**The relevance of the statutory audit of financial statements**

**A cost of capital approach on Dutch medium-sized enterprises**

**Abstract**

This research studies the relevance of the statutory audit of financial statements of Dutch medium sized companies for the providers of debt capital. Using audit firm size as a proxy for audit quality we find no significant association between audit quality and the cost of debt capital for a sample of 133 firm-year observations. We do find a significant association between the auditors’ opinion and the cost of capital. Contrary to our expectations this is positive association meaning that an unqualified opinion leads to an increase of interest rate with 20 basis points. Although we therefore conclude the statutory audit to be relevant for the providers of debt capital of Dutch medium-sized companies, further research will be needed to explain the ratio behind this association.

**Keywords**: Statutory Audit, Audit Quality, Auditors’ Opinion, Cost of Debt Capital.

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# Preface

This research is written as a conclusion of the master program Accounting, Auditing & Control. It’s been six years since I finished the other courses of this master program. During these years I completed the post-master program ‘Registeraccountant’ and I’ve been working at BDO Audit & Assurance B.V.

My job focuses primarily on statutory audits of medium-sized Dutch companies. As a result I am very interested in the opinion of the stakeholders of these companies regarding the perceived quality of the audit and the auditors’ opinion. Also, as a future registeraccountant, I’m very interested in the ongoing discussion about the audit profession. The latest chapter in this discussion is fueled by the report of the Autoriteit Financiële Markten on the quality of statutory audits by smaller audit firms, published just four days ago. These interests have led to the subject of this thesis: the relevance of the statutory audit of financial statements for the providers of debt capital of Dutch medium sized companies.

I would like to thank my colleagues, my friends, my girlfriend and especially my parents for supporting me in writing this thesis. Many thanks as well to my supervisor drs. R. van der Wal RA for guiding me in the right direction.

Vlaardingen, July 15, 2013

Chris van Staalduinen

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# Introduction

In the aftermath of the financial crisis more and more questions were raised in the media about the role of the auditors. (Joling, 2008; Tricker, 2009; Jones, 2011; McKenna, 2011; Dekkers, 2013). The basic question ‘Where were the auditors?’ resonated throughout the entire audit profession. In order to answer this question to contribute to increased financial stability, the European Commission wanted to examine how the audit function could be enhanced.

## Green Paper and SMEs

In October 2010 the European Commission released their ‘Green Paper of Audit Policy: Lessons from the Crisis’. In this paper Internal Market and Services Commissioner Michel Barnier acknowledges the important role that auditors have in performing statutory audits of financial statements. On the other hand he recognizes that

‘certain stakeholders have expressed concerns with regard to the relevance of audits in today's business environment’ and ‘that it is time to probe into the true fulfillment of this societal mandate’. In order to open the debate on the role of the auditor, the Green Paper acts as a consultation to all interested parties. It presents a range of ideas, categorized in various discussion themes, to improve the value of audit, independence concerns and market concentration. One of the discussion themes that Barnier points out is the segregation between Small and Medium Sized Enterprises (SMEs) and other enterprises:

*“While SMEs get value from an audit in terms of enhanced credibility of financial information, statutory audits have also been identified as a potential source of administrative burden. Serious efforts should be made to create a specific environment for the audit of SMEs”.*

To solve this problem the commissioner comes up with a number of ideas:

* discouraging the statutory audit of SMEs;
* introducing a new type of statutory service adapted to the needs of SMEs such as a "limited audit" or a "statutory review";
* in the instance of the prohibition of non-audit services (…) providing for a safe harbour which would allow the auditor of an SME to continue providing certain non-audit services to that company.

In the months following the release of the Green Paper the European Commission invited all interested parties (audit firms, stakeholders, academics, etc.) to come up with a reaction to the presented problems and ideas. In February 2011 the European Commission released a summary of all these reactions stating to have had “the highest level of responses of any consultation in the Internal Market and Services area since the completion of the public consultation on Solvency II in February 2008” and “the widest consultation response coming out of the financial crisis.”

Most parties agree on the fact that statutory audits of SMEs form an administrative burden and they recognize the differences between SMEs and other enterprises. To solve this problem various options are mentioned:

“We […] consider that there should be a mechanism for stakeholders to opt for a full audit if desired and the full voluntary audit of SMEs should not be discouraged. We are also of the view that, if adopted, the size of companies included in this new category should be significantly lower than those currently defined as medium-sized.” (PwC, 2010)

“We support the option of a lower form of assurance […] to be available for companies falling beneath the statutory audit thresholds in the EU Company Law Directives.” (BDO, 2010)

“One possibility is to replace mandatory audits with voluntary audits for certain SMEs as there is evidence that imposing audits suppresses the signaling value of an audit” (Maastricht University, 2010)

Although there is no complete consensus, the reaction of KPMG gives a summary of all responses to the discussion point on SMEs in the Green Paper:

“We recognize that the position of Small and Medium Sized Enterprises (SMEs) is different to

that of large public interest entities. The requirements for both should however be based on a

thorough understanding of the relevant stakeholder needs. […] if stakeholders’ needs do not justify mandating the publication of full financial statements by law, some lower level of assurance may also be acceptable to them.” (KPMG, 2010)

It becomes clear that the European Commission should reform the audit function within the SME segment of the financial market based on the stakeholders’ needs. It is also clear that there is not a complete and up-to-date insight in the type of assurance that stakeholders need and how they value the current assurance services. This thesis will try to answer a part of this question by investigating the added value of statutory audits of financial statements for stakeholders of SMEs.

## Stakeholders of Dutch SMEs

This research will take place in The Netherlands and focus on Dutch SMEs. These SMEs have a number of different types of stakeholders. In general the following important groups of internal and external stakeholders can be recognized: shareholders, employees, providers of debt capital, suppliers, clients and governments. These different stakeholders all have a different interest in the financial statements of the enterprise and in the accompanying audit report. This thesis will focus on the providers of debt capital of Dutch SMEs. These external stakeholders supposedly have a high need for the independent opinion of the auditor. This is because they have financed the operations or the acquisitions of the enterprise but have no control over the business operations and have no direct access to financial information other than the financial statements. The main providers of debt capital of Dutch SMEs are local banks.

## Relevance

This thesis will be useful for all participants in the discussion about the future role of the audit function in the Dutch SME segment. Since the participants in this discussion agree that the stakeholders’ need for assurance should form the foundation for the audit function it is very important to know the current relevance of the audit report for one of the most important stakeholders. This thesis will provide empirical evidence to whether or not the local banks value the audit report accompanying the financial statements of Dutch SMEs. If the outcome will be that banks do not add value to the assurance report then this will be an additional argument for a complete reform of the audit function in the SME segment. A lot of further research will then be necessary to determine which of the ideas mentioned in the (reactions to the) Green Paper will form the best model for a new audit function. If the outcome of this thesis will be that banks do add value to the current assurance report then this will be an argument for parties who claim a less dramatic reform of the audit function in the SME segment is needed. For example just lowering the thresholds for mandatory statutory audits.

Prior research on the added value of the audit report of private SMEs is limited. The research that has been conducted primarily focused on private firms in the USA (Pittman & Fortin, 2007), Spain (Cano-Rodríguez et al., 2008) and Finland (Karjalainen, 2011). This thesis will focus on the Dutch SMEs. The rules and regulations on statutory audits in The Netherlands differ from those in the USA (Pittman & Fortin, 2007), Spain (Cano-Rodríguez et al., 2008) and Finland (Karjalainen, 2011). Therefore the outcome of this thesis may be different. This study will extend the international body of knowledge on the audit function in privately owned SMEs.

The discussion about the audit function has been fueled by the financial crisis. It is therefore possible that added value of the audit report changed during this crisis. Prior research primarily focused on the period before the financial crisis. This thesis will focus on the period during the financial crisis (2009 – 2011, based on the availability of data) and therefore give un updated insight in the role of audit in the SME segment that may differ from prior research.

## Research question, sub-questions and structure

As explained in the previous paragraphs this research will focus on the relationship between two important actors in the financial crisis: banks en auditors. For this thesis the following main research question is formulated: *What is the relevance of the statutory audit of financial statements for the providers of debt capital of Dutch medium sized companies?*

To find an answer to the main research question, various sub-questions are formulated. The answers to the sub-questions will provide the necessary background information on the Dutch auditing environment, provide insight in the underlying theory of this research, give an overview of prior research on the subject matter and eventually form the research design and the empirical results. The sub-questions also give structure to this thesis. The following sub-questions are formulated:

Chapter 2: Auditing Environment in The Netherlands

What impact do Dutch laws and regulations have on the audit of financial statements of medium-sized entities?

Chapter 3: Theory

What is the current role and purpose of the public audit function in the economy?

Chapter 4: Prior Research

What can be learned from prior research on the impact of independent audit on the providers of (debt) capital?

Chapter 5: Research Design

What research design can be used to answer the main research question?

Chapter 6: Results and analysis

What are the results of the empirical research of this thesis?

## Methodology

This research will follow the flowchart below. After determining the main research question in chapter one it is necessary to form a good understanding of the specific Dutch audit environment to comprehend all regulatory factors influencing our research topic. Next to the practical regulatory environment we also need to place our research question in the proper theoretical background. In chapter three the major theories on auditing will be explored to help explain and predict the role of independent audit in modern society. After we gained an understanding of both the practical and theoretical environment we will explore in chapter four what we can learn from prior research on the audit function and the cost of capital. Based on our exploration in chapters two, three and four we will develop in chapter five our hypotheses regarding the research question and form a proper research design to test these hypotheses. After building the research design we will collect our data sample and perform regression analysis. In chapter six we will analyze the results using our understanding of both the practical and theoretical environment and the results of prior research. Finally, an answer to the main research question will be formulated possibly leading to recommendations for further research.

Results (6)

Data analysis (6)

Sample collection (6)

Research Design & Hypothesis (5)

Research Question (1)

Auditing Environment (2)

Prior Research (4)

Theory (3)

# Auditing Environment in The Netherlands

In this chapter the auditing environment in The Netherlands will be explored. Chapter 2.1 will present a short history and an overview of the current laws and regulations on the audit profession and will present an overview of the current players in the Dutch audit market. paragraph 2.2 will explore the regulations regarding the execution of the statutory audit in The Netherlands. paragraph 2.3 will give a short overview of Dutch laws and regulations on corporate governance since these see on the relationship between management board, supervisory board and shareholders and therefore are part of the auditors’ playing field. Finally paragraph 2.4 will summarize chapter 2 and answer the question: What impact do Dutch laws and regulations have on the audit of financial statements of medium-sized entities?

## Laws and Regulations on the Audit Profession

### Origin

In 1879 one of the first modern time fraud scandals was discovered. The president of a Dutch trading company had ‘cooked’ the books and fled to New York. Eventually a Fl 2 million profit turned into a Fl 6 million loss (de Vries, 1985). This scandal led to a general suspicion against boards of directors and it fueled the need for external, independent assurance regarding their financial statements. Not long after the fraud a couple of financial professionals began offering this assurance as a service and started the first Dutch audit firm. The need for assurance became the foundation of a new profession.

