm is employing less debt (Ross et al., 2010, p. 62). This interrelationship can be viewed as quite strange, however it is very straightforward and can be explained by the equity multiplier (Debt-Equity ratio). Basically, ROE is the product of two other ratios; ROA and the equity multiplier (Ross et al., 2010, p. 66).

\[ ROE = ROA \times \text{Equity Multiplier} = ROA \times (1 + \frac{D}{E}) \]  

(13)

Hence, ROA might be a more reliable metric to use when examining a firm’s financial performance, contra ROE. This since a firm’s ROE is highly connected to the amount of debt it employs, and can even increase with it, while the ROA denominator is independent of it. Furthermore the ROA will be calculated on an after-tax basis, allowing for a better and more just comparison of firms regardless of their size. Accounting for taxes, i.e using net income as numerator instead of EBIT, would enable the incorporation of tax-shields induced by interest payments on debt. This becomes beneficial for this study since it aims to investigate how financial performance affect the usage of trade credit. Trade credit, as abovementioned can be utilized as a tax-shield for firms with restricted access to capital markets. Thus a firm’s after-tax performance could impact its decision of employing trade credit as financial leverage.

### 3.4.3 Return on Equity

Return on equity (ROE) is a metric measuring how well an enterprise has performed in relation to the capital its shareholders have invested. In an accounting perspective it is a true bottom-line performance measure. Essentially, ROE displays how much return every dollar of equity invested in the firm by its shareholders generates (Ross et al., 2010, p. 62). Consequently, a high ROE indicates that the firm is utilizing its equity in an efficient manner and is a well-performing enterprise. ROE is expressed as a percentage derived from the following equation:

\[ ROE = \frac{\text{Net Income}}{\text{Total Equity}} \]

(14)

It has to be kept in mind that ROE is measured in accounting rates of return, meaning they are measured on book values. A more appropriate term for ROE would be Return on Book Equity. As a result, it would be inappropriate to compare the ROE of an enterprise to the interest rate observed in the financial markets (Ross et al., 2010, 62). However, this will not be of concern for the study at hand as it is only book values that will be investigated and compared.

Another concern is of how leverage might affect ROE, it is self-evident that ROE will increase as leverage increases. This can be illustrated with the help of equation 14. The smaller the denominator (i.e. total equity) the larger the ROE, keeping the numerator (i.e. net income) constant. A firm utilizing financial leverage will as a result have a smaller portion of equity, hence leverage will have a positive relationship with ROE. As a consequence, it will be important for this degree project to account for this relationship in the analysis. The foregoing will be accounted for with the aid of the
Debt-to-equity ratio, in order to arrive at the true financial performance of the sample firms.

In conclusion, ROE is an important metric in regards to measuring financial performance. However, it comes with some drawbacks that have to be considered for this research. Moreover, as the main objective of the study at hand is to investigate what affect financial performance has on the usage of trade credit this metric cannot be excluded.

### 3.4.4 Debt-to-Equity Ratio

According to Penman (2013, p. 373) one of the most common measures of financial leverage is the debt-to-equity ratio. The ratio is a measurement that is utilized in order to measure an enterprise’s financial leverage, the ratio indicates how much debt the firm employs to finance its assets. The most traditional debt-to-equity ratio is calculated according to equation 15:

\[
\frac{\text{Total Debt}}{\text{Total Equity}} = \text{Debt to Equity Ratio}
\]

This ratio will be of importance to employ for the study at hand as it assess the financial leverage situation of a corporation. As trade credit is an alternative approach to create financial leverage and the aim is to investigate how the usage of trade credit is affected by financial performance, it is a central metric to investigate. However, the debt-to-equity ratio can come in many variations (Welch, 2008, p. 524) and to best fulfill the purpose of the study at hand it is believed that it has to be altered into one variation accounting for long-term debt only, which will be calculated accordingly:

\[
\frac{\text{Long term Debt}}{\text{Total Equity}} = \text{LTDE}
\]

The long-term debt-equity ratio (LTDE) is exercised to separate the different types of debt from each other. Under long-term debt the more traditional types of debt can be found, such as bank debt for example. Consequently, enterprises that have high LTDE ratios are expected to employ lower levels of trade credit, hence a negative relationship between financial performance and LTDE can be anticipated.

### 3.4.5 Cost of Debt

The cost of debt is a weighted average of all components of net financial obligations (Penman, 2013, p. 447). It can be viewed as the overall average return the firm’s creditors demand in return on new borrowing, expressed as an annual percentage. While a firm’s cost of equity can be viewed as quite ambiguous, the cost of debt can easily be calculated. It is simply the interest rate the firm must pay on its outstanding debt (Ross et al., 2010, p. 443). The simple formula to compute cost of debt is:

\[
\text{After Tax Cost of Debt} = \text{Average Interest Paid} \times (1 - T)
\]

The after-tax cost of debt is calculated for the same reason as the ROA. Simply put, interest paid is tax deductible. Hence the actual net cost of debt is the interest paid less the tax savings gained from the tax-deductible interest payment (tax-shield). This becomes relevant for this degree project due to that firm’s may utilize trade credit, and other sorts of debt, in order to benefit from tax savings.
It might be viewed as illogical for most to include cost of debt as a financial performance indicator, the reason behind it is however quite straightforward. As explained earlier, SMEs have very limited access to capital markets and financial institutions. This culminates in that they often have to turn towards short-term debt, namely trade credit, with considerably higher explicit costs compared to more traditional long-term debt. This ultimately leads to a higher cost of debt, which evidently is not feasible in the long run. Hence, as SMEs starts to turn towards more traditional debt their cost of debt will gradually decline (Berger & Udell, 1998, p. 635-636), benefiting the bottom line of their income statement. Thus, to include cost of debt as a financial performance indicator is quite logical. This since a low cost of debt indicates a more traditional utilization of debt financing, compared to a high cost of debt which insinuate a high usage of short-term debt. Arguably it can then be assumed that SMEs with a solid financial performance have a lower cost of debt and utilize more traditional financing alternatives, compared to SMEs with inadequate financial performance. Followingly, this becomes of interest for this degree project as the aim is to investigate if financial performance affect the usage of trade credit.

3.5 SME Financing

One of the biggest and most important constraint facing SMEs is the difficulty of obtaining capital and the resulting inadequate capitalization (Van Auken & Holman, 1996, p. 29). Finley (1984) explains that this is the result of that small firms have fewer available sources of funds, higher cost of capital and increased transaction costs. This type of operating environment often leads to suboptimal capital structure and increase the risk of insolvency (Van Auken & Holman, 1996, p. 29).

It could be argued for that finance theory and the theory of capital structure apply to SMEs and that it thus should be possible for them to create and optimal capital structure. This assumption paints an untrue picture, as SMEs financing and capital structure decisions are driven by market imperfections. Carter and Van Auken (1990) for example found that SMEs relied on financial strategies that enabled them to manage their inaccessibility to the capital markets. As a result of SMEs limited access to capital markets, they rely upon long-term debt to fund cash, provide liquidity and manage their risk of going insolvent. However, most notably is that they were found to stretch their accounts payable to fund operations.

In conclusion, SMEs financing and capital structure decisions are a complex matter. Most notably is that that the main drivers for SMEs financing strategies are market imperfections. Compared to larger corporations they do not have the luxury to act unrestrained in capital markets and in negotiations with financial institutions. This ultimately leads to that they need to find alternative sources of financing.

3.5.1 SMEs Choice of Financing

SMEs and financing is something that differs extensively from large corporations and financing. This was documented by Ang (1991) where he found the fact that financial management between these two types of corporations differ, which stems from the fact that SMEs mostly are not publically traded and have slimmer access to capital markets. However, the aforementioned is not the only problem arising in terms of financing and SMEs. Information asymmetry is something that influences the financing decision of SMEs, as information asymmetry will increase the risk in granting finance to SMEs as in contrast to other firms. Therefore, the access to financing and securing it is a difficult
task for SMEs (Kumar & Rao, 2016, p. 99). In connection to the riskier nature of SMEs, Myers & Majluf (1984) argues that corporations ensue a hierarchy when seeking sources of financing. They further argue that firms advocate sources of finance that can be seen as the easiest and least risky to secure. As a result, they arrive at the conclusion that firms favor internal sources over external sources of finance. Since the work of Myers & Majluf (1984) is based on the pecking order theory developed by Myers (1984), the hierarchy advocates the order of internal funds, debt, and lastly external equity.

However, it has to be kept in mind that internal funds are most of the time not sufficient for a firm to endure and grow. As a result, firms need to seek supplementary sources of funds, which as discussed previously is a difficult task for SMEs. According to Liu & Yu (2008) this is a consequence of SMEs less transparent character. Banks are especially averse to grant debt to SMEs, due to the information asymmetry surrounding them (Kumar & Rao, 2016, p. 100). All of these aspects are further supported by the findings of Jagoda & Herath (2010), where they found that a compelling amount of SMEs have reported difficulties in securing debt financing. Moreover, it has to be kept in mind that the access to finance changes as the firm matures (Wu et al., 2008, p. 971). This is further supported by Berger & Udell (1998) as they found out that the access to funds for a corporation is dependent on its size, age, and information continuum. In conclusion, it is quite evident that smaller firms are reliant on alternative sources of financing, such as trade credit (Kumar & Rao, 2016, p. 100).
4. Practical Research Method

This chapter explains the research methods that underlie the practical part of the degree project, i.e. the empirical study. It serves to provide a detailed insight into the practical research steps in order to establish an extensive understanding of the decisions and choices made. First, the population and sample are discussed by explaining the qualification criteria. Secondly, all variables are elaborated upon and explained. Third, hypotheses and decision rules are presented. Lastly, elaborations about the statistical tools that are applied to conduct the statistical analyses are formulated together with their given assumptions.

4.1 Population & Sampling

In order to investigate the relationship expressed in the research question and arrive at an answer, the population and sample population must be defined. The population of the study at hand amounts to nearly 38 000 enterprises (SCB, 2015), which are defined as small to medium sized enterprises. However, there are some criteria that have to be fulfilled in order to be part of the sample population, to best fit the purpose of the study. The criteria to fulfill are the following:

1. Have 10-249 employees
2. Have a revenue of 10-499 MSEK or total assets of 20-430 MSEK
3. Operate in Sweden
4. Be a limited liability corporation (Aktiebolag)
5. Not be part of the financial services industry or public sector

The first criterion to be fulfilled is the number of employees, as this is the main criterion to fulfill according to the European Commission (2015) to be considered an SME. As a result, the interval will be 10-249 employees since it is the staff headcount the European Commission apply. Essentially, to be defined an SME the staff headcount must fall within this interval, no matter what other criteria the enterprise might fulfill. As the purpose of the study at hand is to investigate SMEs, a natural result is that the enterprises included in the sample must fulfill this criterion.

As for the second criterion, it concerns the revenue or total assets of the enterprise. According to the European Commission one of the two intervals stated in the list above must be achieved for the enterprise to be considered an SME. Furthermore, it has to be fulfilled in connection with the first criterion. In essence, two out of the three criterias have to be satisfied, with the staff headcount always to be fulfilled either together with the revenue interval or total asset interval. The same logic lies behind this criterion as the first one, as the purpose is to scrutinize SMEs it is of importance to properly identify enterprises that confidently can be defined as SMEs.

Moreover, a third criterion has to be fulfilled, which is the one dictating the the enterprise must operate in Sweden. The reasoning behind this criterion is straightforward, as the purpose is to study Swedish SMEs it would be inappropriate to

1 The interval for revenue has been altered, as a consequence of the limitations of Retriever Business. The original interval is 20-499 MSEK, the alternative was to either choose 10-499 MSEK or 50-499 MSEK in Retriever Business. 10-499 MSEK was chosen in order not to exclude a large part of the sample population.
investigate SMEs outside of Sweden. Therefore, only Swedish SMEs will be considered in order to arrive at a conclusion for the research question at hand.

The fourth criterion to be achieved is for the enterprise to be a limited liability corporation (LLC). This stems from the fact that Swedish LLCs need to have their financials reviewed by a certified external auditor if they comply to at least two of the following measurements (Bolagsverket, 2016):

- More than 3 employees
- More than 1.5 MSEK in total assets
- More than 3 MSEK in net revenue

All of the enterprises in the sample population for the study at hand will fulfill the above criteria, as they fall within the intervals presented in criteria one and two. The reason to include this criterion is to confirm the utilization of reliable data, hence to increase the validity as the data will be consistent.

The last criterion to be brought to completion to be included in the sample population, is the one of not operate in the financial services industry or public sector. The financial services industry is excluded as it does not operate in a manner allowing for the utilization of trade credit. Moreover, the public sector has been excluded as it is operated by the government and an assumption has been made in connection to this. The assumption is that enterprises within the public will be subsidized and financially backed by the government. As a result, public sector enterprises will not be reliant on trade credit.

After all of the above criteria have been fulfilled, the number of observations utilized for the study at hand will amount to 119,458 over the five year period scrutinized, for each variable of interest. Moreover, the sample population on average is equal to 19,910 SMEs. Furthermore, these SMEs have been grouped into their respective industries, since it is one of the control variables employed for the study. The sample was initially divided into 25 industries, which Retriever Business produced automatically. However, as industry is applied as a dummy variable, it had to be further grouped in order to decrease the amount of dummy variables in the regression model. As a consequence, the 25 original industry groups were further narrowed down to 6 sectors². This was carried out with the help of the Global Industry Classification Standard (GICS), which was developed in 1999 by MSCI and Standard & Poor’s.

Lastly, the sample size and the very large number of observations have to be acknowledged. It will provide a prominent advantage for the study at hand. The aim of statistical testing is to unveil a significant difference. Utilizing a large sample with many observations leads to a more reliable reflection of the population mean, ultimately leading to an increase of significance in the statistical tests. Furthermore, larger sample sizes typically lead to increased precision when estimating unknown parameters, resulting in a high statistical power. Hence, the massive sample and the high degree of

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² See Appendix D for sector grouping.
observations will contribute significantly to the reliability of the study (Moore et al, 2011, p. 263-266).

4.2 Data Sources & Access

Broadly speaking, data can be classified into three components: primary, secondary and tertiary data. Choosing the most adequate data source primarily depends on the stated research question and the adapted research design. However, it also depends on availability of resources and the researcher’s ability to access these resources.

This degree project follows an archival research strategy, it focuses upon historical administrative data presented in annual reports of Swedish SMEs. Annual reports are constructed by companies for their own, and their shareholders’ purposes. Hence, the data contained in these reports are not collected for research purposes but rather for administrative means by the organisation, classifying it as secondary data (Bryman & Bell, 2011, p.312- 313). According to Bryman & Bell (2011, p. 313-320) secondary data offer numerous benefits to researchers. (1) It enables the researcher to gather data in a timely and economical manner, (2) many data sets most frequently used for secondary analysis, like annual reports, are of extremely high quality, (3) it is up to date and (4) it is immensely suitable for the research purpose. Despite this, there are certain aspects that one has to consider when applying secondary data. As it is gathered for divergent purposes, the amount of data can tend to be extensive, making it difficult for the researcher to really understand it. Additionally, the data has to be reviewed for in terms of its quality and credibility.

This degree project can however disregard these concerns. The data used is obtained from annual report generated accordingly to legislative requirements and approved by independent external auditors, resulting in a high degree of reliability. While the data might be complex for outside readers to cope with, it is not of concern for the authors due to their financial background. More importantly, Retriever Business, besides annual reports, is used as a secondary source. Retriever Business is considered to be a highly accepted and valued tool when conducting financial analysis. This can easily be verified since many previous research studies have been based upon the database. It is therefore viewed as source with high credibility. Retriever Business has been utilized for this degree projects for three purposes. First, to gather data from financial statements. Second, to provide support in the calculations of the financial metrics used to evaluate firms financial performance. Thirdly, to label each firm with industry affiliation.

In regards to the annual reports utilized, access issues were not present as the data is publicly accessible. However, the sample utilized includes unlisted, as well as listed firms. Unlisted firms annual reports are not as widely accessible as listed ones, but are possible to access via request. Thus, current and former annual reports of the sample population can be acquired. Furthermore, Umeå University offers free access to Retriever Business database hence all students and staff of the University can easily gain access to the data used.
4.3 Research Variables

This section states and discusses the given research variables of this degree project, in respect to their specific type and role. It is pivotal to understand what the miscellaneous variables represent and why they were chosen in order to apply and consolidate them correctly in the statistical models.

4.3.1 Dependent & Independent Variables

When conducting research there are two main types of variables, which have to be identified; the dependent and independent variable. According to Nenty (2009, p. 19) “The dependent variable is the problem variable while the independent variable is that whose influence or relationship to the problem variable is to be established, and which if effectively manipulated is highly likely to bring about desirable changes in the problem variable”

As this study aims to find a relationship between SMEs financial performance and their usage of trade credit, the trade credit indicator is defined as the dependent variable. Trade credit is measured by a proxy, which is based on data from the consolidated balance sheet and the consolidated income statement of all SMEs involved. Their annual revenue divides the total amount of trade credit of each SME, in order to get trade credit as a percentage relative to revenue. This is done to not bias the data and to achieve reliable outcomes. If only the trade credit account on the balance sheet were to be utilized as a proxy for the dependent variable the relationship with all the independent variables would be biased. For example, SMEs that are considered sizeable could still have a large trade credit post on their balance sheet, thus it would seem that larger SMEs also utilize more trade credit than smaller ones. Putting trade credit in relation to revenue and creating a ratio can erase this bias, since larger firms also tend to have higher revenue than smaller ones. Hence creating a revenue driven proxy for trade credit will make it possible to give a fairer estimate of how financial performance affect SMEs trade credit usage.

The independent variables, i.e. firm performance, are represented by; ROA, ROE, Gross Margin, Profit Margin, Cost of Debt and Long-term-Debt-to-Equity. These financial ratios incorporate the utilization of both the consolidated balance sheet as well as the consolidated income statement. As mentioned in chapter 3.4 the ratio analysis is considered a powerful analytical tool when assessing the performance of an organization, primary by virtue of its ability to interpret financial statements so that both strengths and weaknesses are determined. By using a vide spectrum of both revenue driven ratios as well as debt driven ones, this degree project will capture a fair picture of SMEs financial performance. As previously stated in chapter 3.4 net income will be used as numerator when calculating ROE and ROA since it incorporates the tax-shield induced by interest payments. Thus ROE is calculated by net income attributable to shareholders over shareholder’s equity. Regarding the ROA calculation, the total assets utilized symbolize the sum of all assets held by the SME, i.e. the entire left-hand side of the balance sheet. The elements of Gross Profit, Profit Margin, Cost of Debt, and Long-term-Debt to Equity, are read off directly from the financial statements. If there is information missing, the ratios are computed to the given specification in chapter’s 3.4.1, 3.4.4 and 3.4.5.

To solve the problem at hand (i.e. usage of trade credit), one could alter the independent variable (i.e. financial performance), to see which direction the dependent variable will
follow. However, to do so Nenty (2009, p. 19) argues that one must first account for the amount of influence such alteration may have on the problem. He further states that the first step necessary to “..[tackle] this problem is to carry out a study to determine the amount of influence any of the independent variables has on the problem variable...” From the findings of the study a recommendation or model may be developed in order to contribute to the solution of the problem. In the case of the degree project at hand, it would be the alternation of financial performance (i.e. worse or better performance) that will help explain the usage of trade credit (i.e. low or high).

One could argue that there has not been enough of variables included to represent the true financial performance of the firms investigated. However, Nenty (2009, p. 19) states that it many times is not possible to handle all variables that might influence the problem variable, in one study. As a consequence, the researcher(s) have to choose the ones that are considered to be of most relevance. Hence, the selection of the presented independent variables, which have been further explained and how they are of relevance in section 3.4. For the research at hand the problem (i.e. dependent variable) is the usage of trade credit, and how it is influenced by the financial performance (i.e. independent variable) of SMEs. In order to analyze the actual relationship between these two variables several contributory factors have been identified. The given independent variables used are; ROA, ROE, Gross Margin, Profit Margin, Cost of Debt and Long-term-Debt-to-Equity.

### 4.3.2 Control Variables

In order to effectuate reliable and credible analysis outcomes certain control variables has to be considered. Control variables captures unsought influences on the dependent variable, i.e. trade credit, they thus has to be explained and popularized so that the analysis remains unbiased. Overall, economic factors explain 15 to 40 percent of variations in the performance of the firm, if one are to go by the typical model of firm performance. Apart from random effect and measurement errors, remaining percentage can be explained by that here might be important, immeasurable, economic variables and missing organizational influences (Hansen & Wernerfelt, 1989, p. 400-401). Given the nature of the degree project, quantifiable control variables are more feasible. Hence, factors as; strategy, behavior, technology or structure are left out. This since they are hardly measurable in this study's context and thus not to be considered as control variables. Followingly, three control variables are taken into consideration when carrying out the analysis; firm size, age and insdustry.

First, firm size can be measured using a number of proxies, such as total assets, revenue and number of employees (Darush & Öhman, 2015, p. 107). In the current degree project, firm size was measured as the natural logarithm of total assets. This is done because coefficients on the natural-log scale are directly interpretable as approximate proportional differences (Gelman & Hill, 2007, p. 60-61), making the natural logarithm very convenient for describing relations between economic variables. More directly speaking, when using the natural logarithm outliers can be eliminated. This since it reduces the variance caused by extreme values. This specific proxy is well established within research to assess firm size (Petersen & Rajan, 1994, p. 8; Petersen & Rajan, 1997, p. 673; García-Teurel & Martínez-Solano, 2010 , p. 220; Huyghebaert et al., 2007, p. 442), hence it will be appropriate to utilize.
Firm size can, and is often used as a potential determinant of capital structure decisions (see for example Kremp et al., 1999; Ozkan, 2001; Rajan & Zingales, 1995). In particular, transaction costs associated with outside financing are likely to depend on size and conforms to both publicly listed firms and SMEs and implies higher transaction cost for smaller firms (Petersen & Rajan, 1994; Wald, 1999). Quite interestingly is that some studies report a negative relationship between size and short-term liabilities for SMEs (Fluck et al, 2000; Michaelas et al, 1999) which suggests that relatively larger SMEs gains enhanced access to, and prefer longer-term financing (Forte et al, 2013). Therefore the purpose of the first control variable is to investigate if firm size has an impact on the usage of trade credit.

Secondly, age will be considered as a control variable. The proxy for firm age is firm years since inception up until the year the data were reported. The purpose is to investigate if age of the firm has an impact on the usage of trade credit. Established firms should have a relatively higher borrowing capacity due to the reduction in information asymmetry and lower bankruptcy risk, making it easier to gain access to institutional credit (Burgstaller & Wagner, 2014, p. 80). This is also consistent with the pecking order theory, internal funds retained over time should be sufficiently high to limit the need for external finance in later stages of the business lifecycle (López-Gracia & Sogorb-Mira, 2008; Romano et al., 2001). Moreover, the greater the age of the firm and the longer its history of debt repayments, the better the reputation. Consequently, a lower agency cost between debtors and creditors will be established (Petersen & Rajan, 1994).

Thirdly, industry affiliation is relevant and determinable as a control variable. However, there will be no specific proxy to quantify industry. It will rather serve as a dummy variable, indicating if the firm belongs to each of the 6 industries classified by the GICS. Thus each industry will take a number between 1 and 6. Frank & Goyal (2008) suggest that industry leverage is an important predictor of firm leverage, but only when it comes to publicly listed firms. Forte et al. (2013) further on suggests that factors such as “industry specific regulatory restrictions and the influence of the type of business activity on the requirements for and access to external funding” can be captured if industry affiliation is used as a control variable. However, evidence regarding if industry affiliation has an impact on SME leverage is scarce. Although, Michaels et al. (1991) documented a significant industry effect on leverages ratios for SMEs in the UK. This control variables’ purpose is to investigate if industry affiliation has an impact on the usage of trade credit.

4.4 Hypotheses

The most powerful instrument created in order to attain dependable knowledge is the usage of hypotheses (Kerlinger, 1968, p. 27). This is further supported by Nenty (2009, p. 22), as he states that hypotheses are “…a powerful tool for the advancement of knowledge because it serves as the working instrument or tentacles of theory and a means for seeking solution to human problems.” Moreover, Selamat (2008, cited in Nenty 2009, p. 22) highlights the aspect of hypotheses being conditional and qualified guesses, concluded with the desire to guide the process of the research in order to arrive at a solution for the research problem. Additionally, Glassman (2007) explains in his article that hypotheses are deducible from theory and can be considered the gateway utilized to validate, revise, or invalidate theory.
In terms of stating hypotheses, according to Nenty (2009, p. 23) hypotheses should not be expressed as questions, it is rather the research question at hand converted into hypotheses. In general, hypotheses indicate the possibility of a correlation between the dependent and an independent variable. In order to best establish the underlying influences, the relationship among the variables have to be determined. Therefore, if a relationship can be determined and considered significant, it will contribute towards the solution of the research problem at hand.

From the aforementioned it is evident that the hypotheses for this degree project have to be derived from previous theory, but also the assumptions of the authors. As for the research problem, the authors assume that there is a correlation between financial performance and the utilization of trade credit. To best arrive at a solution for the research problem at hand, several underlying relationships will be determined. These relationships are expressed in the following hypotheses:

Hypothesis 1 (H1)

\[ H_0: \beta_{\text{AGE}} = 0 \]
\[ H_A: \beta_{\text{AGE}} \neq 0 \]

Where \( \beta_{\text{AGE}} \) is the relationship between age and trade credit, with \( H_0 \) indicating there is no affect of age on the utilization of trade credit for SMEs. Moreover, \( H_A \) states that there is an affect of age on the usage of trade credit. Thus, \( H_0 \) can only be rejected if there is a relationship between the two.

Hypothesis 2 (H2)

\[ H_0: \beta_{\text{SIZE}} = 0 \]
\[ H_A: \beta_{\text{SIZE}} \neq 0 \]

Where \( \beta_{\text{SIZE}} \) is the relationship between size and trade credit, with \( H_0 \) indicating there is no affect of size on the utilization of trade credit for SMEs. Moreover, \( H_A \) states that there is an affect of size on the usage of trade credit. Thus, \( H_0 \) can only be rejected if there is a relationship between the two.

Hypothesis 3 (H3)

\[ H_0: \beta_{\text{INDUSTRY}} = 0 \]
\[ H_A: \beta_{\text{INDUSTRY}} \neq 0 \]

Where \( \beta_{\text{INDUSTRY}} \) is the relationship between industry and trade credit, with \( H_0 \) indicating there is no affect of industry on the utilization of trade credit for SMEs. Moreover, \( H_A \) states that there is an affect of industry on the usage of trade credit. Thus, \( H_0 \) can only be rejected if there is a relationship between the two.

Hypothesis 4 (H4)

\[ H_0: \beta_{\text{GM}} = 0 \]
\[ H_A: \beta_{\text{GM}} \neq 0 \]

Where \( \beta_{\text{GM}} \) is the relationship between gross margin and trade credit, with \( H_0 \) indicating there is no affect of gross margin on the utilization of trade credit for SMEs. Moreover, \( H_A \) states that there is an affect of gross margin on the usage of trade credit. Thus, \( H_0 \) can only be rejected if there is a relationship between the two.
Hypothesis 5 (H5)

\[ H_0: \beta_{PM} = 0 \]
\[ H_A: \beta_{PM} \neq 0 \]

Where \( \beta_{PM} \) is the relationship between profit margin and trade credit, with \( H_0 \) indicating there is no affect of profit margin on the utilization of trade credit for SMEs. Moreover, \( H_A \) states that there is an affect of profit margin on the usage of trade credit. Thus, \( H_0 \) can only be rejected if there is a relationship between the two.

Hypothesis 6 (H6)

\[ H_0: \beta_{ROE} = 0 \]
\[ H_A: \beta_{ROE} \neq 0 \]

Where \( \beta_{ROE} \) is the relationship between return on equity and trade credit, with \( H_0 \) indicating there is no affect of return on equity on the utilization of trade credit for SMEs. Moreover, \( H_A \) states that there is an affect of return on equity on the usage of trade credit. Thus, \( H_0 \) can only be rejected if there is a relationship between the two.

Hypothesis 7 (H7)

\[ H_0: \beta_{ROA} = 0 \]
\[ H_A: \beta_{ROA} \neq 0 \]

Where \( \beta_{ROA} \) is the relationship between return on assets and trade credit, with \( H_0 \) indicating there is no affect of return on assets on the utilization of trade credit for SMEs. Moreover, \( H_A \) states that there is an affect of return on assets on the usage of trade credit. Thus, \( H_0 \) can only be rejected if there is a relationship between the two.

Hypothesis 8 (H8)

\[ H_0: \beta_{LTDE} = 0 \]
\[ H_A: \beta_{LTDE} \neq 0 \]

Where \( \beta_{LTDE} \) is the relationship between long-term debt-to-equity and trade credit, with \( H_0 \) indicating there is no affect of LTDE on the utilization of trade credit for SMEs. Moreover, \( H_A \) states that there is an affect of LTDE on the usage of trade credit. Thus, \( H_0 \) can only be rejected if there is a relationship between the two.

Hypothesis 9 (H9)

\[ H_0: \beta_{COD} = 0 \]
\[ H_A: \beta_{COD} \neq 0 \]

Where \( \beta_{COD} \) is the relationship between cost of debt and trade credit, with \( H_0 \) indicating there is no affect of cost of debt on the utilization of trade credit for SMEs. Moreover, \( H_A \) states that there is an affect of cost of debt on the usage of trade credit. Thus, \( H_0 \) can only be rejected if there is a relationship between the two.
4.4.1 Decision Rule
When conducting research with the help of hypotheses it is important to establish a
decision rule, meaning at what level of significance the null hypothesis should be
rejected. In connection to hypothesis-testing there are errors, namely Type I and Type II
errors. Type I error being the case of rejecting the null hypothesis when it is actually
true and Type II error is when the null hypothesis fails to be rejected even though it is
false (Uriel, 2013, p. 3). Moreover, the significance level is the probability of Type I
and Type II errors to occur. For example, if the researcher sets the significance level at
0.05 he or she is willing to falsely reject the null hypothesis 5% of the time (i.e.
attaining a Type I error) (Uriel, 2013, p. 3). The most widely used significance levels in
research are 0.01, 0.05, and 0.1. For the study at hand, the significance level will be set
at 0.05 as it is the default setting for most tests and it is in between the more strict and
loose level of significance. Implying, null hypothesis will be rejected when the P-value
is less than 5% (i.e. p < 0.05).

4.4.2 Data setup and coding
Independent and control variables are going to be utilized as continuous variables with
numeric characteristics for this particular degree project. The dependent one will act as
a continuous variable as well, this since a multiple regression analysis will be carried
out. As for the dummy variable it will take the form of industry affiliation, utilized as a
binary variable, taking a value between “0” and “1” depending on which industry the
specific SME belongs to.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Type of variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trade Credit</td>
<td>Dependent, continuous</td>
</tr>
<tr>
<td>ROA</td>
<td>Independent, continuous</td>
</tr>
<tr>
<td>ROE</td>
<td>Independent, continuous</td>
</tr>
<tr>
<td>Gross Margin</td>
<td>Independent, continuous</td>
</tr>
<tr>
<td>Profit Margin</td>
<td>Independent, continuous</td>
</tr>
<tr>
<td>LTDE</td>
<td>Independent, continuous</td>
</tr>
<tr>
<td>COD</td>
<td>Independent, continuous</td>
</tr>
<tr>
<td>Age</td>
<td>Control, continuous</td>
</tr>
<tr>
<td>Size</td>
<td>Control, continuous</td>
</tr>
<tr>
<td>Industry</td>
<td>Control/Dummy, binary</td>
</tr>
</tbody>
</table>

Table 2. Variable Coding.