### Current rules and regulations

Since 1879, the auditing of financial statements in The Netherlands has progressed into a firmly regulated profession. According to Bindenga (2000) the most important stages in this progression were:

1. The founding of the first Dutch Institute of Auditors: NIVA (1894)
2. The implementation of ethical guidelines (1907)
3. The regulation of education and examination
4. Protection of the profession by Dutch law (1962, 1974)

In this paragraph a short overview of these stages will be given resulting in the current rules and regulations.

Laws on individual auditors

In the Netherlands there are two types of auditors. In the first place there is the ‘registeraccountant’ (RA). The title of RA became protected by law in 1962 with the implementation of article 58b of the ‘Wet op de Registeraccountants’ (WRA). With this law also the ‘Nederlands Instituut van Registeraccountants (NIVRA) was formed (article 1). In the second place there is the ‘accountant-administratieconsulent’ (AA). The title of ‘AA’ became protected in 1972 with the implementation of article 40 of the ‘Wet op de Accountants-Administratieconsulenten’ (WAA). With this law also the ‘Nederlandse Orde van Accountants-Administratieconsulenten’ (NOvAA) was formed (article 2). The WRA and the WAA assign the NIVRA respectively the NOvAA with the following tasks regarding the audit profession:

* Advance the proper practice of the profession;
* Foster the joint interest of the profession;
* Protect the reputation of the profession;

In 1993 the WRA and the WAA were amended due to harmonization with European laws. In addition to their general tasks the NIVRA and NOvAA became by law responsible for setting the end terms for the theoretical education to become RA (article 69, WRA) or AA (article 56, WAA) and for the organization and examination of the practical part of the audit education. Only people who successfully finished their education and were registered by the NIVRA or NOvAA were legally allowed to carry the title of RA respectively AA.

On December 13, 2012 the Dutch government published the ‘Wet op het Accountantsberoep’ (WAB). This law replaces both the WRA and the WAA. The WAB formalizes the merger between NIVRA and NovAA into the ‘Nederlandse Beroepsorganisatie van Accountants’ (NBA). The two different types of auditors remain (article 1) and the NBA will be responsible for the aforementioned tasks regarding both titles (article 3).

Regulations on individual auditors by the audit profession

In accordance with the legal tasks given to both NIVRA and NOvAA, these organizations have issued several binding regulations for auditors. The most essential regulations are those that give guidance to both ethical and practical execution of the audit profession. In 1994 both NIVRA and NOvAA implemented a separate set of regulations called ‘Gedrags- en beroepsregels’ (GBR). These regulations contained various rules on independence, client acceptance, confidentiality etc.

In 2006 both NIVRA and NOvAA harmonized their respective GBR with international regulations. NIVRA was a member of the International Federation of Accountants (IFAC). IFAC was established in 1977 to strengthen the worldwide accountancy profession in the public interest by:

* Developing high-quality international standards in auditing and assurance, public sector accounting, ethics, and education for professional accountants and supporting their adoption and use;
* Facilitating collaboration and cooperation among its member bodies;
* Collaborating and cooperating with other international organizations; and
* Serving as the international spokesperson for the accountancy profession.

As a member of IFAC, NIVRA was obligated to implement their regulations. NOvAA decided to follow this step. In accordance with IFAC regulations both NIVRA and NOvAA implemented the ‘Verordening Gedragscode (VGC). This set of rules and regulations is based on IFAC’s 2003 ‘Code of Ethics’. It contains a set of regulations that apply to all RAs and AAs and is based on five fundamental principles: integrity, objectivity, professional competence, confidentiality and professional behavior. This principle-based structure is de most essential difference compared to the more rules-based gedrags- en beroepsregels. To specify some important aspects of the VGC, NIVRA has implemented complementary guidelines. Important supplements for the individual auditor contain the detailed rules and regulations regarding the independence of auditors and the mandatory permanent education.

In January 2013 the NBA presented a consultation document called ‘Verordening gedrags- en beroepscode accountants’ (VGBA). This new VGBA plans to implement changes by IFAC made in the ‘Code of Ethics’ and in time replace the existing VGC with a more up-to-date set of ethical and practical guidelines.

Laws on audit organizations

In 2006 the Dutch government introduced the ‘Wet Toezicht Accountantsorganisaties’ (WTA). This law regulates internal quality and external oversight of the Dutch audit profession. The law is based on EU-directive 2006/43/EC and on the International Standard on Quality Control 1 issued by IFAC. The WTA states that a statutory audit of financial statements can only be performed by the external auditor who is representing an audit firm with a specific license for this type of assurance services. The conditions for this license are also stated in the WTA. These conditions are mainly focused on a strong internal quality control system for the audit organizations. A license can only be issued by the Autoriteit Financiële Markten (AFM). This Dutch authority on financial markets is appointed as the organization to perform the oversight on audit organizations in The Netherlands. They frequently perform quality audits on audit organizations in order to check if they still meet the license conditions stated in the WTA.

|  |  |  |
| --- | --- | --- |
|  | *Individual Auditors* | *Audit Organizations* |
| Laws | Wet op het Accountantsberoep | Wet Toezicht Accountantsorganisaties |
| Wet Tuchtrechtspraak Accountants | Besluit Toezicht Accountantsorganisaties |
| Regulations | Verordening Gedragscode | Verordening Accountantsorganisaties |
| Nadere Voorschriften Onafhankelijkheid |
| Nadere Voorschriften Permanente Educatie |

### The current Dutch audit market in numbers

According to the online register[[1]](#footnote-1) of the AFM there are 462 audit organizations with a license to perform statutory audits on Dutch enterprises. These audit firms employ the majority of registered Dutch auditors. According to NBA’s year report 2011 there are 4.539 RA auditors and 4.529 AA auditors registered per the end of 2011 who are working as a public auditor at an audit organization.

The Dutch audit market is dominated by the international member firms. The ‘Big Four’ top the list based on revenue. Other international firms such as BDO, Baker Tilly Berk, Mazars and Grant Thornton are also in the top 20.



### Recent developments

As described in paragraph 1.1 the European Commission is evaluating the public audit function. After assessing al the reactions to his Green Paper, commissioner Barnier presented two proposals on the reform of the audit market:

1. Proposal for specific requirements regarding statutory audit of public-interest entities;
2. Proposal for amending Directive 2006/43/EC on statutory audits of annual accounts and consolidated accounts

These proposals contain the following essential regulatory changes:

* Mandatory rotation of audit firms regarding the audit of public-interest entities after a maximum period of 6 years.
* The statutory auditor, audit firm or member of the audit firm's network will be prevented from providing certain non-audit services which are fundamentally incompatible with the independent public-interest function of audit to their audited entities.
* When medium-sized undertakings are audited pursuant to EU law, the amended Directive requires Member States to ensure that the way in which the auditing standards are applied are adapted to the dimension and scale of those undertakings. This calibration of the audit to the size of the audited entity should result in better audit services to the small and medium-sized undertakings concerned and possibly lower cost. The proposed measure does not define in detail how proportionate application of the standards must be done.

The Dutch legislator did not wait for this European proposal to be finalized. With the implementation of the ‘Wet op het Accountantsberoep’ (see paragraph 2.1.2) several amendments were made which had nothing to do with the merger between NIVRA and NOvAA where this law was initially intended for. The following essential amendments were implemented:

* Mandatory rotation of audit firms regarding the audit of public-interest entities after a maximum period of 8 years (Van Vliet).
* The statutory auditor, audit firm or member of the audit firm's network will be prevented from providing non-audit services to their audited public-interest entities. A limited number of specific exceptions is made (Plasterk, Irrgang, Braakhuis).

## Laws and Regulations on the Statutory Audit

The rules and regulations on (the audit of) financial statements are determined by The European Union through a set of directives. Each Member State is responsible for the implementation of these directives in their legislation.

### Origin of Statutory Audit in the EU

The statutory audit of financial statements in European Member States is based on the Fourth Council Directive 78/660/EEC of 25 July 1978. This directive applies to all limited public and private companies. It gives an extensive set of conditions regarding:

* the mandatory components of the financial statements;
* the general principles of valuation of specific items in the annual accounts;
* the publication of financial statements;
* the audit of financial statements.

On the audit of financial statements the directive states: “Companies must have their annual accounts audited by one or more persons authorized by national law to audit accounts.” The Member States are allowed to exclude smaller companies from curtain conditions in this directive including the statutory audit. The legislator creates the following set of criteria that determines the boundaries between small and large companies:

* balance sheet total : 1 000 000 EUA,
* net turnover : 2 000 000 EUA,
* average number of employees during the financial year : 50

Where on its balance sheet date a company exceeds or ceases to exceed the limits of two of the three criteria for two consecutive financial years the company will switch from the light regime to the full regime for large companies or vice versa.

An important amendment to directive 78/660/EEC was issued in 1983. EU directive 83/349/EEC states the conditions when a company is obliged to additionally prepare consolidated financial statements. To determine whether a company meets the criteria of the SME regime these consolidated financial statements have to be taken into account.

### Assurance Framework

In 1983 the statutory audit was completely implemented in European legislation. The legislation however didn’t include requirements on how an audit should be conducted. This responsibility was given to the audit profession. In 1978 IFAC established The International Auditing and Assurance Standards Board (IAASB). This organization has been working as an independent standard-setting body ever since. IAASB has developed a set of standards on the auditing of financial statements that has been implemented by IFAC and all its members. In order to place these standards in context and apply these standards in the proper way IAASB has developed the ‘International Framework for Assurance Engagements’. This framework defines and describes the elements and objectives of an assurance engagement and identifies engagements to which International Standards on Auditing (ISAs) apply:

An “assurance engagement” means an engagement in which a practitioner expresses a conclusion designed to enhance the degree of confidence of the intended users other than the responsible party about the outcome of the evaluation or measurement of a subject matter against criteria. Assurance engagements involve three separate parties: a practitioner, a responsible party and intended users. Furthermore an assurance engagement requires the following elements:

* An appropriate subject matter;
* Suitable criteria;
* Sufficient appropriate evidence;
* A written assurance report;

This thesis focuses on the statutory audit of financial statements. This type of engagement meets all the requirements of an assurance engagement according to the International Framework for Assurance Engagements. The statutory audit is therefore subject to the ISAs.

### International Standards on Auditing

It wasn’t until 2006 that the European Commission embedded the ISAs in their legislation by implementing Directive 2006/43/EC: “Member States shall require statutory auditors and audit firms to carry out statutory audits in compliance with international auditing standards.” The International Standards on Auditing start with overall objectives of the independent auditor and the conduct of an audit. ISA 200 states: “The purpose of an audit is to enhance the degree of confidence of intended users in the financial statements. This is achieved by the expression of an opinion by the auditor on whether the financial statements are prepared, in all material respects, in accordance with an applicable financial reporting framework. In the case of most general purpose frameworks, that opinion is on whether the financial statements are presented fairly, in all material respects, or give a true and fair view in accordance with the framework. An audit conducted in accordance with ISAs and relevant ethical requirements enables the auditor to form that opinion.” To be able to form an opinion the standards continue with ISAs on risk assessment, risk response, planning of an audit and gathering and documentation of audit evidence.