4.5 Multiple regression analysis
A multiple regression analysis will be carried out in order to test the hypotheses. This is
done since the study aims to simultaneously analyze the effects of association of more
than two independent variables and one dependent (Zikmund et al, 2013, p. 586). Trade
credit, being the dependent variable will be tested in relationship to multiple
independent variables. Independent variables being, Return on Assets, Return on
Equity, Gross Margin, Profit Margin, and Long-term Debt-to-Equity. The control
variables are Age and Size, Industry affiliation will be utilized as a dummy variable.
The multiple regression equation being employed for the analysis will be illustrated accordingly:

\[ TC_{i,t} = \alpha + \beta_1 \text{ROA}_{i,t} + \beta_2 \text{ROE}_{i,t} + \beta_3 \text{GM}_{i,t} + \beta_4 \text{PM}_{i,t} + \beta_5 \text{LTDE}_{i,t} + \beta_6 \text{AGE}_{i,t} + \beta_7 \text{SIZE}_{i,t} + \beta_8 \text{INDUSTRY}_{i,t} + \varepsilon_{i,t} \]

Where:
\( \alpha \) = constant;
TC = Trade Credit, defined as the firm’s total Trade Credit outstanding/Revenue;
ROA = independent variable, Return on Assets;
ROE = independent variable, Return on Equity;
GM = independent variable, Gross Margin;
PM = independent variable, Profit Margin;
LTDE = independent variable, Long-term debt-to-Equity;
AGE = control variable, Age;
SIZE = control variable, Size;
INDUSTRY = control/dummy variable, Industry Affiliation; and
\( \varepsilon_{i,t} \) = error term.

The general purpose of a regression analysis is to “assess the relationship between one dependent variable and several independent variables” (Tabachnick & Fidell, 2013, p. 153). The primary goal of the analysis thus becomes to investigate the relationship between a dependent variable and several independent variables (Tabachnick & Fidell, 2013, p. 155).

Coefficients \( \beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7, \) and \( \beta_8 \) represent the slope of X on Y (TC). Notable about the multiple regression equation is that it has several slope estimates, so called regression coefficients. Thus, if the independent variables are correlated to one another, the given slope estimate might be altered. Hence, a correlation analysis has to be carried out in order to determine if the correlation coefficients are reliable.

4.6 Practical issues in statistical testing
Before conducting the regression analysis it is important to mention practical issues that might arise during the process. Below follows a discussion regarding each issue.

4.6.1 Outliers
According to Fox (1991) extreme cases have too much impact on the regression solution and will also affect the precision of estimation of the regression weights. Tabachnik & Fidell, 2013, p. 160) explains that “with high leverage and low discrepancy, the standard errors of the regression coefficient are too small; with low leverage and high discrepancy, the standard errors of the regression coefficient are too large”. Neither case will generalize well to population values. Hence, outlier should be deleted, rescored, or the variable transformed.

In a regression cases are evaluated for univariate extremeness with respect to the dependent variable and each independent variable. These univariate outliers show up in initial screening runs that often utilize Mahalanobis distance or by calculating z-scores, were z-scores of more than -3 or 3 indicates outliers (Tabachnick & Fidell, 2013, p.
160). Hence an initial screening run in SPSS, using z-scores, will be conducted after the regression run in order to detect and delete outliers.

**4.6.2 Multicollinearity**

Cortina (1993, p. 916-917) explains that multicollinearity is utilized to test the presence of correlations in a situation when it is suspected that variable (X), with the influence of variables (Z) which in most cases are control variables, have an effect on variable (Y). Multicollinearity further on suggests that independent variables are tightly linked and thus associated and therefore usually appear when the correlation between them is non-zero. Consequently, one can assume that the model’s accuracy is not significantly influenced when the correlation among mentioned variables is low. However, if it appears that when the correlation among them is high the problem of multicollinearity arises and the sampling error of the partial slopes and partial correlations will be utterly large (Blalock, 1963, 233). It is therefore important for this degree project to examine if there is a causal relationship between the identified collinear variables. Hence, before conducting a regression analysis a correlation matrix will be examined to see whether there are relationships among independent variables. If this is the case an additional collinearity tests, the Variance Inflation Factor (VIF) and Tolerance diagnostic factor, will be carried out in SPSS in order to reduce the level of correlation among the specific variables.

Bryman & Cramer (2005, p. 312) explains that the tolerance statistic is calculated as 1 minus the multiple R of each individual variable. The multiple R for each independent variable appears from its correlation with all of the other independent variables. The tolerance statistic indicates whether an examined variable have a perfect linear relationship of values combined with the other independent variables in the equation. Keeping all other things equal, a high level of tolerance is preferred, since low levels will adversely affect the result associated with the regression. The statistic ranges from 0 to 1, thus values close to 1 are to be preferred since values closer to 0 might indicate multicollinearity among the observed variables. Most commonly the value of 0.10 is recommended as the minimum level of tolerance. In addition to the tolerance statistic, a VIF analyse the impact of collinearity among variables in the regression. It is defined as 1 divided by the tolerance number of that independent variable. If the VIF takes a number above 10, which is a conservative approach, collinearity exists within the regression. However, given a more strict approach, if the test displays numbers between the range of 2.5 to 5 one should be concerned (Bryman & Cramer, 2005, p. 312-313).

**4.6.3 Heteroscedasticity**

Osborne & Waters (2002, p. 4) describes heteroscedasticity as a situation where the variance of the error term changes as a response to a change in values of the independent variables. If the assumption of constant variance among error terms does not hold, the standard error might be wrong and the estimator might bring forth an erroneous conclusion, consequently leading to heteroscedasticity (Tabachnik & Fidell, 2007, p. 85). Meaning that there is “a different slope in some cells of the design” implying that there is “interaction between independent variables and control variables” (Tabachnik & Fidell, 2007, p. 202). Osborne & Waters (2002) explains that heteroscedasticity is of major concern when applying a regression analysis, due to the uncorrelated values and the invalidated statistical tests, emerging from the assumption that the data analyzed should be homoscedastic.
Additionally, the error may increase if the values of the independent variables become more extreme in either direction, ranging from excessively negative to excessively positive. Hence in terms of validity, occurrence of heteroscedasticity needs to be detected after carrying out the multiple regression analysis. Brook (2008, p. 137) argues that there are several statistical tests that can be utilized when there is a suspicion of heteroscedasticity. However, the most widely used one is the White test. The White test involves two ways to detect and unravel heteroscedasticity, either transform the variables into natural logarithms or convert them into other measures of size (White, 1980). However, Brook (2008, p. 138) states that the main problem with using natural logarithms is that the binary values, having a value of 0 and 1, as well as continuous variables with negative values cannot be utilized.

4.6.4 Linearity
The linear regression is based on the assumption that the interrelations between the dependent and independent variables are linear. Meaning that there need to be a linear relationship between the dependent variable and each of the independent variables utilized, and the dependent variable and the independent variables collectively (Kleinbaum et al., 2008, p. 119). This can be verified through a scatterplot, where a visual inspection will be carried out in order to check for linearity. Given that the line is curved, one can assume that there is a possibility that the interrelations between the given variables are not linear. If this is the case, and the assumption is violated, the power of the statistical test will be reduced (Tabachnick & Fidell, 2007, p. 202). If the relationship displayed is not linear, a transformation of the data is necessary in order fulfill the assumption (Kleinbaum et al., 2008, p. 303). This particular transformation can be performed using SPSS Statistics. Furthermore an ANOVA test for linearity can be conducted to assess linearity significance and the deviations from it.

4.6.5 Normality test
A normality test is conducted in order to assess if the sample data is normally distributed. This can either be verified via numerical statistical methods or by analyzing graphics. There are especially two components that are of interest when assessing normality, i.e. kurtosis and skewness. Skewness reviews the level to which the distribution is not symmetric around its mean value, whereas kurtosis measures the peakedness of the distribution. In the general, and actual sense, a normal distribution should usually have a zero value of skewness and 3 in kurtosis (Tabachnick & Fidell, 2007, p. 79; Brook, 2008, p. 161).

Furthermore, it is of importance to bear in mind the population value, or the actual sampling population of the mean in order to test the given assumptions. However, according to the central limit theorem a large sample provides normal distributions. With a small and unequal sample in the group or outliers, it is recommended to make the transformation of variables (Tabachnik & Fidell, 2007, p. 202). It should however be noted that even though the data itself is non-normally distributed, the regression test is “robust” towards it as long as residuals are normally distributed (Eduardo, 2015). Thus the distribution of data will be presented in descriptive statistics in chapter 5.1, while the actual normality test will be conducted on residuals to assess the normality assumption.
4.6.6 Correlation
Correlation is a recurring subject when discussing variables and statistical analysis. Correlation helps to determine whether variables have a propensity to move into the same or opposite direction of each other. Given that variables move in the same direction, they have a positive correlation. Moving in the opposite direction of each other thus implies a negative correlation (Salkind, 2010, p. 114). When conducting a regression analysis, a scatterplot appears, displaying a cluster of points which describes the strength and linear interrelation between two variables (Moore et al., 2011, p. 81-82). Mukaka (2012, p. 71) does however argue for that the Pearson’s correlation coefficient approach is more appropriate to utilize when variables appear to be normally distributed. Pearson’s correlation coefficient is the most widely utilized statistical method among researchers when determining correlation for a linear relationship between two variables (Bryman & Bell, 2011, p. 355; Mukaka, 2012, p. 69-71). It is defined as a numerical index, where the number can take place between the range of -1 and 1. Table 3, presented below, explains how correlations should be interpreted.

<table>
<thead>
<tr>
<th>Amount of correlation (+/-)</th>
<th>Coefficient general interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0 - 0.2</td>
<td>Weak or no relationship</td>
</tr>
<tr>
<td>0.2 - 0.4</td>
<td>Weak relationship</td>
</tr>
<tr>
<td>0.4 - 0.6</td>
<td>Moderate relationship</td>
</tr>
<tr>
<td>0.6 - 0.8</td>
<td>Strong relationship</td>
</tr>
<tr>
<td>0.8 - 1.0</td>
<td>Extremely strong relationship</td>
</tr>
</tbody>
</table>

Table 3. Correlation interpretation.
Source: Adaptation from Salkind, 2010, p. 129

4.6.7 Normality, Linearity and Homoscedasticity of Residuals
Tabachnick & Fidell (2013, p. 161) explain that the “examination of residuals scatterplots provides a test of assumptions of normality, linearity, and homoscedasticity between predicted dependent variable scores and errors of predictions”. Assumptions of analysis are that the residuals are normally distributed about the predicted dependent variable scores, that they have a horizontal-line relationship with predicted dependent variable scores, and that the variance of the residuals about predicted dependent variable scores is the same for all predicted scores (Tabachnick & Fidell, 2013, p. 161-162).

If the assumptions of the analysis are deemed met, further screening of variables and cases is unnecessary. That is, if the residuals show normality, linearity, and homoscedasticity and that no outliers are evident. Further on there should be no evidence of multicollinearity or singularity. If this is the case, then the regression only requires one run (Tabachnick & Fidell, 2013, p. 162-163).

The normality assumption corresponds to that errors of prediction are normally distributed around each and every predicted dependent variable score. The residual scatterplot should disclose a pileup of residuals in the center of the plot at each value of predicted score with a normal distribution of residuals trailing off symmetrically from the center (Tabachnick & Fidell, 2013, p. 163). Bryman & Cramer (2005, p. 115) does however state that the perfect normal distribution can rarely be met. Nevertheless, values of variables can be close to the normal distribution and are presumed by many researchers to have the characteristics of a normal distribution if the curve is bell-shaped. This is further supported by Diamond & Jefferies (2001, p. 54).
Linearity of relationship between predicted dependent variable scores and errors of predictions is also assumed. If there is a nonlinear relationship the overall shape of the scatterplot will be curved instead of rectangular. Failure of linearity in regression does however not invalidate the analysis so much as weaken it. A curvilinear relationship between the dependent variable and an independent variable is perfectly good relationship, not completely captured by a linear correlation coefficient. The drawback is that the power of the analysis is reduced to the extent that the analysis cannot map the full extent of the relationships among variables. Typically, nonlinearity of residuals can be made linear by transforming independent variables (or the dependent), so that a linear relationship appears between them (Tabachnick & Fidell, 2013, p. 163).

The same goes for homoscedasticity, the assumption that the standard deviations of errors of prediction are approximately equal for all predicted dependent variable scores. Heteroscedasticity does not invalidate the analysis so much as weakens it. It may occur when some of the variables are skewed and other are not. A transformation of variables may reduce or eliminate heteroscedasticity (Tabachnick & Fidell, 2013, p. 163).

A residual scatterplot examining predicted dependent variable scores against residuals will thus be examined in SPSS to check for the given assumptions. It is the overall shape of the scatterplot that is of interest. This since, if all assumptions are met, the residuals will be nearly rectangularrayly distributed with a concentration of scores along the center.
5. Empirical Findings
In this chapter, the analytical results obtained are presented and described. To provide an overview as well as a better understanding of the research variables utilized, descriptive statistics together with tables and figures are portrayed. Lastly, the outcomes of the multiple regression model are shown and interpreted briefly.

5.1 Descriptive statistics
Descriptive analysis, or statistics, is a transformation of sample data that explains “the basic characteristics such as central tendency, distribution and variability” (Zikmund et al, 2013, p. 484). Hence, in this section the descriptive statistics of the research variables are presented. Essential measures such as mean, minimum and maximum values as well as kurtosis and skewness are revealed and described. Additionally, emblematic histograms are provided for illustrative purposes. The descriptive for the variables laid forth in chapter 4.3 are elaborated upon, except for industry. Given that industry serves as a dummy variable, only taking binary values of either 0 or 1, no useful descriptive statistics can be analyzed.

Following will be a summary of the sample population’s descriptive statistics including outliers and excluding them (sample excluding outliers is denominated as “out” in table 4).

5.1.1 Sample Population
The following figures and table demonstrate the descriptive statistics for the dependent, independent and control variables, including and excluding outliers. The distributions, except for TC, are presented in appendix A. The z-score approach, described in chapter 4.6, was applied when identifying and excluding outliers. Notable is that outliers were removed from all variables, due to their heavy skewness and extensive kurtosis. However, outliers were only removed if it resulted in a significant distribution change. This was apparent for all variables, as illustrated in appendix A.

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Mean</th>
<th>Std. Dev</th>
<th>Min</th>
<th>Max</th>
<th>Kurtosis</th>
<th>Skewness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>119458</td>
<td>21.67</td>
<td>17.057</td>
<td>0</td>
<td>118</td>
<td>3.890</td>
<td>1.669</td>
</tr>
<tr>
<td>Ageout</td>
<td>115091</td>
<td>20.53</td>
<td>14.528</td>
<td>0</td>
<td>72</td>
<td>0.804</td>
<td>1.056</td>
</tr>
<tr>
<td>Size</td>
<td>119458</td>
<td>16.7</td>
<td>1.06</td>
<td>11</td>
<td>20</td>
<td>-0.175</td>
<td>0.378</td>
</tr>
<tr>
<td>Sizeout</td>
<td>115091</td>
<td>16.68</td>
<td>1.044</td>
<td>14</td>
<td>20</td>
<td>-0.153</td>
<td>0.395</td>
</tr>
<tr>
<td>GM</td>
<td>119458</td>
<td>61.209</td>
<td>55.018</td>
<td>-14272</td>
<td>100</td>
<td>39,260,334</td>
<td>-157,896</td>
</tr>
<tr>
<td>GMout</td>
<td>115091</td>
<td>61.798</td>
<td>28.795</td>
<td>-102,94</td>
<td>100</td>
<td>-1,078</td>
<td>-0.121</td>
</tr>
<tr>
<td>PM</td>
<td>119458</td>
<td>3.656</td>
<td>224.417</td>
<td>3712.69</td>
<td>30,640,247</td>
<td>165,524</td>
<td></td>
</tr>
<tr>
<td>POut</td>
<td>115091</td>
<td>5.53</td>
<td>14.002</td>
<td>-628.95</td>
<td>671.15</td>
<td>529,513</td>
<td>3,388</td>
</tr>
<tr>
<td>ROE</td>
<td>119458</td>
<td>14.967</td>
<td>1,128,249</td>
<td>147487.5</td>
<td>7,067,056</td>
<td>-3,296</td>
<td></td>
</tr>
<tr>
<td>ROEOut</td>
<td>115091</td>
<td>19.358</td>
<td>183,081</td>
<td>-3,352,747</td>
<td>3362</td>
<td>120.29</td>
<td>-2,379</td>
</tr>
<tr>
<td>ROA</td>
<td>119458</td>
<td>6.481</td>
<td>43.691</td>
<td>-689,422</td>
<td>13,992,453</td>
<td>87,911,288</td>
<td>274,572</td>
</tr>
<tr>
<td>ROOut</td>
<td>115091</td>
<td>6.698</td>
<td>12.971</td>
<td>-123,769</td>
<td>133,057</td>
<td>11,706</td>
<td>-0.674</td>
</tr>
<tr>
<td>LTDE</td>
<td>119458</td>
<td>2.129</td>
<td>34.099</td>
<td>29,472,574</td>
<td>6,621,267</td>
<td>1,562</td>
<td></td>
</tr>
<tr>
<td>LTEOut</td>
<td>115091</td>
<td>1.411</td>
<td>5,36</td>
<td>104,426</td>
<td>98.66</td>
<td>7.86</td>
<td></td>
</tr>
<tr>
<td>COD</td>
<td>119458</td>
<td>76.984</td>
<td>267,926</td>
<td>21088</td>
<td>1,265,827</td>
<td>23,958</td>
<td></td>
</tr>
<tr>
<td>CODOut</td>
<td>115091</td>
<td>64.324</td>
<td>118.53</td>
<td>-0.51</td>
<td>879</td>
<td>7,516</td>
<td>2.52</td>
</tr>
<tr>
<td>TC</td>
<td>119458</td>
<td>5.823</td>
<td>6,323</td>
<td>-43,413</td>
<td>613,469</td>
<td>2,873,611</td>
<td>34,745</td>
</tr>
<tr>
<td>TCout</td>
<td>115091</td>
<td>5.559</td>
<td>3.913</td>
<td>-4,341</td>
<td>24,769</td>
<td>2,395</td>
<td>1,324</td>
</tr>
</tbody>
</table>

Table 4. Descriptive Statistics.
When comparing the mean of the dependent variable *Trade Credit* to its complementary accomplice without outliers, a significant difference is noticeable by virtue of the comprehensive number of observations excluded as outliers. On average, including outliers, the total amount of trade credit utilized in relation to revenue among Swedish SMEs is 5.823% while excluding outliers it is 5.559% with a standard deviation of 6.323 and 3.913, respectively. When glancing at the kurtosis and skewness factors, a large digression is observable. After eliminating outliers, the skewness and kurtosis dropped significantly, resulting in a more normal distribution, as illustrated below in figures 5 and 6. However, the kurtosis and skewness does not take values of 3 and 0, respectively, which are considered optimal values for a normal distribution.

![Figure 6. Distribution Histogram: TC excluding outliers.](image)

![Figure 7. Distribution Histogram: TC excluding outliers.](image)

The scrutinized sample of Swedish SMEs has an *Age* mean of 21.67 including outliers, and 20.53 excluding them. The standard deviation is 17.057 with a min value of 0 and a max of 188. A decrease of the standard deviation is evident when removing outliers since it goes down to 14.528 with a min value of 0 and a max of 72. The elimination of outliers brought down both the kurtosis and skewness marginally to 0.804 and 1.056, making it a more normal distribution as illustrated by the bell-shaped curve in Appendix A.

As demonstrated by table 4, the mean of the control variable *Size* is 16.7 including outliers and 16.68 excluding them with standard deviations of 1.06 and 1.044,
respectively. Min values observed are 11 and 14, respectively. Observed max for both samples are 20. Before the removal of outliers the kurtosis was -0.175, while it dropped to -0.153 when excluding them. The skewness however increased when excluding outliers, taking a value of 0.395. Removing outliers however resulted in a more normal distribution as illustrated in Appendix A.

On average the **Gross Margin** is 61.209% including outliers while it only goes of marginally to 62.798%, excluding them. Min values observed with outliers and excluding them are -14.272% and -102.94%, respectively, while max values are 100% for both samples. Observed standard deviations are 55.018 with outliers and 28.795 excluding them. Notable here is the extreme kurtosis of 39 260.334 and extensive skewness of -157.896 while incorporating outliers. Hence, the elimination of them brought the sample to more optimal numbers of -1.078 and -0.121, respectively, having a significant impact on the distribution as shown in Appendix A.

The mean of the independent variable **Profit Margin** is 3.656% including outliers and 5.53% excluding them. Standard deviation is 224.417 with outliers and 14.002 excluding them, with min values of -50.272% and -628.95% and max values of 3712.69% and 671.15%, respectively. Appendix A clearly shows that the distribution is not normal if outliers are included, which can be explained by the kurtosis value of 30 640.247 and the skewness of -165.524. Hence, the removal of outliers contributes significantly in the transformation towards a normal distribution, even though the kurtosis remains high.

Table 4 exhibits that the independent variable **ROE** has a mean of 14.967% together with outliers and 19.358% when they have been obviated. Further on it shows a standard deviation of 1 128.249 including outliers and 183.081 excluding them. Min values with and without outliers are -142.050% and -3 352.747%, respectively. In the opposite direction Max values with and without outliers are 147 487.5% and 3 362% respectively. With a kurtosis of 7 067.056 and a skewness of -3.296 the sample including outliers cannot be considered normally distributed, which is clearly illustrated in Appendix A. The obviating of outliers smoothen the values, transforming the distribution to a more normal state. Nonetheless, the kurtosis remains high.

As table 4 depicts, the mean of the independent variable **ROA** is 6.481%, however when outliers are ostracized the value adjusts to 6.698%. Min values observed ranges from -689.422% to -123.769%, respectively. Max values observed are 13 992.453% with outliers and 133.057% excluding them. The standard deviation with outliers is 43.691 and 12.971 excluding them. Given the range of Min and Max values without outliers, it is considered normal that the distribution is non-normal, as illustrated in Appendix A. The exclusion of outliers smoothen the kurtosis and skewness, converting the distribution to become more bell-shaped.

LTDE has mean of 2.129 when accounting for outliers and 1.411 when excluding them. The standard deviation of the original data is 34.099 while it converts to 5.36 when removing outliers. The Min and Max value of -5 057 and 2 947.2574, respectively, explain the non-normal distribution as well as the high kurtosis of the original data. When excluding outliers the Min value transforms to -88.64 and the Max to 104.426. This transforms the distribution to a more normal state as shown in Appendix A.
However, when removing outliers the skewness increases from 1.562 to 7.86 but more importantly is that the kurtosis declined to 98.66 from its original value of 6 621.267.

Lastly, when assessing the descriptive statistics for the independent variable COD one can notice a mean of 76,984% in the original data, however when outliers are removed it drops to 64,324%. The standard deviation for the original data is 267,926 with a Min value of -14 953% and a Max value of 21 088%. When excluding outliers the standard deviation declines to 118,53 while the Min and Max statistic takes the value of -0.51% and 879%, respectively. Again the original data is not normally distributed, as illustrated in Appendix A. Nonetheless, when excluding outliers both the kurtosis and the skewness take more normal values, resulting in a more normally distributed sample.

5.2 Statistical results

5.2.1 Original data and assumption criteria

Assumption #1: Linear relationship between the dependent variable & each independent variable

![Graph showing linear relationship between TC and GM](image)

**TC * GM ANOVA**

<table>
<thead>
<tr>
<th></th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>0.000</td>
</tr>
<tr>
<td>Combined</td>
<td></td>
</tr>
<tr>
<td>Linearity</td>
<td>0.000</td>
</tr>
<tr>
<td>Deviation from Linearity</td>
<td>0.000</td>
</tr>
</tbody>
</table>

**Figure 8.** Linearity assessment: GM including outliers.

There is an evident slope of the fit line, regarding the linear relationship between TC and GM. However, the slope indicates a negative linear relationship between the variables.
An additional ANOVA test for linearity was run to assess the linear relationship between TC and GM. These variables statistically significantly predicted p<0.05=0.000 for a linear relationship between them. Hence the p-value is under the threshold value of 0.05 indicating that there is a linear relationship between TC and GM. Nevertheless, even though there is a linear relationship, the deviation from linearity is also statistically significant, p<0.05, indicating that there is a nonlinear relationship in addition to the linear component. However, it can with statistical significance be concluded that there is a linear relationship, thus the assumption of linearity is fulfilled.

Furthermore, control variable; Age and Size, and independent variables; PM, ROE, ROA, and LTDE, were deemed statistically significant when assessing their linear relationship with TC. Their scatterplots and ANOVA test for linearity outputs are illustrated in Appendix B. The same reasoning were applied to them as with control variable GM when assessing linearity.

However independent variable COD did not statistically significantly predict a linear relationship with TC as illustrated below.

![Figure 9. Linearity assessment: COD including outliers.](image)

The fitted line remains flat, hence, no linear relationship seems to be evident between TC and COD. This is further supported by the ANOVA test for linearity indicating that their is no statistical significance predicted, p>0.05=0.919, for a linear relationship between them. The p-value for linearity is well above the threshold value of 0.05, while the p-value for deviation from linearity is statistically significant, p<0.05=0.000. Hence,
there is no linear relationship between the two variables, only a nonlinear one. Thus, the assumption of linearity among the dependent and each independent variable is not fulfilled.

Assumption #2: No outliers evident
In order to detect outliers a Casewise diagnostic was utilized. This diagnostics indicates that there were residuals outside ± 3 standard deviations, meaning the data was suffering from outliers. Consequently, the assumption regarding no outliers is in violation.

In order to detect the outliers, the Z-score values have been calculated and observations with values greater than ± 3 will be regarded as extreme values and removed. Hence, the assumption of no outliers is not fulfilled.

Assumption #3 Pearson Correlation and Multicollinearity

<table>
<thead>
<tr>
<th>Pearson Correlation: Including outliers</th>
<th>Variable</th>
<th>TC</th>
<th>Age</th>
<th>Size</th>
<th>Industry</th>
<th>GM</th>
<th>PM</th>
<th>ROE</th>
<th>ROA</th>
<th>LTDE</th>
<th>COD</th>
</tr>
</thead>
<tbody>
<tr>
<td>TC</td>
<td>1</td>
<td>0.039</td>
<td>0.163</td>
<td>-0.061</td>
<td>-0.117</td>
<td>-0.038</td>
<td>-0.033</td>
<td>-0.061</td>
<td>0.017</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>0.039</td>
<td>1</td>
<td>0.316</td>
<td>-0.109</td>
<td>-0.085</td>
<td>0.007</td>
<td>0.005</td>
<td>-0.013</td>
<td>-0.008</td>
<td>0.002</td>
<td></td>
</tr>
<tr>
<td>Size</td>
<td>0.163</td>
<td>0.316</td>
<td>1</td>
<td>-0.109</td>
<td>-0.129</td>
<td>-0.008</td>
<td>-0.009</td>
<td>-0.029</td>
<td>0.052</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Industry</td>
<td>-0.061</td>
<td>-0.109</td>
<td>-0.109</td>
<td>1</td>
<td>0</td>
<td>-0.01</td>
<td>-0.001</td>
<td>-0.009</td>
<td>0.009</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>GM</td>
<td>-0.117</td>
<td>-0.085</td>
<td>-0.129</td>
<td>0</td>
<td>1</td>
<td>0.586</td>
<td>0.003</td>
<td>0.017</td>
<td>0.011</td>
<td>0.004</td>
<td></td>
</tr>
<tr>
<td>PM</td>
<td>-0.038</td>
<td>0.007</td>
<td>-0.008</td>
<td>-0.01</td>
<td>0.586</td>
<td>1</td>
<td>0.011</td>
<td>0.018</td>
<td>-0.001</td>
<td>0.005</td>
<td></td>
</tr>
<tr>
<td>ROE</td>
<td>-0.033</td>
<td>0.005</td>
<td>-0.009</td>
<td>-0.001</td>
<td>0.003</td>
<td>0.011</td>
<td>1</td>
<td>0.253</td>
<td>-0.101</td>
<td>-0.011</td>
<td></td>
</tr>
<tr>
<td>ROA</td>
<td>-0.061</td>
<td>-0.013</td>
<td>-0.029</td>
<td>-0.009</td>
<td>0.017</td>
<td>0.018</td>
<td>0.253</td>
<td>1</td>
<td>-0.01</td>
<td>-0.033</td>
<td></td>
</tr>
<tr>
<td>LTDE</td>
<td>0.017</td>
<td>-0.008</td>
<td>0.052</td>
<td>0.009</td>
<td>0.011</td>
<td>-0.001</td>
<td>-0.101</td>
<td>-0.01</td>
<td>1</td>
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<td></td>
</tr>
<tr>
<td>COD</td>
<td>0</td>
<td>0.002</td>
<td>0</td>
<td>0</td>
<td>0.004</td>
<td>-0.005</td>
<td>-0.011</td>
<td>-0.033</td>
<td>0.009</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Table 5. Pearson Correlation: Including outliers.

When evaluation the Pearson correlation it is evident that the variables have a certain degree of correlation with each other. TC is statistically significantly related to all independent variables, except COD; p<0.461, and control variables at the 0.05 significance level as illustrated in Appendix C. TC shows a positive correlation with Age, Size and LTDE and negative correlation with Industry, GM, PM, ROE and ROA. Furthermore, COD is not significantly related to Age, Size, Industry, GM and PM. This since the threshold value of 0.05 is breached resulting in p>0.05. Industry shows no significant relationship with GM, ROE and COD since their p>0.05. Additionally, the correlation between GM and ROE cannot be deemed significant as well as the correlation between PM and LTDE.

The results confirm that all coefficients between variables are fairly low. The correlation between GM and PM of 0.586 is however fairly strong as well as the correlation of 0.316 between Age and Size. However, as one should be concerned when the correlation is 0.7 or higher, it is evident that the data is not in violation of multicollinearity. Moreover, for robustness the tolerance and VIF statistics were calculated to assess if there are any signs of multicollinearity, which can be found in the table below:
The results of the tolerance statistics and the VIF confirm that there is no indication of multicollinearity among the variables included in the model. This since all variables are well above the 0.10 minimum tolerance value, in addition to the low VIF values below the critical range of 2.5-5. Thus, the assumption of no multicollinearity is considered as fulfilled.

**Assumption #4 Normality, linearity and homoscedasticity of Residuals**

**Table 6. VIF statistics: Including outliers.**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Tolerance</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
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<td></td>
</tr>
<tr>
<td>Age</td>
<td>0.89</td>
<td>1.124</td>
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<tr>
<td>Size</td>
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<td>GM</td>
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<td>PM</td>
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<tr>
<td>ROE</td>
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<tr>
<td>ROA</td>
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<td>LTDE</td>
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</tr>
<tr>
<td>COD</td>
<td>0.999</td>
<td>1.001</td>
</tr>
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</table>

**Figure 10. Distribution Histogram: Residuals including outliers.**

Errors of prediction are to be considered as normally distributed as illustrated by this residual histogram. This is verified by the bell-shaped fit curve present around the distribution indicating a symmetric distribution around its mean. However, the distribution is affected by a high kurtosis as illustrated by the peak. This particular kurtosis is best viewed in the normal P-P Plot of regression standardized residual, presented below:
As illustrated by figure 11, the normal distribution of residual is not particularly evident, since observations do not center along the fitted line due the extensive kurtosis. However, the bell-shaped curve presented in figure 10 establish that residuals are normally distributed.