Finally, a set of ISAs describe how the auditor should form and report his opinion based on the audit evidence and relating to the purpose of the audit stated in ISA 200. According to ISA 700 the auditor has to express his opinion in an auditor’s report on the financial statements. In addition to the auditor’s opinion this report has to contain several elements stated in ISA 700. Due to these strict regulations all auditor’s reports contain the same elements and are the same in form. The auditor’s opinion obviously can differ. ISA 700 states: “The auditor shall express an unqualiﬁed opinion when he concludes that the ﬁnancial statements have been prepared, in all material aspects, in accordance with the identiﬁed ﬁnancial reporting framework.” ISA 705 describes the situations when an auditor can not come to an unqualified opinion. It recognizes four situations that result in three different audit opinions:

|  |  |  |
| --- | --- | --- |
| *Nature of Matter Giving*  *Rise to the Modiﬁcation* | *Auditor’s Judgment about the Pervasiveness of the*  *Effects or Possible Effects on the Financial Statements* | |
| *Material but Not Pervasive* | *Material and Pervasive* |
| Financial statements are  materially misstated | Qualiﬁed opinion | Adverse opinion |
| Inability to obtain sufﬁcient  appropriate audit evidence | Qualiﬁed opinion | Disclaimer of opinion |

An unqualified opinion results in a standard text in the auditor’s report that is the same for every statutory audit. The other types of opinions require an explanation by the auditor. In an additional paragraph of the auditor’s report the auditor states the basis for this qualified opinion.

## Corporate Governance

Corporate governance can be defined as: “The system of regulating and overseeing corporate conduct and of balancing the interests of all internal stakeholders and other parties (external stakeholders, governments and local communities) who can be effected by the corporation’s conduct, in order to ensure responsible behavior by corporations and to achieve the maximum level of efficiency and profitability for a corporation” (Du Plessis et al. 2010). The statutory audit also focuses on the relationship between internal and external stakeholders therefore corporate governance regulations are a part of the audit environment.

### Two-tier system

The Dutch corporate structure is characterized by a two-tier board system. This entails that executive and non-executive directors do not serve on the same board. In addition to the management board, Dutch companies generally have an additional body called the supervisory board (Raad van Commissarissen). This supervisory board consists of non-executive directors and has a strong monitoring role regarding the management board (Peij, 2011). A supervisory board is not mandatory for Dutch companies, unless these companies meet the requirements of the ‘structuurregeling’, embedded in articles 2:153 and 2:263 of the Dutch Civil Code, for three years in a row:

* A minimum equity of EUR 16 million;
* A minimum number of 100 employees in The Netherlands;
* An official works council.

These requirements differ from the requirements for statutory audit (paragraph 2.2.1). However due to these regulations the majority of SMEs (according to the audit regime) are not required to install a supervisory board. According to Hessels and Hooge (2006) 29% of all Dutch medium-sized enterprises has a supervisory board.

With the implementation of the ‘Wet Bestuur en Toezicht’ per January 2013, the legislator gives Dutch enterprises the option to form a one-tier board.

### Dutch Corporate Governance Code

In The Netherlands the Dutch Corporate Governance Code was implemented in 2003. In 2008 The Corporate Governance Code Monitoring Committee replaced the code with an amended version that today is still in place. The Dutch Corporate Governance Code is not an isolated set of rules, but part of a larger system, together with Dutch and European legislation. The Code contains principles and best practice provisions that regulate relations between the management board, the supervisory board and the shareholders.

“The Code applies to all companies whose registered offices are in the Netherlands and whose shares or depositary receipts for shares have been admitted to listing on a stock exchange, or more specifically to trading on a regulated market or a comparable system, and to all large companies whose registered offices are in the Netherlands (balance sheet value > € 500 million) and whose shares or depositary receipts for shares have been admitted to trading on a multilateral trading facility or a comparable system (referred to below as listed companies).” Since the Code does not apply to SMEs, this thesis will not give a detailed exploration of the Code.

In 2006 Hessels and Hooge explored the possibility of a Small Business Governance Code. They recognize that for the majority of Dutch SME’s the CEO is also the major shareholder. This reduces the agency risks (see chapter 3.5) that form the foundation for corporate governance within larger enterprises. However, Hessels and Hooge do identify a number situations where good corporate governance within SME’s is important: business succession, mergers and acquisitions, external financing, continuity issues, etc. Finally they question the support for a Small Business Governance Code: “Although SME entrepreneurs consider good corporate governance relevant for the success, continuity and reputation of their company, they are not willing to spend time and capacity on it”.

## Summary

The Dutch legislation on the audit profession and on the statutory audit is primarily based on European legislation. By this legislation the NBA has been appointed to advance the proper practice of the profession, foster the joint interest of the profession and protect the reputation of the profession. To achieve these goals the NBA has implemented the VGC, a principle-based set of ethical and practical guidelines, based on IFAC ‘Code of Ethics’. All Dutch auditors, registered by the NBA, are required to follow this code.

All Dutch private en public limited companies are subject to statutory audit. However, the legislator implemented conditions for small companies that are excluded from statutory audit. This exclusion applies for companies that meet two of the following three criteria for two consecutive financial years:

* balance sheet total : € 4.400.000;
* net turnover : € 8.800.000;
* average number of employees during the financial year : 50

The audit can only be performed by an auditor who successfully finished the education with the NBA and who is named in the public register. The auditor has to be working in an audit firm that has a license to perform statutory audits. The criteria for this license include strict rules on internal quality control. In The Netherlands, licensing and oversight on the audit function is carried out by AFM.

Every statutory audit on Dutch companies has to be performed in accordance with the ISAs issued by IAASB. According to these standards the purpose of an audit is to enhance the degree of confidence of intended users in the financial statements. The European legislator has proposed a special regime for SMEs, however this is not yet finalized in European or Dutch legislation. An audit results in the auditor’s opinion that is expressed in the auditor’s report. Four different audit opinions are recognized in the ISAs. The auditor shall express an unqualiﬁed opinion when he concludes that the ﬁnancial statements have been prepared, in all material aspects, in accordance with the identiﬁed ﬁnancial reporting framework. Any other opinion needs to be explained in the auditor’s report.

The majority of Dutch companies has a two-tier structure. However, the majority of medium-sized companies has no supervisory board in place. The Dutch Corporate Governence Code does not apply on medium-sized companies.

# Theory on the public audit function

The need for theory in auditing is associated with the willingness of the interested parties (shareholders, managers, bankers, auditors, analysts and so on) to form a solid basis for making ﬁnancial decisions. Each of these parties is considered as an economic actor seeking to maximize its wealth and in doing so, they want to know all the possible ways to achieve this goal. To acquire the necessary knowledge about these options requires a thorough understanding of the economic variables and of the relationship between them. This can only be done through the use of a theoretical framework, which provides sufﬁcient explanation and reasoning of the variables, their association with each other and the environment in which the economic action is taking place. (Soltani, 2007). This chapter will cover some of the most well-known theories on auditing. This will provide the necessary theoretical framework to help explain the role and purpose of the audit function.

## Policeman Theory

The ‘policeman theory’ claims that an auditor is responsible for searching, discovering, and preventing fraud. The focus of the audit however, has moved from preventing and detecting fraud towards the verification of the truth and the fairness of the financial statements and the provision of reasonable assurance. The policeman theory is not able to explain this shift in focus.

## Lending Credibility Theory

The lending credibility theory suggests that the primary function of the audit is to add credibility to the financial statements. In this view the service that the auditors are selling to the clients is credibility. Audited financial statements are seen to have elements that increase the financial statement users’ confidence in the figures presented by the management. The users are perceived to gain benefits from this increased credibility. These benefits are typically considered to be that the quality of investment decisions improve when they are based on reliable information.

## Theory of Inspired Confidence

In 1932 and 1933 Limperg published a number of articles explaining and defending his philosophy of auditing. In educational as well as professional circles professor Limperg’s thoughts became known as the ‘Theory of Inspired Confidence’. Later, his theory became known as the ‘Theory of Rational Expectations (Blokdijk, 1979). In his first article Limperg points out the most important function of the public auditor:

“The financial structure of production has become dependent on society's participation in its financing and, in exchange, the community demands that producers account to it for the savings entrusted to them and for their management. […] It is clear that the community at large cannot in the end be satisfied with accountability and data provided by the person who requests the money and manages the capital. It is rational that the community will seek information from persons other than the interested parties […] At this point, the public accountant appears on the societal scene as a confidential agent of the community at large.” (Limperg, 1985)

Limperg addresses the alternative to the public audit function that is for companies to come up with an internal audit function. He finds three main arguments which indicate a preference for external audit:

* Independence; external auditors will perceive to be more independent from both executive management and operational work force and therefore more reliable.
* Broader perspective; external auditors will presumably be engaged in a variety of enterprises. This broader perspective will increase their competence.
* Economic rationality; Only when a company is so large that an audit staff can be employed in which the same division of labor can be applied as is found in the business of the public accountant, does an economically rational basis for its own auditing organization exist; as long as that size has not been reached, the costs of the internal organization must, normally and in the long run, be higher than the use of the services of the public accountant; at least when the same high standards are demanded of the internal audit organization as of the public accountant.

Limperg argues that the public audit function can only exist due to the confidence that the community at large has in the effectiveness of this audit. This effectiveness is based on the (perceived) independence and (perceived) expertise of the public audit function. This results in the general threat to the public audit function: the danger of unreasonably high expectations from the community at large. Since these “will unavoidably lead to disappointments, for which the accountant is then unjustly blamed with the ultimate result that the general confidence in the accountant's function is shaken.” This brings Limperg to the definition of his Theory of Inspired Confidence: “the auditor is obliged to carry out his work in such a way that he does not betray the expectations which he evokes in the sensible layman; and, conversely, the auditor may not arouse greater expectations than can be justified by the work done."

The Theory of Inspired Confidence relates the public needs for reliability of financial information to the ability of the public audit function to meet these needs. This thesis investigates the effectiveness of the public audit function in the Dutch SME segment. It’s important to realize that according to Limperg’s theory changes in the needs of the stakeholders of Dutch SMEs and changes in the execution of the audit by public auditors will result in changes in the auditor's function.

## Philosophy of Auditing

In 1961, Mautz and Sharaf published ‘The Philosophy of Auditing’. They outlined an extensive discussion on auditing philosophy, methodology of auditing and postulates of auditing. Mautz and Sharaf conceive of auditing as a field of knowledge built on a central core of abstract through including mathematics, logic and metaphysics: “‘the nature of evidence and the formation of audit opinions are dependent on the theory of knowledge; reliance on tests and samples is based on probability theory and mathematics; fair presentation draws upon accounting principles, ﬁnancial analysis, and communication theory; due audit care recognizes ethical and legal relationships.” (Mautz and Sharaf, 1961)

These philosophical foundations form the first level of a hierarchical five-level structure. At the second level of their structure, Mautz and Sharaf offer eight tentative postulates of auditing:

1. Financial statements and financial data are verifiable.
2. There is no necessary conflict of interest between the auditor and the management of the enterprise under audit.
3. The financial statements and other information submitted for verification are free from collusive and other unusual irregularities.
4. The existence of the satisfactory system of internal control eliminates the probability of irregularities.
5. Consistent application of generally accepted principles of accounting result in fair presentation of the financial position and the results of operations.
6. In the absence of clear evidence to the contrary, what has held true in the past for the enterprise under examination will hold true in the future.
7. When examining financial data for the purpose of expressing an opinion thereon, the auditor acts exclusively in the capacity of an auditor.
8. The professional status of the independent auditor imposes commensurate professional obligations.

From these postulates Mautz and Sharaf derive five primary concepts of auditing: evidence, due audit care, fair presentation, independence and ethical conduct. Levels one, two, and three, the basic philosophy, postulates, and conceptual structure, produce the precepts (level four) that guide practice (level five).

“Flint (1988) claims that the ‘primary condition’ for an audit is that there must be a relationship of accountability between two parties arising explicitly by agreement or by some form of construction. This formulation is certainly an advance on Mautz and Sharaf and connects Flint’s thinking to that of agency theory. But whereas agency theory views the role of the auditor in an economically reductive way as a monitoring cost between two parties, Flint emphasizes the ethical as well as the economic dimension of audit practice. The auditor is not merely an economic agent but has a moral mission which must somehow be safeguarded – whether by regulation or otherwise. Although Flint considers the ‘economic or social beneﬁt’ of the audit process, in contrast to agency theory, he regards this as a ‘postulate’ rather than an open empirical question”. (Power, 1990)

## Agency Theory

Independent from Limperg, in 1932 Berle and Means noticed a similar development in large U.S. enterprises. They found that control of these enterprises became increasingly maintained apart from ownership. This phenomenon Berle and Means identiﬁed in 1932, would come to dominate most thinking about issues of corporate governance for the rest of the twentieth century (Hawley & Willams, 2000).

Based on the division between ownership and control in 1976 Jensen and Meckling published an article in which they presented their Agency Theory. Jensen and Meckling define an agency relationship as a contract under which one party (the principal) engages another party (the agent) to perform a service on their behalf which involves decision making. They realize that principal and agent might have different incentives for decision making. An agent may therefore not always act in the best interest of the principal.

The dollar equivalent of the reduction in welfare experienced by the principal as a result of this divergence is referred to as ‘residual loss’ (Jensen and Meckling, 1976) or ‘opportunistic behavior costs’ (Watts and Zimmerman, 1983). Jensen and Meckling formulate options that principals have to limit divergences from their interest. They argue that applying executive compensation schemes and implementing extensive information systems for monitoring should help align the interests of the agents and the principals. Another option they point out is to implement a system of monitoring and accountability. “Jensen and Meckling hypothesize that an audit is one type of monitoring activity that increases the value of the firm. An audit by someone independent of the manager reduces the incentive problems that arise” (Watts and Zimmerman, 1983).

## Summary

The following figure gives an overview of the major theories of auditing that have been explored in this chapter:

This chapter provided the necessary theoretical framework to place our research question in the right perspective. The role of the audit function has been described, explained and predicted based on various academic disciplines. From a philosophical perspective auditing is described as a field of knowledge based on mathematics, metaphysics and primarily logic (Mautz and Sharaf, 1961). The theory of inspired confidence (Limperg, 1932) explains the role of audit primarily from a sociological perspective. From this perspective public audit fulfills a social responsibility with an auditor being the ‘confidential agent of the community at large’. Finally the role of audit is explained from an economic perspective. From this perspective public audit is explained by the economic benefits it is supposed to bring. These economic benefits can be the detection and prevention of fraud (policemen theory), more reliable information for investment decision making (lending credibility theory) and the lowering of agency costs (agency theory).

This thesis concludes a master study in economics and therefore follows the economic perspective on the audit function. From an economic perspective the Agency Theory is the most prominent theory on auditing. This theory explains that a financial audit by a public auditor can reduce information asymmetry and the agency costs that come with it, by adding credibility to the financial statements. This justifies the research of this thesis examining the relationship between independent financial audit and the cost of capital. Based on the Agency Theory independent financial audit should lead to lower monitoring costs and therefore a lower cost of capital. In the next chapter prior research on this relationship will be explored.

# Prior Research

To help build our research design and to develop our hypotheses this chapter will cover relevant prior research. Paragraph 4.1 will cover the general research methods used in capital markets research. In paragraph 4.2 will focus on prior research on the cost of debt capital in a voluntary audit environment. Finally in paragraph 4.3 we will explore prior research closest to ours: research on the impact of an audit on the cost of debt capital.

## Capital markets research

Accounting information, such as financial statements, aims to provide investors with the essential inputs for making investment decisions. The information that is drawn from financial statements, apart from the great importance that is has for creditors, suppliers and competitors and other stakeholders, is extensively used in capital markets as the means of forecasting the future cash flows of the company, and thus helping investors to estimate the securities’ future risks and returns. The prime objective of capital market research in accounting is to estimate whether the companies’ published accounting data, be it annually or interim, provide valuable corporate information for investors. (Negakis, 2005) In this context information is ‘valuable’ ‘when it leads investors to change their beliefs and actions, resulting in trading volumes and prices in capital markets’ (Scott, 2003). Deegan (2003) combines both definitions of Negakis and Scott and describes the role of capital market research in accounting as follows: “Capital market research explores the role of accounting and other financial information in equity markets. This type of research involves examining statistical relations between financial information, and share prices or returns. Reactions of investors are evidenced by their capital market transactions.”

Instead of public companies this research focuses on private companies and their relation with the capital market. This means that the capital market’s reaction to the financial statements cannot be measured by the change in share price. Instead the assumption is made that a change in beliefs and actions of the capital market (local banks) will lead to a change in the cost of debt capital.

## Research on the cost of debt capital in a voluntary audit climate

This thesis focuses on the Dutch audit environment with a mandatory public audit of the financial statements. However we can learn a lot from prior research on the impact of public audit in a voluntary climate. A mandatory independent financial audit suppresses the signal that is conveyed when companies exercise their discretion in choosing whether to be audited (Lennox and Pittman, 2011). Therefore several researchers chose this voluntary climate to investigate whether the single fact financial statements have been audited has an impact on the cost of debt capital.

In 1998 Blackwell, Noland and Winters published one of the first well known studies on independent audit in a voluntary climate. The study focuses on the economic value of service provided by independent auditors. The researchers define this economic value as lower interest rates. They theorize that if audit assurance reduces the agency costs (specifically the monitoring costs) for lenders than competition will force banks to pass along this cost reductions in the form of lower interest rates. The study focuses on a sample of small, private US firms. These firms are not required by law to purchase an audit by an independent auditor. Using multivariate regressions for a sample of revolving credit agreements, the researchers find “one potential benefit from obtaining an audit, that of reduced interest rates on bank loans”.

Allee and Yohn (2009) examined the same potential benefits for companies that have their financial statements audited in the same auditing environment as Blackwell et al. (1998). They did however not focus on revolving credit agreements, but they used the interest rate paid on the firm’s most recent loan. Furthermore Allee and Yohn examined the potential benefits coming from four different levels of auditor association. Private firms choose one of four levels of auditor association (Blackwell et al., 1998):

* Audits, which provide reasonable assurance of a low risk of material misstatement.
* Reviews, which are less comprehensive than audits and provide negative assurance.
* Compilation, the accountant assembles the firm's financial information and puts it into a format consistent with GAAP but provides no assurance;
* Company-prepared statements have no association with an independent accountant.

The regression analysis leads to the conclusion that firms with audited financial statements benefit in the form of greater access to credit. A similar conclusion on the benefits of independent audit have been reported in the voluntary audit climate of private Korean companies (Kim et al., 2011).

In the U.K. audits became voluntary for larger private companies in 2004. This regime change offered an unique opportunity for research.Lennox and Pittman (2011) examined the relation between independent audit of financial statements and credit ratings for a sample of companies over the period 2003 to 2004. Their study shows that the companies that remain audited enjoy signiﬁcantly higher credit ratings after the regime change, even though these companies were audited in both 2003 and 2004 and the assurance value of their audits was apparently stable. Lennox and Pittman attribute this upgrade in credit ratings to the positive impression that voluntarily submitting to an audit conveys to outsiders. They conclude: “the decision to be audited voluntarily conveys information that is incremental to the signals that exist in a mandatory regime”.

Prior research shows that in a voluntary audit environment independent audit is valued by lenders with a lower cost of capital. This is consistent with the agency theory of chapter 3.

## Research on the cost of debt capital in a mandatory audit climate

In a mandatory audit environment obviously there is no decision to be made by management whether or not to purchase an independent audit of the financial statements. However management is free to choose any auditor that’s legally allowed to perform such an audit. Lennox and Pittman (2011) refer to this choice as a ‘signaling mechanism’. There has been a lot of prior research on auditor choice.

### Research on auditor choice

Prior research on auditor choice primarily focused on the question whether or not there is a difference in the quality of the audit between audit firms. In her research on auditor size and audit quality DeAngelo (1981) defined audit quality as ‘the market-assessed joint probability that a given auditor will both discover a breach in the client’s accounting system and report the breach’. From this definition DeAngelo splits audit quality into two components: professional competence and independence. Furthermore she argues that, since professional competence and independence are unobservable, users of financial statements are expected to make decisions based on *perceived* audit quality. ‘The larger the auditor as measured by the number of current clients and the smaller the client as a fraction of the auditor's total quasi-rents, the less incentive the auditor has to behave opportunistically, and the higher the perceived quality of the auditor.’ ‘Auditor size serves as a surrogate for audit quality’. The research by DeAngelo formed a starting point for a lot of further research on the association between auditor size and financial statements. Typically the researchers created a segregation between ‘big firms’ and ‘small firms’. Then they investigated a possible association with specific characteristics in the financial statements. Several relevant associations have been reported:

* Big firms are associated with higher audit fees (Palmrose, 1986);
* Big firms are associated with an increased likelihood to issue modified audit reports (Francis & Krishnan, 1999);
* Big firms are associated with lower levels of discretionary accruals. The researchers argue that this is indicative of high-quality auditors permitting ﬁrms less accounting ﬂexibility. (Becker et al, 1998)

In 1993 Teoh and Wong used a different definition of audit quality. They state that ‘a high-quality auditor is defined as one who brings about more credible earnings reports’. To investigate whether this audit quality correlates with auditor size they use the earnings response coefficient. They find that (clients of) big firms statistically have a significantly higher multiple that correlates unexpected earnings with abnormal changes in stock prices in response. Therefore they conclude that audit firm size is a proxy for audit quality.

Prior research agrees that auditor size is a proxy for audit quality. Therefore in choosing a big firm or a small firm management sends a signal to their shareholders and other stakeholders.