Assessing the residual scatterplot, a weak linear relationship can be detected. A clear majority of observations are centered around the fitted line, indicating that a linear relationship between residuals is present.
Furthermore, the assumption of homoscedasticity is assessed utilizing the residual scatterplot. Analyzing the dispersion of dots assumes that residuals are not homoscedastic, but rather heteroscedastic. This since the plots do not seem to be following a random walk, but rather pile up in the center. Further on, it cannot be established that the residuals are rectangularly distributed. Hence, the assumption of homoscedasticity of residuals is violated.

**Multiple Regression output**

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.207(^a)</td>
<td>0.043</td>
<td>0.043</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), COD, Industry, GM, ROE, LTDE, Age, ROA, Size, PM
b. Dependent Variable: TC

**ANOVA Table: Multiple Regression including outliers**

<table>
<thead>
<tr>
<th>Model</th>
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<th>F</th>
<th>Sig</th>
</tr>
</thead>
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<tr>
<td></td>
<td>Residual</td>
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</tr>
<tr>
<td></td>
<td>Total</td>
<td>119444</td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: TC
b. Predictors: (Constant), COD, Industry, GM, ROE, LTDE, Age, Size, PM

Table 7. Multiple Regression Output: Including outliers.

The multiple regression model statistically significantly predicted TC, F(9, 119435) = 594.489, p<0.05, R\(^2\)=0.043. All variables except COD added statistically significantly to the prediction, given that p<0.05\(^3\).

The data is a good fit for the model, as indicated by the ANOVA table (p<0.05) showing that the null hypotheses can be rejected. However, the model only explains 4.3% (as shown by the adjusted R\(^2\)) of how financial performance affect Swedish SMEs usage of trade credit. This has to be considered as weak. However, as both the data and residuals are in violation of the given assumptions additional testing will be carried out after the removal of outliers to enhance the prediction rate. It is predicted that this will change the given model significantly, due to the hefty amount of identified outliers.

---

\(^3\) See multiple regressions coefficient table in Appendix C.
5.2.2 Data excluding outliers and assumption criteria

Assumption #1: Linear relationship between the dependent variable & each independent variable

![Graph showing the linear relationship between TC and GM](image)

<table>
<thead>
<tr>
<th>TC * GM ANOVA</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>0.000</td>
</tr>
<tr>
<td>Combined</td>
<td></td>
</tr>
<tr>
<td>Linearity</td>
<td>0.000</td>
</tr>
<tr>
<td>Deviation from Linearity</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Figure 13. Linearity assessment: GM excluding outliers.

There is an evident slope of the fit line, regarding the linear relationship between TC and GM when outliers have been removed. The slope indicates a negative linear relationship between the variables. An additional ANOVA test for linearity was run to assess the linear relationship between TC and GM excluding outliers. These variables statistically significantly predicted p<0.05=0.000 for a linear relationship between them. Hence the p-value is under the threshold value of 0.05 indicating that there is a linear relationship between TC and GM. Nevertheless, even though there is a linear relationship, the deviation from linearity is also statistically significant, p<0.05, indicating that there is a nonlinear relationship in addition to the linear component. However, it can with statistical significance be concluded that there is a linear relationship, thus the assumption of linearity is fulfilled.

Furthermore, control variables; Age and Size, and independent variables; PM, ROE, ROA, and LTDE, were deemed statistically significant when assessing their linear relationship with TC. Their scatterplots and ANOVA test for linearity outputs are illustrated in Appendix B. The same reasoning were applied to them as with control variable GM when assessing linearity.
COD was the only variable without a linear relationship with TC before the removal of outliers, leaving the assumption violated. However, with the exclusion of outliers COD became significantly linear as illustrated below.

[Image of scatter plot with regression line and R² value]

<table>
<thead>
<tr>
<th>TC * COD ANOVA</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>Combined 0.000</td>
</tr>
<tr>
<td>Linearity</td>
<td>0.000</td>
</tr>
<tr>
<td>Deviation from Linearity</td>
<td>0.000</td>
</tr>
</tbody>
</table>

**Figure 14.** Linearity assessment: COD excluding outliers.

The fitted line now indicated that there is a linear relationship between TC and COD. This is further supported by the ANOVA test for linearity indicating that there is statistical significance predicted, p<0.05=0.000, for a linear relationship between them. The p-value for deviation from linearity remain statistically significant, p<0.005=0.000. Hence, there is a linear relationship between the two variables, but also a nonlinear one. Thus, the assumption of linearity among the dependent and each independent variable is fulfilled.

**Assumption #2: No outliers evident**

Outliers were localized using Casewise diagnostics as presented in chapter 5.2.1. Z-score values have been calculated for each observation and residuals that were outside ± 3 standard deviations have been excluded from the sample. This resulted in the exclusion of 4 367 observations. Hence, the observed sample decreased from 119 548 to 115 091. The assumption of no outliers is thus considered as fulfilled.
Assumption #3 Pearson Correlation and Multicollinearity

Table 8. Pearson Correlation: Excluding Outliers

<table>
<thead>
<tr>
<th>Variable</th>
<th>TC</th>
<th>Age</th>
<th>Size</th>
<th>Industry</th>
<th>GM</th>
<th>PM</th>
<th>ROE</th>
<th>ROA</th>
<th>LTDE</th>
<th>COD</th>
</tr>
</thead>
<tbody>
<tr>
<td>TC</td>
<td>1</td>
<td>0.066</td>
<td>0.203</td>
<td>-0.106</td>
<td>-0.276</td>
<td>-0.136</td>
<td>-0.066</td>
<td>-0.231</td>
<td>0.039</td>
<td>0.026</td>
</tr>
<tr>
<td>Age</td>
<td>0.066</td>
<td>1</td>
<td>0.297</td>
<td>-0.12</td>
<td>-0.169</td>
<td>0.008</td>
<td>-0.007</td>
<td>-0.051</td>
<td>-0.043</td>
<td>0.02</td>
</tr>
<tr>
<td>Size</td>
<td>0.203</td>
<td>0.297</td>
<td>1</td>
<td>-0.1</td>
<td>-0.233</td>
<td>0.055</td>
<td>-0.007</td>
<td>-0.05</td>
<td>0.053</td>
<td>0.012</td>
</tr>
<tr>
<td>Industry</td>
<td>-0.106</td>
<td>-0.12</td>
<td>-0.1</td>
<td>1</td>
<td>-0.007</td>
<td>-0.035</td>
<td>-0.003</td>
<td>-0.013</td>
<td>0.018</td>
<td>-0.009</td>
</tr>
<tr>
<td>GM</td>
<td>-0.276</td>
<td>-0.169</td>
<td>-0.233</td>
<td>-0.007</td>
<td>1</td>
<td>0.109</td>
<td>0.03</td>
<td>0.092</td>
<td>0.038</td>
<td>-0.001</td>
</tr>
<tr>
<td>PM</td>
<td>-0.136</td>
<td>0.008</td>
<td>0.055</td>
<td>-0.035</td>
<td>0.109</td>
<td>1</td>
<td>0.192</td>
<td>0.493</td>
<td>-0.057</td>
<td>-0.065</td>
</tr>
<tr>
<td>ROE</td>
<td>-0.066</td>
<td>-0.007</td>
<td>-0.007</td>
<td>-0.003</td>
<td>0.03</td>
<td>0.192</td>
<td>1</td>
<td>0.403</td>
<td>-0.152</td>
<td>-0.046</td>
</tr>
<tr>
<td>ROA</td>
<td>-0.231</td>
<td>-0.051</td>
<td>-0.05</td>
<td>-0.013</td>
<td>0.092</td>
<td>0.493</td>
<td>0.403</td>
<td>1</td>
<td>-0.136</td>
<td>-0.113</td>
</tr>
<tr>
<td>LTDE</td>
<td>0.039</td>
<td>-0.043</td>
<td>0.053</td>
<td>0.018</td>
<td>0.038</td>
<td>-0.057</td>
<td>-0.152</td>
<td>-0.136</td>
<td>1</td>
<td>0.098</td>
</tr>
<tr>
<td>COD</td>
<td>0.026</td>
<td>0.02</td>
<td>0.012</td>
<td>-0.009</td>
<td>-0.001</td>
<td>-0.065</td>
<td>-0.056</td>
<td>-0.113</td>
<td>0.098</td>
<td>1</td>
</tr>
</tbody>
</table>

When evaluating the Pearson correlation, excluding outliers, the variables have a certain degree of correlation with each other. TC is now statistically significantly related to all independent variables and control variables at the 0.05 significance level as illustrated in Appendix C. TC shows a positive correlation with Age, Size, LTDE and COD while having negative correlation with Industry, GM, PM, ROE and ROA. Furthermore, COD is now significantly related to all variables, except GM. Industry now exhibit a significant relationship with GM, and COD since their p<0.05, however it still shows no significant with ROE. Additionally, the correlation between GM and ROE can now be deemed significant as well as the correlation between PM and LTDE. Thus, when excluding outliers more correlations were assessed as statistically significant and the level of correlation among variables decreased.

Table 9. VIF statistics: Excluding outliers

<table>
<thead>
<tr>
<th>Variable</th>
<th>Tolerance</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>0.888</td>
<td>1.126</td>
</tr>
<tr>
<td>Size</td>
<td>0.858</td>
<td>1.166</td>
</tr>
<tr>
<td>Industry</td>
<td>0.978</td>
<td>1.022</td>
</tr>
<tr>
<td>GM</td>
<td>0.915</td>
<td>1.093</td>
</tr>
<tr>
<td>PM</td>
<td>0.743</td>
<td>1.346</td>
</tr>
<tr>
<td>ROE</td>
<td>0.827</td>
<td>1.209</td>
</tr>
<tr>
<td>ROA</td>
<td>0.644</td>
<td>1.553</td>
</tr>
<tr>
<td>LTDE</td>
<td>0.953</td>
<td>1.049</td>
</tr>
<tr>
<td>COD</td>
<td>0.98</td>
<td>1.021</td>
</tr>
</tbody>
</table>

The results confirm that all coefficients between variables are fairly low. The correlation between ROA and PM of 0.493 is however moderately high. However, as one should be concerned when the correlation is 0.7 or higher, it is evident that the data is not in violation of multicollinearity. Moreover, for robustness the tolerance and VIF statistics were calculated ones again to assess if there is any signs of multicollinearity.

The results of the tolerance statistics and the VIF once again confirm that there is no indication of multicollinearity among the variables included in the model. This since all variables are well above the 0.10 minimum tolerance value, in addition to the low VIF.
values below the critical range of 2.5-5. Thus, the assumption of no multicollinearity among variables is fulfilled.

Assumption #4 Normality, linearity and homoscedasticity of Residuals

![Histogram](image)

**Figure 15.** Distribution Histogram: Residuals excluding outliers.

Errors of prediction are to be considered as normally distributed as illustrated by this residual histogram. The bell-shaped curve indicated by the fitted line has become even more symmetrical when excluding outliers. Indicating an even more symmetrical distribution around its mean. The extensive kurtosis has decreased to a more moderate and acceptable level. This is best illustrated by the normal P-P plot presented below.

![Normal P-P Plot](image)

**Figure 16.** P-P Plot Residuals: excluding outliers.
Residuals now center more evenly along the fitted line presented in figure 16. Hence, the exclusion of outliers improved the normal distribution significantly.

![Scatterplot](image)

**Figure 17.** Residual scatterplot: excluding outliers.

Ostracizing outliers evidently made the residuals to appear more linear. No curvature can be viewed in figure 17, rather it has taken more of a rectangular form. The assumption of linear residuals can thusly be seen as fulfilled.

Withal, the assumption of homoscedasticity among residuals can be deemed fulfilled. No evident pattern of plots can be detected, rather they are seen as following a random walk. The more rectangular shape also indicate that the heteroscedasticity that was evident from the original sample has been erased. The overall shape of the scatterplot concludes that all assumptions regarding residuals are fulfilled. It is nearly rectangularly distributed and has a concentration of scored along the center. Hence, it can be concluded that outliers that were present influenced and weakened the values predicted by the model earlier prior to being excluded.
Multiple Regression Output: Excluding Outliers

### Multiple Regression Model Summary: Excluding outliers

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.386&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.149</td>
<td>0.149</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), COD, Industry, GM, ROE, LTDE, Age, ROA, Size, PM

b. Dependent Variable: TC

### ANOVA Table: Multiple Regression excluding outliers

<table>
<thead>
<tr>
<th>Model</th>
<th>df</th>
<th>F</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Regression</td>
<td>9</td>
<td>2239.843</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>115081</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>115090</td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: TC

b. Predictors: (Constant), COD, Industry, GM, ROE, LTDE, Age, Size, PM

Table 10. Multiple Regression Output: Excluding outliers.

The multiple regression model statistically significantly predicted $TC$, $F(9, 119435) = 2239.843$, $p<0.05$, $R^2=0.149$. All variables except $COD$ added statistically significantly to the prediction, given that $p<0.05$.<sup>4</sup>

The data is a good fit for the model, as indicated by the ANOVA table ($p<0.05$) showing that the null hypotheses can be rejected. $COD$ is still statistically insignificant to the model given that its $p>0.05$. It is therefore removed from the model before one final regression output is made.

### 5.3 Final Multiple Regression Output

#### Multiple Regression Model Summary: Excluding COD and outliers

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.386&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.149</td>
<td>0.149</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Industry, GM, ROE, LTDE, Age, ROA, Size, PM

b. Dependent Variable: TC

#### ANOVA Table: Multiple Regression excluding COD and outliers

<table>
<thead>
<tr>
<th>Model</th>
<th>df</th>
<th>F</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Regression</td>
<td>8</td>
<td>2519.837</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>115082</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>115090</td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: TC

b. Predictors: (Constant), Industry, GM, ROE, LTDE, Age, Size, PM

Table 11. Multiple Regression Output: Excluding COD and outliers.

The multiple regression model statistically significantly predicted $TC$, $F(9, 119435) = 2519.837$, $p<0.05$, $R^2=0.149$. All variables added statistically significance to the

---

<sup>4</sup> See multiple regressions coefficient table in next section.
prediction, given that $p<0.05^5$. The data is a good fit for the model, as indicated by the ANOVA table ($p<0.05$) showing that the null hypotheses can be rejected. It can therefore be established that there is evidence, at the 5% significance level, that financial performance affects Swedish SMEs’ trade credit usage.

With the exclusion of outliers the model explains, as indicated by the adjusted $R^2$, 14.9% of how financial performance affect Swedish SMEs usage of trade credit. This can be compared to the 4.3% predicted by the previous regression model. Hence, hypothesis testing will be carried out by utilizing the regression model excluding outliers, due to its higher explanatory power.