### Research on the impact of audit quality on the cost of debt capital

Based on the Agency Theory as discussed in chapter three a higher audit quality should lead to lower monitoring costs for lenders and therefore a lower cost of debt capital for companies. Based on this theory Pittman & Fortin (2004) focus on the association between auditor choice and the cost of debt capital for newly public firms in the USA. For a total sample of 371 firms the study investigates the possible correlation between interest rate (calculated as interest expense for the year divided by its average short- and long-term debt during the year), firm age and auditor choice. For the observation period of 1977 – 1988 the study segregates the audit firms in ‘Big 8’ and ‘other’. For the period 1989 – 1997 the study segregates the audit firms in ‘Big 6’ and ‘other’ after the mergers that resulted in the formation of Deloitte & Touche and Ernst & Young. To control for other determinants of debt pricing (credit risk) the study also uses firm size, leverage, cash flow and asset structure. The researchers find that choosing a big audit firm enables young firms to lower their interest rates. However, the impact of auditor choice on firms’ interest rates diminishes with firm age. This decline over time might be due to the fact that borrowers gradually shift form relying on the auditor’s reputation toward relying on their own reputations.

In 2004 Fortin & Pittman study the association between auditor choice and debt pricing for public firms. However, in this research they don’t use interest rates deducted from financial statements. Instead they focus on credit ratings on bonds issued by US public firms. They reach the same conclusion that public firms can lower their interest rates by choosing a big audit firm. In 2007 Pittman & Fortin extend their prior research to private firms. They perform a similar research using credit ratings on 144A bonds issued by private US firms. They come to the conclusion that, for private firms, there is no significant association between auditor size and credit rating.

Other studies result in opposing conclusions. Using a research design similar to Pittman & Fortin (2003) the results of Cano Rodríguez et al. (2008) show that for private Spanish firms auditor choice significantly associates with interest rates of debt capital. In addition Tsai & Hua (2009) found empirical evidence of lower interest rates for private Chinese SMEs audited by Big 4 auditors. Karjalainen (2011) reaches the conclusion that private firms in the mandatory Finish audit environment audited by the ‘Big 4’ have significantly lower interest rates. Kim et al. (2013) finds, using a large sample of U.S. bank loan data from 1996 to 2008, that the loan interest rate is signiﬁcantly lower for borrowers with prestigious Big 4 auditors than for borrowers with non-Big 4 auditors. Their study provides direct evidence that auditor size is an incremental credit risk-reducing factor in the bank loan market.

### Research on the impact of auditor’s opinion on the cost of debt capital

Auditor choice is a signal that management can send to stakeholders. Another signal to stakeholders is send by the auditor. In the auditor’s report the independent auditor expresses his opinion on the financial statements. A very limited number of studies have examined the possible impact of this signal on the cost of debt capital.

Karjalainen (2011) examines a sample of 3.890 private Finnish SMEs. Al of these firms are required by law to prepare public financial statements that are subject to a full audit. The study shows that firms with a modified auditor’s opinion (qualified opinion or disclaimer of opinion) have higher interest rates. Cano Rodríguez et al. (2008) comes to a contradicting conclusion for a large sample of private Spanish firms. The study concludes: “These findings suggest that Spanish banks’ and lenders’ decisions are more influenced by the reputation of the auditor than by the content of the audit report.”

### Conclusion

Prior research agrees on the fact that the size of an audit firm is a proxy for the (perceived) quality of the audit. Numerous studies have investigated the impact of this audit quality on the cost of debt capital. These studies examined the financial statements of private companies in various mandatory audit environments. The majority of studies conclude that audit quality is associated with lower interest rates. This is explained by the fact that a higher audit assurance lowers the agency costs (monitoring costs) for providers of debt capital. Competition forces banks to pass along this cost reductions in the form of lower interest rates. However Pittman & Fortin (2007) find no significant association between auditor size and credit rating for US private firms.

The possible impact of auditors’ opinion on providers of capital (debt capital, private firms) has been object of research to very few studies. This might be explained by the fact that in some countries other than unqualified audit reports are uncommon. Studies on private companies in the mandatory audit environments of Spain and Finland resulted in mixed evidence.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Year** | **Author** | **Sample** | **Dependent variable in Regression analysis** | **Auditor size association?** | **Auditors' opinion association?** |
| 2004 | Pittman & Fortin | Public firms (USA) | Interest expenses / average debt capital | YES |  |
| 2004 | Fortin & Pittman | Public firms (USA) | Credit rating on issued bonds | YES |  |
| 2007 | Pittman & Fortin | Private firms (USA) | Credit rating on issued bonds | NO |  |
| 2008 | Cano Rodríguez et al. | Private firms (Spain) | Interest expenses / average debt capital | YES | NO |
| 2009 | Tsai & Hua | Private SMEs (Taiwan) | Interest rate on bank loans | YES |  |
| 2011 | Kim et al. | Private firms (Korea) | Credit rating | NO |  |
| 2011 | Karjalainen | Private SMEs (Finland) | Interest expenses / average debt capital | YES | YES |
| 2011 | Causholli & Knechel | Public firms (USA) | Interest expenses / average debt capital | YES |  |

# Hypotheses and Research Design

In the previous chapters the Dutch audit environment, existing theories on auditing and prior research on the relationship between audit and the cost of capital has been explored. Based on this exploration in paragraph 5.1 our hypotheses regarding the main research question will be formulated. In paragraph 5.2 the research design tot test these hypotheses will be presented. Finally paragraph 5.3 will describe the process of data selection for this research.

## Hypothesis Development

The main research question of this thesis, as presented in chapter 1, is the following: *What is the relevance of the statutory audit of financial statements for the providers of debt capital of Dutch medium sized companies?*

Based on the Agency Theory this thesis follows a cost of capital approach. The most obvious way to research the impact of an independent audit of financial statements on providers of debt capitalwould be to compare the cost of capital of companies with audited financial statements versus companies with unaudited financial statements. The focus of this thesis however is on Dutch medium-sized entities who are forced by legislation to have their financial statements audited. In such a mandatory audit climate an audit does not entail a ‘signaling mechanism’ as described in chapter 4.3. The possible impact of the audit on stakeholders therefore have to be investigated using other ‘signals’.

Another signal that management can use to possibly influence their stakeholders is their choice of auditor. DeAngelo (1981) is the first of many researchers to find that auditor size is positively associated with (perceived) audit quality. Based on the Agency Theory and the Theory of Inspired Confidence a higher quality of audit will lead to more credible financial statements and the lowering of agency (monitoring) costs. Thus by engaging a big auditor management ‘signals’ more credible financial statements. Prior studies (paragraph 4.3.4) using auditor size as a proxy for (perceived) audit quality lead to mixed results regarding the possible association between auditor size and the cost of capital. We will study this association based on interest expenses instead of credit ratings. We therefore will follow the conclusion of prior research based on interest expenses (paragraph 4.3.4). This leads us to our first hypothesis:

*H1: Providers of debt capital of private Dutch medium-sized companies value audit quality resulting in an inverse association between auditor size and the cost of debt capital.*

Another ‘signal’ to stakeholders comes not from management but from the auditor. An unqualified auditors’ opinion provides more assurance than a qualified opinion, disclaimer of opinion or an adverse opinion. This higher assurance again is expected to lead to lower agency (monitoring) costs. However, prior research in Spain (Cano Rodríguez et al., 2008) en Finland (Karjalainen, 2011) leads to mixed evidence regarding the association between the auditors’ opinion and the cost of capital. Since the Dutch audit environment is better comparable with the Finish environment, the second hypothesis again follows the results of Karjalainen (2011):

*H2: Providers of debt capital of private Dutch medium-sized companies value auditors’ opinion resulting in a lower cost of debt capital for firms with an unqualified auditors’ report.*

As described in chapter 2, in The Netherlands there are two types of auditors: RAs and AAs. Both types of auditors are allowed to perform statutory audits on Dutch SMEs following the same rules and regulations. However, both types have different educational backgrounds (academic versus practical) and a different overall focus (assurance versus non assurance). These differences lead to the final hypothesis of this research:

*H3: Providers of debt capital of private Dutch medium-sized companies associate an RA auditor with higher audit quality than an AA auditor, resulting in a lower cost of debt capital for firms audited by an RA auditor.*

The possible impact of the statutory audit of financial statements of Dutch medium-sized companies on providers of debt capitalwill be derived from the possible influence of audit quality and the auditors’ opinion on the cost of capital.

## Research Design

To test our hypotheses the methodology of mostly all prior research in chapter 4 will be followed using regression analysis. In the regression equation the dependent variable will be the cost of capital. Since this study focuses on private firms the focus will be on the cost debt capital instead of equity capital. Prior studies have used different definitions for the cost of debt capital as described in chapter four. Since credit ratings (Kim et al., 2011), the credit rating of issued bonds (Pittman & Fortin, 2007) or interest rates on specific bank loans (Tsai & Hua, 2009) will not be available for private Dutch medium-sized companies, our primary source of information will be the published financial statements. Following primarily Karjalainen (2011), Cano Rodríguez et al. (2008) and Pittman & Fortin (2003) this research will define the cost of debt capital as the interest expenses in year *t* divided by the average of cost-bearing debt capital at the beginning and the end of year *t*.

### Test variables

The first test variable of our regression equation relates to our first hypothesis. To test the influence of audit quality we use the proxy ‘auditor size’. As shown in paragraph 2.1.3 the Dutch audit market has four major competitors. PwC, Ernst & Young, KPMG and Deloitte form the ‘Big Four’ audit firms. This division of market share is similar to the worldwide division. Both in Finland (Karjalainen, 2011) and the U.S.A. (Pittman & Fortin, 2003) the difference between ‘Big Four’ and other audit forms is used to test the influence of auditor size. Based on this prior research and paragraph 2.1.3 this research will investigate the possible differences in the cost of capital of companies audited by a ‘Big Four’ audit firm versus companies audited by other audit firms. The second test variable of our regression equation relates to our second hypothesis. As described in paragraph 2.2.3 the auditor in the Dutch audit environment can present four different opinions in the auditors’ report. To test our hypothesis we will differentiate between an unqualified opinion versus another opinion (either an adverse opinion, qualified opinion or disclaimer of opinion). The third test variable of our regression equation relates to our third hypothesis and will consist of the type of auditor, RA auditor versus AA auditor.

### Control variables

The cost of debt capital may be influenced by auditor size, auditors’ opinion and auditor type. However, there are a lot more variables that providers of debt capitalconsider in determining their interest rates. To control for the debt pricing effect of several firm-specific characteristics a number of control variables needs to be added to the regression equation.

Firm size

Petersen and Rajan (1994), Blackwell et al. (1997 and 1998) and Moir & Sudarsanam (2007) all find evidence that firm size is inversely associated with the cost of debt capital. Apparently providers of debt capitalperceive large firms to be less risky. Firm size can be defined by a number of variables such as total assets, annual turnover or number of employees (see paragraph 2.4). Dutch medium-sized companies are not required to show their annual turnover in their financial statements. Furthermore we estimate that providers of debt capitalare more interested in the assets of a company than in the number of employees since the assets are the collateral on their loans. We therefore use the control variable ‘total assets’ as a proxy for firm size.

Leverage

In prior research on debt pricing ‘leverage’ is defined as the proportion of assets that is financed by external creditors. Petersen and Rajan (1994) and Karjalainen (2011) find evidence that leverage is positively associated with the cost of capital. This is consistent with the Agency Theory of Jensen & Meckling (1976). Agency costs are expected to increase when the proportion of outside creditors increases. To control for leverage we use a control variable that consists of the ratio of total debt over total assets.