5.4 Presentation of Statistical Results
In the following section the results obtained via the multiple regression model will be bestowed. Each relationship between $TC$ (i.e. the dependent variable) and the independent variables will be presented, with regards to their unstandardized $\beta$ coefficients, t-statistics, significance levels, and confidence intervals. From the Coefficients table acquired per SPSS, the following results were established:

<table>
<thead>
<tr>
<th>Coefficients</th>
<th>Variable</th>
<th>Unstandardized $\beta$</th>
<th>t</th>
<th>Sig.</th>
<th>95% Confidence Interval for $\beta$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Age</td>
<td>-0.01</td>
<td>-12.302</td>
<td>0.000</td>
<td>-0.011 to -0.008</td>
</tr>
<tr>
<td></td>
<td>Size</td>
<td>0.527</td>
<td>47.84</td>
<td>0.000</td>
<td>0.505 to 0.548</td>
</tr>
<tr>
<td></td>
<td>Industry</td>
<td>-0.218</td>
<td>-36.792</td>
<td>0.000</td>
<td>-0.230 to -0.206</td>
</tr>
<tr>
<td></td>
<td>GM</td>
<td>-0.031</td>
<td>-80.806</td>
<td>0.000</td>
<td>-0.032 to -0.030</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>-0.008</td>
<td>-8.558</td>
<td>0.000</td>
<td>-0.009 to -0.006</td>
</tr>
<tr>
<td></td>
<td>ROE</td>
<td>0.001</td>
<td>10.127</td>
<td>0.000</td>
<td>0.001 to 0.001</td>
</tr>
<tr>
<td></td>
<td>ROA</td>
<td>-0.061</td>
<td>-59.645</td>
<td>0.000</td>
<td>-0.063 to -0.059</td>
</tr>
<tr>
<td></td>
<td>LTDE</td>
<td>0.012</td>
<td>5.941</td>
<td>0.000</td>
<td>0.008 to 0.016</td>
</tr>
<tr>
<td></td>
<td>COD</td>
<td>-0.00002088</td>
<td>-0.23</td>
<td>0.818</td>
<td>0.000 to 0.000</td>
</tr>
</tbody>
</table>

Dependent Variable: TC

Table 12. Multiple Regression Unstandardized Coefficients.

*Age*: The unstandardized $\beta$ coefficient of Age can be reported as negative, with the numeric value of -0.010. The t-statistic has been presented to be negative as well, with a value of -12.302. Moving along to the P-value reported under the significance column, it is reported that Age is different from 0, since the reported value is 0.000, hence, $p<0.05$. Lastly the confidence interval is accounted for, which on the 95% level of significance is -0.011 to -0.008, indicating the true value of the unstandardized $\beta$ coefficient will with a 95% probability lie within that range.

*Size*: The current variable reported an unstandardized $\beta$ coefficient with a positive value, more precisely 0.527. Furthermore, the t-statistic for Size was reported to be 47.840. As for the significance value it is 0.000, implying that the variable is different from 0, a consequence of $p<0.05$. The last element presented is the confidence interval, signifying the true value of the unstandardized $\beta$ coefficient to lie between 0.505 and 0.548 with a 95% probability.

5 See multiple regressions coefficient table below.
Industry: For the variable Industry the unstandardized β coefficient is found to be negative, to be precise -0.218. Additionally, the t-statistic it was presented to be -36.792. The p-value of 0.000 indicates Industry to be different from 0, implying it is statistically significant, due to the fact that p<0.05. Moving along to the confidence interval, it reports the true value of the unstandardized β coefficient, with 95% probability, is somewhere between -0.230 and -0.206.

GM: In regards to the unstandardized β coefficient for GM the value is negative, to be precise -0.031. Alongside, the t-statistic was reported to be -80.806. As for the p-value it is significant, due to p<0.05, where p = 0.000. Which further implies GM to be different from 0. The last statistic reported in the table is the confidence interval, with an interval of -0.032 to -0.030. Suggesting the true value of the unstandardized β coefficient to lie within that range with a probability of 95%.

PM: Moving forward, the unstandardized β coefficient for PM is negative, with a value of -0.008. Moreover, the t-statistic for the variable is reported to be -8.558. The p-value for PM is 0.000, insinuating the variable to be different from 0, hence being statistically significant. Which is further supported by the logic of p<0.05. The confidence interval, at 95%, gave the range of -0.009 to -0.006, signifying that the true value of the unstandardized β coefficient lies within it with a probability of 95%.

ROE: The unstandardized β coefficient for ROE is a positive value, more precisely 0.001. The t-statistic was reported to be 10.127 for the current variable. In terms of the p-value, it was 0.000, indicating the variable is different from 0, consequently it is considered to be statistically significant at the 0.05 significance level. Lastly, the 95% confidence interval was reported to be 0.001 to 0.001.

ROA: The reported value for the unstandardized β coefficient for ROA was negative, with a value of -0.061 and the t-statistic had a negative value of -59.645. Furthermore, the variable is considered to statistically significant, since p<0.05, with a p-value of 0.000. The confidence interval is reported to be -0.063 to -0.059, at the 95% significance level.

LTDE: The unstandardized β coefficient for LTDE is a positive value, at 0.012 and the t-statistic is 5.941. Additionally, the p-value is reported to be 0.000 for the current variable, thus p<0.05, making it different from 0 and statistically significant. Moreover, the confidence interval takes the range of 0.008 to 0.016, hence the true value of the unstandardized β coefficient shall lie within it with a probability of 95%.

COD: The last variable COD has an unstandardized β coefficient which is negative, however at an extremely low value of -0.0000288 and a t-statistic of -0.230. Moreover, the p-value is 0.818, making the variable statistically insignificant as it cannot be proven to different from 0, a consequence of p>0.05. The 95% confidence interval is 0.000 to 0.000. Due to the insignificance of the variable, it will be dropped from the final regression model as stated earlier.
6. Analysis and Conclusion

In the following chapter the empirical results from the previous chapter will be made sense of, with the assistance of the study’s theoretical frame of reference presented in chapter 3. The main objective is to gain an understanding for the findings reported and what the plausible logic behind the results is. The relationships bestowed from the empirical findings will be further discussed in regards to if they met the expectations of the authors or not. In essence, the analysis will argument for if any definite cause(s) can be established for the results. Consequently, concluding remarks about the analysis will be presented before answering the research question in the conclusion.

6.1 Analysis of Results

The research philosophy, as argued for in the methodology chapter, is of the positivistic nature for this degree project. Consequently, for information to be considered knowledge it needs the reinforcement of facts and data. Thus, the only results to be considered definite knowledge are those who are statistically significant. Therefore, only relationships who are statistically significant will be acknowledge as true. For the study at hand to maintain statistical robustness the level of significance is set at 0.05. As a result, the risk of statistically significant results being caused by chance is kept low.

Below the results of the multiple regression will be analyzed, hypothesis by hypothesis. Consequently, concluding remarks about the analysis will be presented before answering the research question in the conclusion.

6.1.1 Age and Trade Credit (H1)

The relationship between TC and Age is negative, which is indicated by the negative unstandardized β coefficient between the two. It is furthermore concluded that it is statistically significant due to the fact that the p-value is below the significance level of 0.05. Hence, the null hypothesis, β_{AGE} = 0, can be rejected. This reveals that as age increases trade credit decreases, which is in conjunction with prior research (Berger & Udell, 1998; Myers, 1977). Furthermore, the relationship is in line with the expectations expressed in chapter 3.

The negative relationship can be explained with the assistance of information asymmetry. As Akerlof (1970) expresses in his article, regarding asymmetric information, there are many times a mismatch in knowledge between parties engaged in transactions. Consequently, as SMEs are considered to be of a less transparent character, this mismatch will be evident when they seek financing. Furthermore, this mismatch will most likely be even more evident for SMEs of a younger age, which can be demonstrated with the help of the signaling theory. Spence (1973) illustrated the signaling theory with the help of the job market, where an employer seeks to hire an employee. He further illustrates that the employer will be uncertain in terms of the potential employee’s capabilities before actually employing him/her. For illustrative purposes there are two groups of workers, good workers and bad workers, under which the employee may fall. However, it is virtually impossible for the employer to know beforehand, under which the potential employee will fall. The same reasoning can be applied to an SME seeking finance, the credit grantor cannot know beforehand if the SME have the capabilities to meet the interest payments of the credit granted. Spence (1973) further suggests that the employee can signal its capabilities to the employer, in order to convince the employer to offer the job. The same logic can be applied to SMEs,
the younger they are the less attributes they will have to signal. However, as the SME ages the more attributes it will have to signal, such as creditworthiness, hence they will be able to utilize traditional debt easier. As a result, the amount of trade credit will decrease as the age of the firm increases.

Furthermore, in connection to the Pecking Order Theory, laid forth by Myers (1984) it is stated firms tend to follow a hierarchy for sources of funds. Which is the following order; internally generated funds, debt, and equity. This hierarchy is further ranked by Lindblom et al. (2011), where debt is categorized into long-term and short-term debt. Moreover, under the aforementioned categorization long-term debt is seen as superior to short-term debt. Therefore, as age increases and gives SMEs more attributes to signal their creditworthiness they will move away from short-term debt (i.e. trade credit) towards long-term debt (i.e. traditional debt). This is further supported by the fact that Darush & Öhman (2015) found a negative relationship of profitability and age. Which indicates that trade credit is not substituted by internally generated funds, but rather other types of funds. In essence, trade credit will decrease as age increases due to their better ability to access traditional debt.

6.1.2 Size and Trade Credit (H2)

TC and SiZe demonstrate a significant positive relationship, as demonstrated by the unstandardized β coefficient. It is deemed statistically significant since the p-value is below the threshold level of 0.05. H2: βSIZE = 0 can henceforth be rejected, and the alternative hypothesis βSIZE ≠ 0 is accepted. Thus, in contrast to what was expected, larger firms receive a higher proportion of their financing from suppliers in the form of trade credit.

Larger firms normally have a considerable advantage of obtaining traditional debt, due to the reduction in information asymmetry (Berger & Udell, 1998, p. 622). By breaching this barrier, larger firms get access to a wider spectrum of external financing choices, which includes traditional bank financing. This is strongly correlated to that market imperfections become less evident, leading to a reduction in transaction and monitoring costs (Carvalho & Schiozer, 2015, p. 209). Further on, as firms grow so do their sales and when the working capital is positive they usually adopt a conservative debt policy (Hill et al., 2010). Hence, additional funds needed to support operations can be generated from within. Thus, larger firms usually generate significant amounts of cash, compared to smaller; leading to accumulated retained earnings (Carvalho & Schiozer, 2015, p. 210). Firm size can therefore be seen as having a positive correlation with the pecking order theory (Majluf, 1984). Conclusively, larger SMEs should naturally utilize lesser amounts of trade credit compared to smaller ones. However, in contrast to this the findings demonstrate that SMEs firm size rather has a positive relationship with trade credit, rather than a negative one. This can nevertheless be explained by several factors.

Considering the agency aspect, expanded upon by Jensen & Meckling (1976), capital structure and financing is not purely decided by the means of financial motives. Aspects such as heterogeneous incentives and diverse risk appetite among shareholders and external debtholders play a part as well (John & John, 1993, p. 951). Darush & Öhman (2015) nevertheless showed that the vast majority of Swedish SMEs, irrespective of size, do not separate the function of shareholder and manager. Hence, capital structure models regarding size are not directly applicable to SMEs. The agency problem of
SMEs instead lies in that owners do not want to lose their controlling power of the firm (Berger & Udell, 1998, p. 628-629). Therefore, many times entrepreneurs and SME owners prefer trade credit to traditional bank debt (Huyghebaert et al., 2007, p. 448). This is related to the implicit cost of bank debt versus the implicit cost of trade credit. Explicitly traditional bank debt is the cheaper alternative due to its lower interest costs, however banks do not hold a “implicit equity stake” within the firm. Thus, if the borrower is experiencing financial distress, banks tend to follow a strict liquidation policy in order to receive what is owed. Thus, the owner risks losing control over the firm while it is being liquidated. In contrast, trade credit carries implicit benefits. Petersen & Rajan (1997) explain that suppliers have a higher implicit equity stake compared to banks. Suppliers will be more willing to renegotiate terms of funding if the SME is in financial distress. This since the SME is seen as a customer, and the supplier is unwilling to the current stake invested, but also future business opportunities. Hence, the positive relationship between trade credit and age can be explained by the implicit benefit carried by trade credit, but also the agency cost associated with that Swedish SMEs do not tend to separate the function of shareholders and management.

Further on, larger firms tend to be more creditworthy and this sends out a signal to the market that they are trustworthy and are able to pay their obligations on time (Myers, 1984). Hence, one can suspect that they will be able to demand, and receive better credit terms when negotiation with trade credit suppliers. The explicit cost for larger SMEs will then decrease, making trade credit an even bigger substitute to traditional bank debt to create financial leverage, as explained by (Ogawa et al., 2011, 101). Trade credit also has a non-financial role for SMEs since it can help to promote long-term relationships with suppliers (Summers & Wilson, 2000). Thusly, as SMEs grow larger their purchase on credit will increase making their relationship with suppliers stronger, which ultimately then can be connected to the decrease in explicit costs carried. Berger & Udell (1998, p. 624) furthermore raise the question about using assets as collateral to obtain bank financing. This on the other side postulates that the given assets on the balance sheet are substantial enough to be considered as collateral. One can suspect that SMEs assets are not viewed as substantial enough to be considered collateral. So even though that they grow in size, trade credit is viewed as a necessary financing alternative to be able to survive, operating as a compliment to traditional bank loans (Carvalho & Schiozer, 2015, p. 209).

The biggest factor that can help to explain the positive relationship found between trade credit and size is however market imperfections associated with SMEs. Today’s capital structure theories are rarely applicable to SMEs, Jensen & Meckling (1976) opposedly showed that circumstances in the real capital markets are more complex than assumptions laid forth account for. Only a small part of all Swedish SMEs are listed on publicly traded stock exchanges, hence efficient market obstacles will arise for the ones that are not. SMEs ability to obtain traditional financing will hence be slimmer, irrespective of size. Ultimately credit grantors will price the loans accordingly, leaving SMEs with a cost that is arduous to absorb (Raju & Rajan, 2015, p. 100). Concludingly, even though that the relationship between trade credit and size might be viewed as irrational, it might be more rational than one can assume. The findings are also in conjunction with previous research carried out by Petersen & Rajan (1997) and García-Teruel & Martínez-Solano (2010), proving that the relationship cannot be disregarded as insignificant.
6.1.3 Industry and Trade Credit (H3)
The relationship between TC and Industry is negative, which is indicated by the negative unstandardized \( \beta \) coefficient between the two. It is furthermore concluded that it is statistically significant due to the fact that the p-value is below the significance level of 0.05. Hence, the null hypothesis, \( \beta_{\text{INDUSTRY}} = 0 \), can be rejected. However, in the case of industry there were no preconceptions in terms of what direction the effect on trade credit would take. The only expectation as stated previously in the theoretical framework is that industry would influence the amount of trade credit, due to industry specific characteristics. The findings were in line with previous research carried out by Kayo & Kimura (2010). These specific characteristics will not be further scrutinized, since the purpose was to control for if industry has an impact on the utilization of trade credit and not why or how.

6.1.4 Gross Margin/Profit Margin and Trade Credit (H4/H5)
For TC and GM a statistically significant relationship is established, more precisely a negative one. The negative relationship is supported by the negative unstandardized \( \beta \) coefficient provided from the regression model. Moreover, the statistical significance is sustained via the p-value, since it is below the significance level of 0.05. Thus, the null hypothesis, \( \beta_{\text{GM}} = 0 \), can be rejected. Furthermore, the same statistical findings could be established in terms of TC and PM, which also had a negative unstandardized \( \beta \) coefficient and a p-value below 0.05. As a result, the null hypothesis, \( \beta_{\text{PM}} = 0 \), is rejected. The established relationships are in conjunction with the author's expectations. Which is further supported by the findings of Darush & Öhman (2015), where a negative relationship is found between leverage ratios (i.e. amount of trade credit) and profitability (i.e. GM and PM). Hereafter, GM and PM will be referred to as Return on Sales (ROS) as they both indicate the same element, profitability.

The Pecking Order Theory can best explain the negative relationship between TC and ROS. As Myers (1984) describes it, firms follow a hierarchy when obtaining funds, namely internal funds, debt, and equity. Therefore, it is evident that TC and ROS are negatively related, since ROS is what generates internal funds. The higher ROS is the more internal funds will be utilized and less external sources of finance, such as trade credit. However, Brealy et al (2014, p. 348-349) states that occasionally internally generated funds are sufficient to over operations and investments, yet more often it is not. As a consequence, firms have to turn to other sources of financing and following the argument of Lindblom et al. (2012) long-term debt is to prefer over short-term debt (i.e. trade credit). Then it could be assumed that SMEs have to turn to short-term debt as it has a hard time obtaining long-term debt. Although, this do not have to be the case as ROS indicates financial strength and the ability to meet debt obligations. Relying on the arguments of Spence (1973) and the signaling theory, the aforementioned can be considered an attribute SMEs use to signal their creditworthiness and ability to meet interest payments. Thus, SMEs will gain the two top tier choices of financing according to the Pecking Order Theory, namely internal funds and long-term debt. Consequently, the utilization rate of trade credit will decrease as ROS increases.

6.1.5 Return on Equity and Trade Credit (H6)
The relationship between TC and ROE is positive, which is indicated by the positive unstandardized \( \beta \) coefficient between the two. It is furthermore concluded that it is statistically significant due to the fact that the p-value is below the significance level of 0.05. Hence, the null hypothesis, \( \beta_{\text{ROE}} = 0 \), can be rejected. This reveals that as trade
credit increases so does ROE, which is in conflict with the preconceptions of the authors.

The rationale behind the expectations of the authors lies in the findings of previous studies (for example Darus & Öhman, 2015), where leverage ratios are negatively correlated with profitability. Hence, the logic can be found in that as ROE is a profitability indicator the same would be observed for the study at hand. However, after a deeper consideration it is quite evident that the opposite can occur. To start with, if the ROE equation is broken down into its components one can easily see that if equity (the denominator) decreases and the net income (the numerator) stays constant, ROE will increase. The rationale behind this behavior of SMEs can be further understood with the help of the pecking order theory (Myers, 1984), where debt is superior to equity. Consequently, firms will utilize more debt and less equity and net income will be divided over the lesser equity post, hence making ROE increase with debt (i.e. trade credit). It can be further demonstrated that this is the nature of SMEs with the assistance of Berger & Udell (1998), where they stated that most SMEs do not separate ownership and management. Thus, some agency problem will arise, since the owners of SMEs do not want to lose control over the firm. As equity comes with the potential loss of control, equity will not be the most attractive source of financing for SMEs. As a result, they stand to make the choice between internal funds and debt. As stated before SMEs ability to generate internal funds are limited, therefore they will rely on debt. Furthermore, in connection to Lindblom et al. (2011), debt is divided into long-term and short-term debt, with long-term debt being superior. However, since SMEs many times have a hard time to obtain long-term debt (i.e. traditional debt) they have to rely on short-term debt (i.e. trade credit). Also, since owners of SMEs many times do not want to lose control over the firm, long-term debt is not an option as it comes with the risk of liquidation of the firm (Huyghebaert et al., 2007). Therefore, SMEs financial leverage will be created with the help of trade credit and as expressed above the relationship between financial leverage and ROE can be seen as positive. Essentially, as debt (i.e. trade credit) increases, equity decreases, and keeping the net income constant ROE increases.

There is one more rationale behind the behavior of ROE increasing with the increase in trade credit. Which stems from the tax shield effect of trade credit, as Brick & Fung (1984) and Desai et al. (2016) found that trade credit comes with a tax benefit. Hence, the utilization of trade credit will increase the net income of the firm. As a result, keeping equity (the denominator) constant, ROE will increase due to the increase in net income (the numerator). Moreover, this reasoning is in conjunction with Modigliani & Miller (1963) as they argue for and increase in performance in connection to the increase of leverage. The increase of performance is a consequence of the tax shield obtained via leverage. In essence, ROE is seen as the performance and trade credit is seen as the leverage, thus, ROE will increase with trade credit.

6.1.6 Return on Assets and Trade Credit (H7)

$TC$ and $ROA$ demonstrate a significant negative relationship, as demonstrated by the unstandardized β coefficient. It is deemed statistically significant since the p-value is below the threshold level of 0.05. H7: $β_{ROA} = 0$ can henceforth be rejected, and the alternative hypothesis $β_{ROA} ≠ 0$ is accepted. Insinuating that as $ROA$ increase the usage of $TC$ decrease among Swedish SMEs. These findings are in line with previous research.
carried out on the relationship between debt and profitability as well as consorts with the theoretical expectations laid forth in chapter 3.

As described by Tangen (2003, p. 349), ROA evaluates how efficiently a firm uses its assets in order to generate an income stream. An increase in ROA indicates an increase in net income generated from sales as illustrated by the DuPont model. Higher net income leads to more accumulated retained earnings which is proven to be the preferred source of financing (Donaldson, 1961, p. 67; Myers, 1984, p. 581-582). Hence, the pecking order theory can serve as an explanation in several ways why trade credit usage decline with increases in ROA. If a firm has the ability to generate sufficient internal capital, the need for external financing decline (Myers, 1984, p. 582; Titman & Wessel, 1988). But the increase in ROA can also break the barriers of information asymmetry by signaling to the market that the employed assets are valuable (Spence, 1973; Akerlof, 1970). Thus, if given assets generate sufficient revenue, they are more likely to viewed as substantial enough to be put up as collateral for traditional bank debt (Berger & Udell, 1998, p. 622). In regard to Lindblom et al (2011, p. 25) findings, long-term bank loans rank higher in the pecking order hierarchy compared to short-term debt. Hence an increase in ROA will lead to the employment of bank debt rather than trade credit, due to a higher creditworthiness generated by the efficiency of assets (Carvalho & Schiozer, 2015, p. 211).

However, neoclassical theories regarding trade credit can also explain this particular relationship. Given that the revenue growth acquired through more efficient use of assets are insufficient to ensure payment of suppliers, but sufficient enough to obtain traditional bank debt. Under this condition the employment of bank debt can enable firms to pay their debts to suppliers (Carvalho & Schiozer, 2015, p. 211). Hence the decrease in trade credit usage in comparison to an increase in ROA is not only connected to solid financial performance. It can rather be viewed as a necessary mean for SMEs to obtain bank debt to pay off their suppliers. Once again though, it is in line with the pecking order argument, where the issuance of long-term debt is preferred to the employment of short-term debt if external capital is required (Lindblom et al., 2011, p. 25).

### 6.1.7 Long-Term Debt and Trade Credit (H8)

TC and LTDE demonstrate a significant positive relationship, as demonstrated by the unstandardized β coefficient. It is deemed statistically significant since the p-value is below the threshold level of 0.05. H7: \( \beta_{LTDE} = 0 \) can henceforth be rejected, and the alternative hypothesis \( \beta_{LTDE} \neq 0 \) is accepted. Insinuating that as LTDE increase the usage of TC increase among Swedish SMEs. This in contrast to what was expected, as an increase in LTDE insinuates that more traditional debt is being employed. Ultimately leading to a decrease in trade credit utilized.

Carvalho & Schiozer (2015, p. 211) on the other hand claim that there is evidence showing that SMEs’ degree of bank loans i heterogenous and that banks, and not trade credit suppliers, are the main source of third-party capital providers to SMEs. Further on they showed that 75% of Brazilian SMEs make more than 50% of their purchases as forward ones. This positive relationship between trade credit and LTDE can therefore be viewed as a form of herd behaviour. Carvalho & Schiozer (2012) evidently show that even though that banks are the main suppliers of capital, SMEs still utilize trade credit to a large extent. This can be explained by the non-financial advantage of trade credit,
since it promotes long-term relationships with suppliers (Summers & Wilson, 2000). Trade credit also serves a form of quality assurance for SMEs, meaning that they have the time to assess the actual product before paying for it. Further on, the financial industry considers SMEs as high risk borrowers due to the information opacity surrounding them (Ang et al., 2000). So even though that they are able to obtain a credit line, it might not be sufficient enough to fund growing operations. This can be connected to their limited reputational history and vague economic financial disclosure, which ultimately increase the hurdle for them to obtain sufficient amounts of traditional debt (Petersen & Rajan, 1994). Hence, trade credit can be viewed as a complement to further support growth and operations, even though the access to traditional debt is increasing (Carvalho & Schiozer, 2015, p. 209). The demand and supply function can henceforth explain the positive relationship between trade credit and LTDE, again the pressing matter for this relationship is connected to the market imperfections facing SMEs. Therefore, what was first seem as a irrational relationship can instead be viewed as quite rational.

6.1.8 Cost of Debt and Trade Credit (H9)
The relationship between TC and COD is not significant, which is indicated from the high p-value, $p>0.05$. Therefore, the null hypothesis, $\beta_{COD}=0$, cannot be rejected. This finding is surprising, as previous research (Berger & Udell, 1998) has indicated a negative relationship between traditional debt and cost of debt. Consequently, a positive relationship was expected for TC and COD. Hence, the result is in conflict with the expectations of the authors.

A consideration that has to be examined is the one of errors that is possible to occur during a research process. Such errors could have an impact on the study at hand and result in misleading findings. Therefore, it is of utmost importance to further discuss what the causes to insignificant result can be.

A possible cause for the insignificant result between trade credit and cost of debt can be the fact the theory surrounding the reasoning is inadequate. As a result, the authors will have gained an understanding that misguides them to believe a relationship, which does not exist, actually does exist. Hence, incorrect independent variables will be utilized in the attempt of explaining the dependent variable. If this is the case, it is self explanatory that there is no relationship between the two variables, thus an insignificant finding will be achieved. However, as the theoretical framework has been extensively elaborated and discussed in terms of applicability for the research at hand the authors are confident it wholly fulfills its purpose. And moreover, guides the authors to arrive at feasible expectations and conclusions.

The aforementioned raises suspicions regarding the data employed in order to establish the relationships of concern, which is in terms of Type I and Type II errors. A Type I error is possible to appear when the sample data is not sufficient in terms of size (Park, 2011, p. 6). Moreover, a Type I error is when a true null hypothesis is rejected, which is not the case since the null hypothesis is not rejected. Leading to the possibility of a Type II error, in contrast to a Type I error a Type II error might occur when the data utilized is too extensive (Park, 2011, p. 6). Further on, a Type II error is when failing to reject a false null hypothesis. Consequently, there is a possibility that it actually is a statistically significant relationship between trade credit and cost of debt. When taking
into consideration the extremely large number of observations (115 091) utilized, a Type II error do not seem unreasonable to assume.

6.2 Concluding Remarks of the Analysis
To explain the behavior of SMEs and their utilization of trade credit is a difficult task, especially in connection to the most traditional financial theories, which usually are based on the assumption of perfect capital markets. As demonstrated by the regression equation, there are mixed relationships between given financial performance metrics and their effect on trade credit usage. Modigliani & Miller (1958) stated that the choice of financing is irrelevant and that performance is unaffected by, they however revised this statement by saying that an increase of debt in a firm’s capital structure could result in higher performance due to tax-deductible interest payments (1963). This formed the basis to the trade-off theory presented by Kraus & Litzenberger in 1973, saying that an optimal capital structure is achievable if the firm can reach the equilibrium determined by the trade-off between costs and benefits of borrowing. These theories have been criticized due to their limited applicability to smaller firms and because they incorporate the assumption of perfect capital markets where no transaction costs are evident. When analyzing the empirical findings of this degree project it became evident that neither of these theories were directly applicable to the results obtained. They however lay the foundation for more non-traditional capital structure theories and is thus viewed as fundamental elements in the theoretical framework of this study.

6.3 Conclusion
Dating back to 1958, Modigliani & Miller argued that the choice of financing is irrelevant and that the performance of the firm is unaffected by it. However, this bold statement is based in the perfect-market assumptions, which is not the case in reality. Circumstances in the real capital markets are more complex than those underlying these assumptions. Consequently, financial markets are imperfect surrounded by information asymmetry, agency cost, and moral hazards. Moreover, as smaller firms tend to be left out of theory to favor the inclusion of large corporations, the applicability of these views on SMEs are questionable. As a result, the purpose of this study is to establish, and assess, an original approach in the search for causality between SMEs financial performance and their usage of trade credit. Keeping this in mind, the categorical goal is to provide empirical evidence in order to accurately answer the articulated research question about a reverse causality:

*How does the financial performance of SMEs in Sweden affect their usage of trade credit?*

The current degree project provides empirical evidence that a reverse causality exists between trade credit and financial performance. More specifically, the study utilizes both traditional and nontraditional theories to motivate its empirical section, and subsequently to explain the impact of financial performance on SMEs usage of trade credit. The overall findings indicate that financial performance of SMEs in Sweden affects their usage of trade credit. Performance measures *Gross Margin*, *Profit Margin* and *Return on Assets* indicate a statistical significant negative relationship with the usage of *Trade Credit*. *Return on Equity* and *Long-term Debt-to-Equity* on the other hand contradictory indicate a statistically significant positive relationship with the usage of *Trade Credit*. Further on, control variable *Age* has a statistical significant negative relationship, while control variable *Size* indicates a statistically significant positive
relationship with the usage of Trade Credit. Industry Affiliation indicates a statistical significant relationship with the usage of Trade Credit.

Although of the low $R^2$, the model is significant on the 0.05 level of significance, which indicates it has explanatory power. Moreover, all variables included in the model to establish an explanation are significant, except for cost of debt. The possibility of a Type II error cannot be rejected, hence there is still a chance for trade credit and cost of debt to be correlated. After the exclusion of cost of debt, the model is still significant and indicates that there is a reverse causation between trade credit and financial performance.

The majority of findings indicate that financial performance negatively affects Swedish SMEs’ usages of trade credit. Consistent with the pecking order theory, the current results confirm that more profitable SMEs tend to use more long-term debt and retained earnings, rather than trade credit. It is however also found that especially agency cost appears to be relevant when examining SMEs choice of financing. The possibility of losing control of the firm can turn SME managers reluctant towards more traditional debt financing. Instead they utilize trade credit as a substitute or as a compliment, even if they are able to obtain sufficient amounts of traditional debt. This is then principally connected to the implicit benefits obtained by the usage of trade credit. Further on, the signaling theory plays an important role in the utilization of trade credit for SMEs, since the usage of it can send signals of creditworthiness. This can then later breach the barriers of market imperfection, resulting in the procurement of top-tier capital with lower explicit costs.

SMEs opaque information environment and their association with market imperfections help to describe more irrational financing decisions, such that trade credit increase with increases in return on equity, long-term debt-to-equity and size. Which is in direct violation of the pecking order theory. Furthermore, neoclassical theories of trade credit clarifies these irrational financing decisions, by implying that non-financial considerations are taken into scrutiny when choosing between different choices of capital. To conclude, the mixed results obtained from this study firmly establishes that the financial performance among SMEs and its relationship to the usage of alternative financing is a complex matter, worthy of further investigation.
7. Final Remarks

This final chapter evaluates the overall quality of the degree project at hand as well as its theoretical and practical contributions. It starts with a discussion of how the authors have ensured a high quality in regards to the reliability and validity of the research. Subsequently, a discussion on the contributions laid forth by this study is provided. Finally, the chapter is concluded with suggestions for further research within the area of SMEs and their financing decisions.

7.1 Limitations and Truth Criteria

A limitation is when the study design or an instrument utilized experiences systematic bias, which was not or couldn’t be controlled and have an unsuitable effect on the results (Price & Murnan, 2004, p. 66). Furthermore, Price & Murnan (2004) states that the limitations of a study are the most exposed via threats to the validity and reliability of the study. If the authors of the study were not to consider the limitations of their research, it might misguide less informed readers to accredit the findings more than warranted. Consequently, the limitations in regards to validity and reliability will be discussed below.

7.1.1 Validity

According to Saunders et al. (2009, p. 157) validity is the concern if the study actually has measured what it set out to measure. Moreover, validity can be divided into two categories; internal validity and external validity (Sekaran, 2003, p. 149). Internal validity is connected to the concern raised by Saunders (2009, p. 157), if the research in fact examines the actual cause of the effect. Whilst external validity refers to if the findings of the research can be generalized to other research settings (Sekaran, 2003, p. 149). Meaning, to what extent can the study be applied to subjects not included in the study.