Cash flow

“In many circumstances cash ﬂow information is arguably viewed as being more concrete and less susceptible to artiﬁcial manipulations than […] actual reported accounting earnings.” (Edmonds et al., 2011) Therefore providers of debt capitalare very interested in the cash flow of a company. To control for cash flow we will use a ratio of EBITDA (Earnings Before Interest, Taxes, Depreciation and Amortization) to the average of cost bearing debt at the beginning and end of year t. This ratio represents the ability of a company to repay their long-term liabilities.

Liquidity

The current ratio is computed as the ratio of current assets over current liabilities. This ratio gives information about the company’s ability to pay term short term debts. Companies with higher current ratios are in a better position to pay their short term debts. Following Cano Rodriguez et al. (2008) we control for liquidity using the current ratio.

### Regression equation

The dependent variable, test variables and control variables together form the following regression equitation that will be used to test the hypotheses of paragraph 5.1:

INTRATE*it* = *β*0 + *β*1(BIG4*it*-1) + *β*2(OPINION*it*-1) + *β*3(TYPE*it*-1) + *β*4(SIZE*it*) + *β*5(LEVERAGE*it*) + *β*6(EBITDA) + *β*7(CUR.RATIO*it*) + ε*it*

|  |  |  |
| --- | --- | --- |
| *variable* | | *Definition* |
| Dependent variable | | |
| INTRATE | The interest rate in year *t* is measured as interest expenses in year *t* divided by the average of cost bearing debt at the beginning and end of year *t* and multiplied by 100. | |
|  |  | |
| Test variables | | |
| BIG4 (*t* - 1) | A dummy variable equal to 1 if the company in year *t* is audited by one of the Big 4 audit firms, and 0 otherwise. | |
| OPINION (*t* - 1) | A dummy variable equal to 1 if an audit report includes a unqualified audit opinion, and 0 otherwise. | |
| TYPE (*t* - 1) | A dummy variable equal to 1 if the company in year *t* is audited by an RA auditor and 0 for an AA auditor. | |
|  |  | |
| Control variables | | |
| SIZE | Natural logarithm of total assets in year t. | |
| LEVERAGE | A ratio of total debt to total assets | |
| EBITDA | A ratio of EBITDA to the average of cost bearing debt | |
| CUR.RATIO | A ratio of current assets to current liabilities | |

### Summary and validity

In the following figure the research design of this study is summarized using the predictive validity model (Libby, 1981). Link number 1 in the figure depicts our main research question.



“No theory can be tested directly; rather, a theory is tested by assessing the relationship between the operational deﬁnitions of key concepts in the theory (i.e. by assessing link 4).

For this test to be valid, the links between the concepts and the operational deﬁnitions (links 2 and 3) must be valid, and other factors that might aﬀect the dependent variable (link 5) must be controlled or have no eﬀect. A study’s internal and external validity is determined by the validity of these ﬁve links.” (Libby et al., 2002)

The validity of link 1 is discussed in chapter 3 and is primarily based on the Agency Theory by Jensen and Meckling (1976). The validity of link 2 is based on the Dutch audit environment. Auditor size (name of the audit firm), auditor type and auditor opinion are mandatory aspects of the Auditors’ Report which is the conclusion of the statutory audit. The validity of link 3 is based on basic economics: interest is a reward for credit risk. Lower risk for providers of debt capital leads to lower rewards thus lower interest rates. The validity of link 4 and 5 is discussed in chapter 4 and 5 and is primarily based on prior research.

The research design presented in this chapter is valid and therefore can be used to answer our research question.

# Results and Analysis

In this chapter the empirical results of this study will be presented and analyzed in order to test our hypotheses. In paragraph 6.1 the selection of our sample will be discussed followed in paragraph 6.2 by an additional analysis. In paragraph 6.3 the descriptive statistics of our regression model based on two sample groups will be presented. In paragraph 6.4 our final regression model will be evaluated. Paragraph 6.5 will present the regression results and finally in paragraph 6.6 we will discuss these results, summarize our research and present our conclusions.

## Sample selection

The data needed to perform the regression analysis of paragraph 5.2.3 comes from published financial statements. The Company.info database is used for the selection of these financial statements.

The focus of this research is on Dutch medium sized companies. According to article 2:397 of the Dutch Civil Code a company is ‘medium sized’ when it meets two of the following three criteria for two consecutive years:

|  |  |
| --- | --- |
| Total assets | ≥ € 4.400.000 ≤ € 17.500.000 |
| Net Turnover | ≥ € 8.800.000 ≤ € 35.000.000 |
| Number of employees | ≥ 50 ≤ 250 |

These criteria however cannot directly be used for our selection in the database. This is caused by article 2:397-3 which states that medium sized companies are not obligated to publish their net turnover. Instead these companies start their profit and loss account with the gross margin.This leads to the following criteria for our first selection in Company.info:

* ≤ € 35.000.000 gross margin/net turnover
* ≥ € 4.400.000 ≤ € 17.500.000 total assets
* ≥ 50 ≤ 199 employees (the database does not give the option to extend this range to 250)
* Published financial statements for the years 2009, 2010 and 2011
* Financial statements including an Auditors’ Report

In addition to the focus on audited medium sized companies the focus of this research is on companies that have external financing. Since the interest rate will be calculated from the average of interest bearing debt, a minimum amount of external interest bearing debt is necessary. This leads to the following additional selection criteria:

* ≥ € 500.000 long-term liabilities
* Known bank relation

## Sample analysis

The criteria of paragraph 6.1 resulted in a list of 610 companies. The published financial statements of these companies had to be individually analyzed in order to acquire the variables needed for the regression analysis of paragraph 5.2.3. The focus points of this analysis were:

1. Elimination of companies that are financed by group companies instead of external creditors;
2. Isolation of external cost bearing debt from other debt;
3. Isolation of external interest expenses from other interest expenses and possible interest income.

This analysis showed that there are many differences between companies regarding the amount of detail that their financial statements present. Financial statements that did not have enough detail to be able to perform the aforementioned 3 analyses were eliminated from the sample. Another result of this analysis is the conclusion that a large percentage of Dutch medium sized companies is using financial instruments (interest swaps) to hedge their interest rate risks. This results in the fact that identical companies (in terms of all the test and control variables of are regression equation) can have very different interest rates. However if both identical companies have their interest rate risks hedged they should pay the same price for this financial instrument. We therefore split our sample in two groups.

This analysis lead to a total sample of 373 firm-year observations consisting of all the variables needed for our regression equation.

|  |  |  |
| --- | --- | --- |
| Sample group without interest rate swaps | 240 | 64% |
| Sample group with interest rate swaps | 133 | 36% |
| Total number of firm-year observations | 373 | 100% |

To be able to perform a multiple regression analysis a certain minimum number of observations is needed. Fidell (1996) argues a minimum of 50 + 8m where ‘m’ is the number of independent variables. Stevens (1996) argues a minimum of 15m. Since our regression equation contains 7 independent variables both sample groups are large enough to build a proper model.

## Descriptive statistics

Table 1 and table 2 present the descriptive statistics of the final test sample of 373 firm-year observations divided over a group without interest swaps (sample group 1) and a group with interest swaps (sample group 2) as described in the previous paragraph.

**Table 1: Descriptive statistics sample group 1**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Continuous variables | Mean | Std. Deviation | N | Dichotomous variables | N | % |
| INTRATE | 5,1822% | 1,81538% | 240 | BIG4 (=1) | 56 | 23,3 |
| SIZE LN | 16,1428963 | ,35028601 | 240 | OPINION (=1) | 191 | 79,6 |
| LEVERAGE | ,6883704 | ,20088195 | 240 | TYPE (=1) | 216 | 90,0 |
| EBITDA | ,4285255 | ,53697667 | 240 |  |  |  |
| CURRATIO | 1,4093333 | ,71305722 | 240 |  |  |  |

On average the companies without hedge instruments pay 5,18% interest per year and they are financed with 68,8% external long-term debt. The external long-term debt of these companies is on average 2,33 times their respective annual EBITDA. 23,3% of the companies are audited by a BIG4 auditor. This is a significantly lower percentage than expected based on the market share of BIG4 companies as presented in paragraph 2.1.3. This is primarily caused by two factors:

* The primary focus of the BIG4 audit firms is on large (listed) companies instead of SME’s.
* A relatively large number of medium-sized clients of BIG4 audit firms are international referrals. These medium-sized Dutch companies are part of an international organization and are often financed by foreign group entities. In our sample analysis of paragraph 6.2 we have eliminated these companies.

79,6% of the firm-year observations are accompanied by an unqualified auditor’s report. Exactly 90% of the sample is audited by a registeraccountant.

**Table 2: Descriptive statistics sample group 2**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Continuous variables | Mean | Std. Deviation | N | Dichotomous variables | N | % |
| INTRATE | 5,7499% | 1,97213% | 133 | BIG4 (=1) | 47 | 35,3 |
| SIZE LN | 16,2464352 | ,34009541 | 133 | OPINION (=1) | 112 | 84,2 |
| LEVERAGE | ,6986003 | ,17119170 | 133 | TYPE (=1) | 129 | 97,0 |
| EBITDA | ,4137483 | ,46277960 | 133 |  |  |  |
| CURRATIO | 1,4806015 | ,84183850 | 133 |  |  |  |

For the sample group of companies with interest swaps the average interest rate is 5,75%. This is significantly higher than the first sample group. This difference is explained by the fact that the market interest rate in the Eurozone over the period 2009 – 2011 was relatively low. Figure 1 shows the development of the 3-months euribor rate.

Figure 1

The other control variables in this sample group show no significant differences from the first sample group. The test variables do differ significantly. This sample group has a higher percentage of BIG4 auditors, a higher percentage of unqualified audit reports and a higher percentage of registeraccountants. The explanation for these differences might be found in the nature of these companies. The fact that these companies have mitigated their interest rate risks signals that they have a low risk appetite and a proper internal control mechanism. This is consistent with the need of a high perceived audit quality (engaging a BIG4 audit firm and a registeraccountant) and the need for an unqualified auditor’s report.

## Evaluation of the model for both sample groups

Table 3 presents Pearson correlations among all the regression variables for the first sample group. The control variables SIZE LN, EBITDA and CURRATIO are negatively correlated with interest rate. The control variable LEVERAGE is positively correlated with INTRATE. These associations are consistent with our expectations made in paragraph 5.2.2. The test variables BIG4 and OPINION are positively correlated with INTRATE. This contradicts with our hypotheses that both engaging a BIG4 audit firm and receiving an unqualified auditor’s report lead to lower cost of capital. The final test variable TYPE is negatively correlated with INTRATE. This is in line with our third hypothesis that engaging a registeraccountant leads to a lower cost of capital.

**Table 3 Pearson Correlation Matrix sample group 1**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | INTRATE | SIZE LN | LEVERAGE | EBITDA | CURRATIO | BIG4 | OPINION | TYPE |
| INTRATE |  | -.102 | .119 | -.013 | -.045 | .038 | .001 | -.049 |
| SIZE LN | -.102 |  | -.232 | .032 | .173 | .077 | -.056 | -.182 |
| LEVERAGE | .119 | -.232 |  | -.437 | -.619 | -.041 | -.182 | -.045 |
| EBITDA | -.013 | .032 | -.437 |  | .327 | .049 | .141 | .063 |
| CURRATIO | -.045 | .173 | -.619 | .327 |  | .060 | .117 | .059 |
| BIG4 | .038 | .077 | -.041 | .049 | .060 |  | .279 | .184 |
| OPINION | .001 | -.056 | -.182 | .141 | .117 | .279 |  | .141 |
| TYPE | -.049 | -.182 | -.045 | .063 | .059 | .184 | .141 |  |

Significant at the 5% confidence level are reported in bold.

Out of all independent variables only the control variable LEVERAGE has a significant correlation with INTRATE. This indicates that our regression equation can not be used for this sample group. This is confirmed by the ANOVA table (appendix c) which states that the model as a whole is not significant. To make sure this insignificance is not caused by extreme values in the data sample a scatterplot of standardized residuals and standardized predicted values is created. Since there are no values of more than 3.3 or less than -3.3 (Tabachnick & Fidell, 2007) we conclude that the data sample does not contain outliers.

The insignificance of this model as a whole and specifically the insignificance of the control variables, contradicts with both the theory, prior research and the hypotheses described in this thesis. The cause of this insignificance might be found in discrepancies in the sample data. It is possible that Dutch medium sized companies have not mentioned their interest swaps in their financial statements of the years 2009 - 2011. The processing of interest swaps in financial statements has lacked awareness especially in the SME segment (Roozen, 2012). This way the sample data could be ‘polluted’ and firm-year observations can not be compared. This model cannot be used to test out hypotheses.

Table 4 presents Pearson correlations among all the regression variables for the second sample group. The control variables SIZE LN and CURRATIO have a negative correlation with INTRATE as expected. The control variables LEVERAGE and EBITDA have a positive correlation with INTRATE. For EBITDA this contradicts with our expectation. The test variables BIG4, OPINION and TYPE all have positive correlation with INTRATE. For all test variables we predicted a negative correlation.

**Table 4 Pearson Correlation Matrix sample group 2**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | INTRATE | SIZE LN | LEVERAGE | EBITDA | CURRATIO | BIG4 | OPINION | TYPE |
| INTRATE |  | -.263 | .229 | .171 | -.082 | .163 | .098 | .120 |
| SIZE LN | -.263 |  | -.076 | .145 | -.007 | .013 | .190 | -.054 |
| LEVERAGE | .229 | -.076 |  | -.293 | -.645 | .046 | -.289 | -.035 |
| EBITDA | .171 | .145 | -.293 |  | .125 | -.052 | .108 | .070 |
| CURRATIO | -.082 | -.007 | -.645 | .125 |  | .042 | .111 | .068 |
| BIG4 | .163 | .013 | .046 | -.052 | .042 |  | .320 | .130 |
| OPINION | .098 | .190 | -.289 | .108 | .111 | .320 |  | .165 |
| TYPE | .120 | -.054 | -.035 | .070 | .068 | .130 | .165 |  |

Significant at the 5% confidence level are reported in bold.

The correlation matrix shows that four out of seven predictors have a significant correlation with INTRATE. In addition the ANOVA table shows that this model as a whole is significant. Now we know that the model is significant we can perform an additional analysis to make sure the model can be used to test our hypotheses.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| ANOVAa | | | | | | |
| Model | | Sum of Squares | df | Mean Square | F | Sig. |
| 1 | Regression | 103.151 | 4 | 25.788 | 8.046 | .000b |
| Residual | 410.235 | 128 | 3.205 |  |  |
| Total | 513.387 | 132 |  |  |  |
| 2 | Regression | 134.232 | 7 | 19.176 | 6.322 | .000c |
| Residual | 379.155 | 125 | 3.033 |  |  |
| Total | 513.387 | 132 |  |  |  |
| a. Dependent Variable: INTRATE | | | | | | |
| b. Predictors: (Constant), CURRATIO, SIZE LN, EBITDA, LEVERAGE | | | | | | |
| c. Predictors: (Constant), CURRATIO, SIZE LN, EBITDA, LEVERAGE, BIG4, TYPE, OPINION | | | | | | |

First we check for high correlations between independent variables. These correlations range from -.645 (LEVERAGE/CURRATIO) to .320 (BIG4/OPINION). This shows no indications for multicollinearity. An additional analysis of the collinearity statistics of the regression output in table 5 also indicates the absence of multicollinearity. All values fall within the general ‘rule of thumb’: tolerance > .10 and VIF < 10 (Tabachnick & Fidell, 2007).

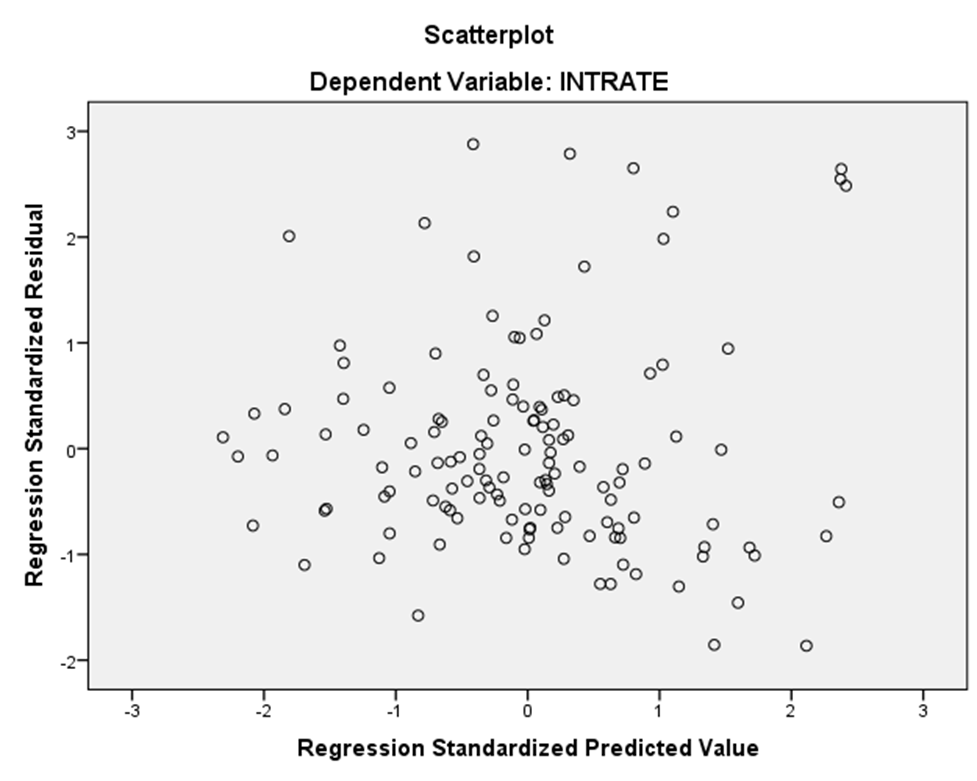
**Table 5: Collinearity Statistics**

|  |  |  |  |
| --- | --- | --- | --- |
|  | | Tolerance | VIF |
| 1 | (Constant) |  |  |
| SIZE LN | .974 | 1.027 |
| LEVERAGE | .536 | 1.865 |
| EBITDA | .894 | 1.119 |
| CURRATIO | .577 | 1.732 |
| 2 | (Constant) |  |  |
| SIZE LN | .937 | 1.067 |
| LEVERAGE | .479 | 2.086 |
| EBITDA | .887 | 1.127 |
| CURRATIO | .560 | 1.787 |
| BIG4 | .853 | 1.173 |
| OPINION | .748 | 1.337 |
| TYPE | .949 | 1.054 |

Second, we evaluate the regression output for outliers. The scatterplot of figure 2 shows no standardized residuals of more than 3.3 or less than -3.3. According to Tabachnick & Fidell (2007) this indicates the absence of outliers.

Third, we evaluate the model for indications of heteroscedasticity. Since we see no pronounced patterns in the scatterplot of figure 2 and most of the values are concentrated in the center of the plot, we have no indications of problems with heteroscedasticity.

**Figure 2: scatterplot of standardized residuals**



Our regression equation applied to the data of sample group 2 results in a significant model that follows the basic assumptions of multiple regression: normality, linearity and homoscedasticity (Osborne, 2002). In addition there are no indications of multicollinearity or outliers. This model we can therefore use to test our hypotheses.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Table 6: Model Summaryc** | | | | | | | | | |
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
| R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .448a | .201 | .176 | 1.79024% | .201 | 8.046 | 4 | 128 | .000 |
| 2 | .511b | .261 | .220 | 1.74162% | .061 | 3.416 | 3 | 125 | .020 |
| a. Predictors: (Constant), CURRATIO, SIZE LN, EBITDA, LEVERAGE | | | | | | | | | |
| b. Predictors: (Constant), CURRATIO, SIZE LN, EBITDA, LEVERAGE, BIG4, TYPE, OPINION | | | | | | | | | |
| c. Dependent Variable: INTRATE | | | | | | | | | |

Table 6 gives a summary of our definitive model. The column ‘Adjusted R Square’ shows that 17,6% of the variance in interest rate is being accounted for by the control variables that are entered in block 1 of the model. When we add our test variables into block 2 of the model, the predictive capacity increases to 22,0%. According to the change statistics, this is a significant increase. This indicates that the combination of auditor size (as a proxy for audit quality), auditor’s opinion and auditor type does have a significant impact on the cost of capital. In the next paragraph we will go into further detail regarding the individual variables.

## Regression results

Table 7 presents the regression results of our definitive model. SIZE LN and LEVERAGE have significant coefficients in the predicted directions. This confirms that smaller companies and companies with relatively high levels of external financing pay higher interest rates. The EBITDA variable is also significant. The sign of the beta coefficient contradicts with our prediction. The EBITDA variable is included into the regression equation to control for the predictive capacity of cashflow from operations that is evidenced by prior research. As explained in paragraph 5.2.2 EBITDA does differ from cashflow from operations since it does not take into account any changes in working capital. This difference might explain why the beta coefficient of EBITDA differs from the beta coefficient of cashflow from operations in prior research. However the positive sign of the coefficient remains unexplained and might be an interesting subject for further research. The final control variable CURRATIO is insignificant.

**Table 7: Main regression results**

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
| Variable | Beta Coefficient | t statistic | Significance |
|  |  |  |  |
| (Constant) |  | 3.797 | .000 |
| SIZE LN | -.310 | -3.910 | .000 |
| LEVERAGE | .432 | 3.887 | .000 |
| EBITDA | .306 | 3.747 | .000 |
| CURRATIO | .127 | 1.237 | .218 |
| BIG4 | .088 | 1.060 | .291 |
| OPINION | .199 | 2.244 | .027 |
| TYPE | .044 | .559 | .577 |
|  |  |  |  |
| N | 133 | |  |
| Adjusted R2 | .220 | |  |

The regression results of the test variable BIG4 result in the rejection of our first hypothesis. Instead of the expected significant inverse association between auditor size (as a proxy for audit quality) and the cost of debt capital, we find an insignificant direct association. This indicates that the providers of debt capital of Dutch medium sized companies do not take audit quality into account when determining interest rates.