The internal validity of this degree project could be seen as quite slim, when only assessing the adjusted $R^2$-value of 14.9% obtained via the multiple regression model. However, it should be further acknowledge that the variables chosen in order to measure the utilization rate of trade credit for SMEs are based on an extensive literature search. The variables selected to represent the financial performance of the firm have been utilized in previous research. Moreover, they have been exploited when assessing trade credit and profitability in conjunction as well. Keeping these factors in mind gives the study a strong internal validity, as it has been seen in previous research in the area. As Sreejesh et al. (2014, p. 116-117) argues, validity can be obtained if a suitable number of variables are selected for measurements. Thus, the variables chosen have to be selected with caution in order to achieve validity. Which according to the aforementioned is the case for the degree project at hand.

Furthermore, in connection to the aforementioned $R^2$-value it has to be kept in mind it is a measure of explanatory power, not the fit. Since regression models are not anticipated to account for all applicable explanatory variables, many interesting findings can still be generated. Although the $R^2$-value is low for the study at hand, the model is statistically significant. Which in turn indicates the model to have statistically significantly explanatory power.

The external validity can be considered high, since the examined population was well represented in the sample utilized for the study. Since there were about 25 000 SMEs on
average per year examined, with 115 091 observations the findings can be seen as robust. Therefore, it is believed the findings can be projected to the whole population of the research. However, one negative remark in terms of the sample size, as expressed in the analysis, it that the risk for Type II error increases. Although, the external validity is still considered high, as it seemed to be possible for only one of the variables examined.

7.1.2 Reliability
Reliability is to the extent the study is carried out without bias and in turn confirms the consistency of the measurements used across time and various items in the instrument (Sekaran, 2003, p.203). In essence, it says that if the study would be duplicated it would achieve the same findings.

According to Drost (2011, p. 106) reliability is only achieved if it is possible to repeat the measurements and the same findings will be obtained, regardless of researcher or time period. For the study at hand this is achievable, since it is of the quantitative character and an archival research strategy has been employed. As the data has been collected through a database (Retriever Business), it can be seen as unalterable. Hence, the data will be the same for all researchers wanting to replicate the study. Moreover, the sampling process has been well explained in chapter 4 and the calculations have been carefully explained in chapter 3. As a result if the same data, procedure, and calculations would be utilized the same results would most likely be obtained. Consequently, it can be stated that the reliability of the study is strong.

7.2 Ethical Considerations
As has been expressed earlier in chapter 2.11, ethical issues may arise during the research process. These issues relates to ethical dilemmas in regards to fairness, conflicts of interest, responsibility issues, power discrepancies, and honesty issues (Hair et al., 2003, p. 104). The aforementioned hurdles especially have a tendency to appear in business research. The issues of ethics which have been considered for the degree project at hand is laid out by Creswell (2003, p. 62-67), which are the following: ethical issues in the research problem statement, in the purpose statement and research question, in data collection, in the data analysis and interpretation, and lastly in writing and disseminating the research.

From the aforementioned it is evident that the research process has been surrounded by ethical considerations throughout. Therefore, it can with confidence be stated that the authors of the degree project have followed the code of ethics laid forth by Umeå University. The research’s aim has been to create new knowledge, without harming any groups of society. Thus, data collection, data analysis and interpretation has been carried out with caution, so that it has not been altered to best fit the purpose of the research. Moreover, when presenting the research the language has been written with carefulness in order not to offend anyone or anything. Lastly, all original ideas of others used in the research have been accredited and referenced, to make sure the originator gets the deserved credit.
7.3 Societal Considerations

The topic itself may not seem to be of the most sensitive character, since it is an integral part of day-to-day business. However, as the study demonstrates how SMEs are excluded from obtaining traditional financing, it might seem as if the financial sector is portrayed as the "big bad wolf". Moreover, suppliers may be perceived as leeches taking advantage of vulnerable SMEs. Consequently, there have been three groups that have been taken into consideration throughout the process to answer the formulated research question of the study.

First of all, it is important to consider SMEs, since they are the population under investigation. As they represent 99% of all enterprises in Sweden, it is of utmost importance to paint a correct picture surrounding SMEs. Moreover, it is of relevance to have an understanding for traditional theories and their inapplicability to smaller firms, since they are based on large corporations. Therefore, what might seem as the rationale in theory may be what is considered irrational for SMEs. Consequently, it is important to give a just account of the true nature of SMEs and why they act as they do. Otherwise, SMEs could be painted as irrational enterprises with no concern of reality. Which is not the case or the purpose of the study to express, its rather the opposite, the rationale can be seen as the irrational for SMEs.

Moving along, the financial sector may be portrayed as a heartless sector driven by profit optimization, with no regards to SMEs. However, it has to be kept in mind they conduct business as all other enterprises, and have to consider risk and return. As previous studies and theories have shown, SMEs are surrounded by information asymmetry, which makes them hard to assess when granting finance. As a result, SMEs are seen as too risky and will fall outside the scope of traditional debt. It is not the aim of this degree project to label the financial sector as immoral, rather to enhance the understanding for why SMEs are denied traditional financing.

Lastly, suppliers can be thought to be illustrated as taking advantage of SMEs, with overpriced alternative sources of finance. This is not the case, they provide with finance when there are no other creditors willing to. Anyone who has undertaken a course in finance understands the more risk, the more expensive it will be in terms of premiums. The same reasoning applies to suppliers and trade credit, they have to be compensated for the risk they are willing to obtain in order to grant SMEs credit. Hence, it is not the intent of this research to picture suppliers as perpetrators.

In conclusion, the societal risk for the degree project at hand is to harm the reputation of these three actors on the Swedish market. It can be stated that this is not the ambition, the aim is to give an accurate picture of the reality of SMEs when seeking financing. Which the authors believe have been achieved, with the help of a thorough theoretical framework, carefully collected data, and well-thought analysis in order to convey the desired understanding.
7.4 Theoretical and Practical Contributions
The intention of this degree project was to be able to contribute to several interested parties in diverse ways. For academics the objective was to build upon prior knowledge and research within similar areas. But the twist was to show that there is a reverse causality existing between financial performance and the usage of trade credit. Hence, new insights have been provided and elaborated upon, by presenting how financial performance affect Swedish SMEs trade credit usage. This uncovers new prospects for scholars to investigate and study new perspectives regarding capital structure financing.

Moreover, the theoretical contributions of our empirical findings have mainly been to increase the knowledge in the area of SMEs choice of financing, and their capital structure. The findings verified the critique aimed towards the limited applicability of traditional capital structure theories. Further on it showed that what might be viewed as irrational financing behaviour, instead is rational in the economic world of SMEs. The findings thus provide a starting point to adjust existing or to develop new theories in order to capture the full extent of SMEs financing decisions. This has to be assessed as a valuable contribution to academic knowledge and might work as an incitement for future researchers to investigate SMEs special role in the capital marketplace.

Additionally, the practical contribution of this empirical investigation is that both SMEs and institutions achieve a higher form of understanding about the current market imperfections affecting SMEs financing decision. Further on, the study could work as a benchmark for suppliers of trade credit to evaluate what type of financial performance that drives the usage of trade credit among SMEs. In connection to the aforementioned, managers of SMEs can utilize the study as a guiding tool when trying to obtain traditional debt. This can be the case as they can scrutinize the different relationships and the variables impact on trade credit. Thus, they can try to alternate variables to achieve the desirable level of trade credit and/or traditional debt.

7.5 Further Suggestions
In the process of conducting the current research it became clear for the authors that there are further improvements that can be made, in order to achieve greater results. The main suggestion for further research, when engaging in a similar study, is the utilization of more explanatory variables. As suggested by the low $R^2$-value, the model only explains 14.9% of the variance of trade credit, which is believed to be increased with the inclusion of more variables. Moreover, in connection to conducting a similar study is the issue of industry. It could be further explained by doing a study where industries are grouped and compared, in order to establish what affect certain industries have on the utilization of trade credit.

Furthermore, the study made the authors realize how difficult it is to apply traditional theories of finance and capital structure to smaller enterprises. As most theories assume perfect capital markets, it is in hindsight quite evident of their lesser applicability to smaller firms. Moreover, as smaller enterprises are heavily surrounded by market imperfections, it is believed to be crucial to further develop theories and make them applicable to SMEs. Hence, research connected to SMEs within the area is suggested, especially since they by far are the majority of enterprises operating in the global economy.
Additionally, it would be of interest to conduct a similar study, yet with a longitudinal time horizon instead of a cross-sectional. This would account for if the relationship between financial performance and SMEs usage of trade credit change over time, or if it stays consistent. Here, more parameters of interest could be investigated, giving a more precise picture regarding the main drivers of trade credit utilization.

Lastly, when conducting this particular research the perspective taken was the one of an outsider, in order to objectively scrutinize SMEs financing choices. Hence there are other intriguing perspectives that could be utilized. One suggestion could be to conduct a qualitative study and investigate the management of SMEs. This would enable to scrutinize their perspective and stand point on external sources of financing, and why or why not they employ a specific type of debt. Ultimately, this would enhance the understanding regarding the human factor in financing decisions.
Reference List


MSCI (n.d.) GICS Structure & Sub-industry definitions. MSCI. [https://www.msci.com/gics](https://www.msci.com/gics) [Retrieved 2016-03-16].


Appendices

Appendix A: Distributions of variables including and excluding outliers

Distribution Age including outliers

![Histogram of Age including outliers]

Mean = 21.67
Std. Dev. = 17.097
N = 119,045

Distribution Age excluding outliers

![Histogram of Age excluding outliers]

Mean = 20.53
Std. Dev. = 19.528
N = 119,041
Distribution Size including outliers

Histogram

Mean = 16.7
Std. Dev. = 1.06
N = 119,645

Distribution Size excluding outliers

Histogram

Mean = 16.68
Std. Dev. = 1.044
N = 115,091
Distribution GM including outliers

Histogram

Mean = 61.2124
Std. Dev. = 55.0183
N = 119,445

Distribution GM excluding outliers

Histogram

Mean = 61.7973
Std. Dev. = 25.7950
N = 115,091
**Distribution PM including outliers**

![Histogram of distribution PM including outliers]

- Mean: 3.6562
- Std. Dev.: 224.4291
- N: 119,445

**Distribution PM excluding outliers**

![Histogram of distribution PM excluding outliers]

- Mean: 5.5303
- Std. Dev.: 16.0020
- N: 115,091
Distribution ROE including outliers

Histogram

Histogram

Distribution ROE excluding outliers
Distribution ROA including outliers

![Histogram]

- Normal

- Mean = 6.4796
- Std. Dev. = 43.6925
- N = 119,445

Distribution ROA excluding outliers

![Histogram]

- Normal

- Mean = 6.6980
- Std. Dev. = 12.9711
- N = 119,081
Distribution LTDE including outliers

![Histogram of LTDE including outliers]

Distribution LTDE excluding outliers

![Histogram of LTDE excluding outliers]
Distribution COD including outliers

Distribution COD excluding outliers
Appendix B: Linear relationship between the DV & each IV

Linearity Scatterplot & ANOVA Table: Age including outliers

ANOVA Table

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Linearity Scatterplot & ANOVA Table: Age excluding outliers

ANOVA Table

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Linearity Scatterplot & ANOVA Table: Size including outliers

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Linearity Scatterplot & ANOVA Table: Size excluding outliers

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Linearity Scatterplot & ANOVA Table: GM including outliers

![Graph showing linearity scatterplot and ANOVA table]

**ANOVA Table**

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Linearity Scatterplot & ANOVA Table: GM excluding outliers

![Scatterplot and ANOVA Table](image)

**ANOVA Table**

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**Linearity Scatterplot & ANOVA Table: PM including outliers**

![Graph showing linearity scatterplot with ANOVA table]

### ANOVA Table

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Linearity Scatterplot & ANOVA Table: PM excluding outliers

![Linearity Scatterplot & ANOVA Table: PM excluding outliers](image)

### ANOVA Table

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Linearity Scatterplot & ANOVA Table: ROE including outliers

ANOVA Table

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Linearity Scatterplot & ANOVA Table: ROE excluding outliers

![Linearity Scatterplot & ANOVA Table](image)

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Linearity Scatterplot & ANOVA Table: ROA including outliers

![ANOM Table]

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\[ R^2 \text{ Linear} = 0.004 \]
Linearity Scatterplot & ANOVA Table: ROA excluding outliers

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### Linearity Scatterplot & ANOVA Table: LTDE including outliers

#### ANOVA Table

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Linearity Scatterplot & ANOVA Table: LTDE excluding outliers

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Linearity Scatterplot & ANOVA Table: COD including outliers

ANOVA Table

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Linearity Scatterplot & ANOVA Table: COD excluding outliers

![Linearity Scatterplot & ANOVA Table](image)

**ANOVA Table**

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# Appendix C: Correlation, VIF Table, and Multiple Regression Coefficients

**Pearson Correlation: including outliers**

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Multiple regression coefficients & VIF statistics: including outliers

### Model Summary

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a. Predictors: (Constant), COD, Industry, GM, ROE, LTDE, Age, ROA, Size, PM

b. Dependent Variable: TC

### ANOVA

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a. Dependent Variable: TC

b. Predictors: (Constant), COD, Industry, GM, ROE, LTDE, Age, ROA, Size, PM

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<sup>a</sup> Standardized VIF

<sup>b</sup> Significant at the 0.05 level (2-tailed)
### Pearson Correlation: excluding outliers

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134
### Multiple regression coefficients & VIF statistics: excluding outliers

#### Model Summary

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- a. Predictors: (Constant), COD, GM, Industry, ROE, LTDE, Age, PM, Size, ROA
- b. Dependent Variable: TC

#### ANOVA

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<th>Model</th>
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- a. Dependent Variable: TC
- b. Predictors: (Constant), COD, GM, Industry, ROE, LTDE, Age, PM, Size, ROA

#### Coefficients

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- a. Dependent Variable: TC
Multiple Regression Model: Excluding COD and Outliers

Model Summary

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<th>Model</th>
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<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
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* a. Predictors: (Constant), LTDE, Industry, GM, PM, Age, ROE, Size, ROA

ANOVA

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<th>Model</th>
<th>Sum of Squares</th>
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* a. Dependent Variable: TC
  
  b. Predictors: (Constant), LTDE, Industry, GM, PM, Age, ROE, Size, ROA
Appendix D: Sector Grouping

- **Utilities**
  - Sewage, waste, electricity & water

- **Consumer Discretionary**
  - Automotive trade/Retail/Hotel & Restaurant/Culture & Leisure/Media/Hair & Beauty/Tourism/Other consumer services

- **Consumer Staples**
  - Food production/Agriculture

- **Health Care**
  - Health care

- **Information Technology**
  - Data, IT & Telecommunications

- **Industrials**
  - Manufacturing & Industry/Transport & Warehousing/Wholesales/Construction & Design/Employment Services/Business Services/Legal & Economic & Consulting/Advertising/Repair & Installation/Technical consulting
Translation of original industries:

Consumer Discretionary
- Automotive trade = Motorfordonshandel
- Retail = Detaljhandel
- Hotel & Restaurant = Hotell & Restaurang
- Culture & Leisure = Kultur, nöje & fritid
- Media = Media
- Other consumer services = Övriga konsumenttjänster
- Hair & beauty = Hår & skönhet
- Tourism = Resebyrå & Turism

Consumer Staples
- Food production = Livsmedelsframställning
- Agriculture = Jakt fike jordbruk

Health Care
- Health care = Hälsa & Sjukvård

Information Technology
- Data, IT & Telecommunications = Data, IT & Telekommunikation

Industrials
- Manufacturing & Industry = Tillverkning & Industri
- Transport & Warehousing = Transport & Magasinering
- Wholesales = Partihandel
- Construction & Design = Bygg, design, & inredning
- Employment services = Bemanning & arbetsförmedling
- Business services = Företagstjänster
- Legal & Economic & Consulting = Juridik, ekonomi, & konsulttjänster
- Advertising = Reklam, PR, & Marknadsundersökning
- Repair & Installation = Reparation & installation
- Technical consulting = Teknisk konsultverksamhet

Utilities
- Sewerage, waste, electricity & water = Avlopp, avfall, el & vatten