The coefficient for OPINION is significant with a positive sign. The beta value predicts an increase in interest rate of 20 basis points associated with the fact that the financial statements are accompanied by an unqualified auditor’s report. This is the complete opposite of our second hypothesis which predicts a significant decrease in interest rate for unqualified auditor’s reports. We will discuss this result in the paragraph 6.6.

The third hypothesis of this research is rejected by the regression results of the variable TYPE. Instead of the expected significant inverse association between auditor type (as a proxy for audit quality specific to the Dutch audit environment) and the cost of debt capital, we find an insignificant direct association. In line with the rejection of hypothesis one, this is another indication of audit quality not being relevant in the pricing of debt capital of Dutch medium sized entities.

## Conclusions

We analyzed the published financial statements of 610 Dutch medium sized firms and found a final data sample of 373 firm-year observations over the years 2009-2011 that met our criteria. To be able to compare the interest rates between companies we needed to take into account the effect of interest swaps and split up the sample in two groups. Sample group 1 contained firm-year observations of companies without interest swaps. Sample group 2 contained firm-year observations of companies with interest swaps. The regression model resulting from the sample group 1 turned out to be insignificant. I expect this is caused by ‘pollution’ of the data sample with companies that failed to present their interest swaps in the financial statements. The regression model resulting from sample group 2 is significant and is used for testing our hypotheses.

The results of the hierarchical multiple regression causes us to reject all three hypotheses. The insignificance of the predictive capacity of auditor size and auditor type results in the conclusion that local banks do not think of audit quality as a relevant factor in debt pricing. This conclusion contradicts with prior research on interest rates in the USA (Pittman & Fortin, 2003), Spain (Cano Rodríguez et al., 2008) and Finland (Karjalainen, 2011). We have to keep in mind that we studied the association of audit quality with interest rate under the assumptions that audit firm size and auditor type are proxies of audit quality. These assumptions however are based on prior research in other audit environments than the market for Dutch medium sized companies. This is an important limitation of this research.

Since we did expect audit quality to be relevant in debt pricing it would be interesting for future research to study the assumption that audit firm size and auditor type are true proxies of audit quality in the specific Dutch context.

The significant positive association between the auditors’ opinion and the cost of debt capital contradicts with the significant negative association of prior research in Finland (Karjalainen, 2011) and the insignificant negative association of prior research in Spain (Cano Rodríguez et al., 2008). Based on the Agency Theory we expected an unqualified audit report to add assurance to the financial statements, thereby lowering the monitoring costs of local banks resulting in lower interest rates for Dutch medium sized companies. Our regression results instead indicate an unqualified audit report to result in higher monitoring costs. Surprisingly, the providers of debt capital seem to take more assurance from a qualified audit opinion than from an unqualified opinion. Further qualitative research into these results is needed to provide a better understanding of the considerations of providers of debt capital that lead them to take more assurance from qualified audit reports than from unqualified audit reports.

In conclusion, the results of this research provide significant evidence that the statutory audit of financial statements is relevant to the providers of debt capital of Dutch medium sized companies. This relevance shows from the significant association between auditors’ opinion and the cost of debt capital. The ratio behind this association however remains unclear since, contrary to our expectations, an unqualified audit report predicts an increase of the interest rate with 20 basis points.

# Summary and conclusions

In this final chapter a summary of this research will be presented by answering both the sub-questions and the main research question of paragraph 1.4. Finally the limitations of this research and our suggestions for further research will be presented.

## Summary

Since the start of the financial crisis in 2007 a lot of people have questioned the role of the audit profession in the economy. In October 2010 the European Commission opened the public debate about the role of the audit profession by releasing their Green Paper. With this document the European Commission consulted with the public on a number of themes regarding the audit profession. One of the themes of the Green Paper is the simplification for small and medium sized enterprises. The European Commission suggests that ‘serious efforts should be made to create a specific environment for the audit of SMEs’. The majority of public reactions suggests a stakeholder approach on this subject, meaning that any discussion on the possible simplification of the audit of the financial statements of SMEs should focus on the stakeholders’ need for assurance. To contribute to this discussion, this research focused on the relevance of the audit of financial statements of Dutch SMEs. We identified the banks financing these SMEs as a group of stakeholders with a supposed high need for reliable financial statements. We chose to focus on this group. This lead to the main research question of this study: *What is the relevance of the statutory audit of financial statements for the providers of debt capital of Dutch medium sized companies?*

To answer the main research question five sub-questions where formulated. The first sub-question focuses on the auditing environment in The Netherlands: What impact do Dutch laws and regulations have on the audit of financial statements of medium-sized entities? The answer to this question consists of the framework of Dutch laws and regulations regarding the audit. The majority of this legislation is derived from European legislation. In general, there are laws on three different levels:

* Audited enterprises; the legislation sets specific size criteria that determine whether or not an enterprise is required to have its financial statements audited by an independent auditor.
* Audit firms; the legislation enforces that only licensed audit firms can perform a statutory audit of financial statements. Specific criteria are set primarily focused on internal quality control and external oversight.
* Individual auditors; the legislation protects the title of ‘auditor’ and appoints the NBA as the organization to carry out this task. Furthermore the NBA is tasked with the education, examination and public registration of the two different types of Dutch auditors. In addition to this legislation the NBA has set several ethical guidelines and rules and regulations on how to perform statutory audits. Both are derived from international regulations.

The second sub-question focused on theory: What is the current role and purpose of the public audit function in the economy? We chose to study the audit function from an economic perspective. From an economic perspective public audit is explained by the economic benefits it is supposed to bring. These economic benefits can be the detection and prevention of fraud, more reliable information for investment decision making and the lowering of agency costs. The Agency Theory explains that a financial audit by a public auditor can reduce information asymmetry and the agency costs that come with it, by adding credibility to the financial statements. This justifies the research of this thesis, examining the relationship between independent financial audit and the cost of debt capital.

The third sub-question focused on prior research: What can be learned from prior research on the impact of independent audit on the providers of debt capital? Prior research agrees on the fact that the size of an audit firm can act as a proxy for the (perceived) quality of the audit. Numerous studies have investigated the impact of this audit quality on the cost of debt capital. The majority of studies conclude that audit quality is negatively associated with interest rates. This is explained by the fact that a higher audit assurance lowers the agency costs (monitoring costs) for providers of debt capital. Competition forces banks to pass along this cost reductions in the form of lower interest rates. The possible impact of auditors’ opinion on providers of capital (debt capital, private firms) has been object of research to very few studies. This might be explained by the fact that in some countries other than unqualified audit reports are uncommon. Studies on private companies in the mandatory audit environments of Spain and Finland resulted in mixed evidence.

Sub-question four concerns the research design: What research design can be used to answer the main research question? Since we can not study the signaling effect (the choice whether or not to let your financial statements be audited) of an audit in a mandatory environment, we focused on the differences between audits that might be relevant to the providers of debt capital. We have identified two aspects of an audit that might be relevant:

* the quality of the audit
* the conclusion of the auditor in the auditors’ report

To investigate these aspects, we created a research design with a cost of capital approach. The statutory audit will be relevant if the aspects of the audit that we identified have a significant association with the interest rate of debt capital. Based on the Agency Theory, the specific Dutch audit environment and evidence from prior research we developed the following hypotheses:

* *H1: Providers of debt capital of private Dutch medium-sized companies value audit quality resulting in an inverse association between auditor size and the cost of debt capital.*
* *H2: Providers of debt capital of private Dutch medium-sized companies value the auditors’ opinion resulting in a lower cost of debt capital for firms with an unqualified auditors’ report.*
* *H3: Providers of debt capital of private Dutch medium-sized companies associate an RA auditor with higher audit quality than an AA auditor, resulting in a lower cost of debt capital for firms audited by an RA auditor.*

To test these hypotheses we developed a regression equation to study the predictive capacity of auditor size (H1), auditors’ opinion (H2) and auditor type (H3) regarding the cost of capital. We added four control variables to the equation to control for firm size, equity structure, liquidity and cashflow. This resulted in the following regression equation:

INTRATEit = β0 + β1(BIG4it-1) + β2(OPINIONit-1) + β3(TYPEit-1) + β4(SIZEit) + β5(LEVERAGEit) + β6(EBITDA) + β7(CUR.RATIOit) + εit

Finally, sub-question 5 focused on the results of the regression analysis: What are the results of the empirical research of this thesis? Our definitive sample contains 133 firm-year observations of companies with interest swaps. The resulting regression model is significant and is used for testing our hypotheses. H1 is tested with test variable BIG4. The t statistic for this coefficient is insignificant. We therefore reject our first hypothesis. Our second hypothesis is tested with the variable OPINION. The t statistic for this variable is significant, but the positive direction of the variable indicates an increase of the cost of capital. This leads us to reject H2. Finally H3 is tested with test variable TYPE. The t statistic for this coefficient is insignificant as well, causing us to reject our third hypothesis.

The insignificance of the predictive capacity of auditor size (BIG4) and auditor type (TYPE) results in the conclusion that local banks do not think of audit quality as a relevant factor in debt pricing.

Our regression results indicate an unqualified audit report to result in higher costs of debt capital. Surprisingly, the providers of debt capital seem to take more assurance from a qualified audit opinion than from an unqualified opinion.

The answers to the sub-questions lead to the following final answer to our main research question: The statutory audit of financial statements is relevant to the providers of debt capital of Dutch medium sized companies. This relevance shows from the significant association between auditors’ opinion and the cost of debt capital. The ratio behind this association however remains unclear since, contrary to our expectations, an unqualified audit report predicts an increase of the interest rate.

## Limitations and suggestions for further research

This research has several limitations. In the first place our final sample only contained Dutch medium-sized companies with interest swaps. When we look at our initial sample of 373 observations and our final sample of 133 observations this indicates that our sample represents approximately 36% of Dutch medium-sized companies with external debt capital. The results of our research therefore may not be generalized to all Dutch medium-sized companies.

A second limitation comes from the fact that our regression model contains a limited number of control variables. We control for firm size, equity structure, liquidity and cashflow, but obviously there are a lot more variables in the pricing of debt capital. Adding other control variables may change the predictive capacity of the test variables.

A third limitation lies in the fact that we assumed that auditor size is a proxy for audit quality. This assumption however, is based on prior research in other audit environments than the market for Dutch medium sized companies. The assumption therefore may not be true for our sample. This would not change our results that the providers of debt capital do not differentiate between audit firms, however it would break the link with audit quality.

A final limitation comes from our method of determining the interest rate. As described in paragraph 5.2 the cost of debt capital is calculated as the interest expenses in year *t* divided by the average of cost-bearing debt capital at the beginning and the end of year *t*. These variables however are not always explicitly presented in the published financial statements. In deriving these variables, the interest rate on debt capital became subject to the authors’ interpretation of the published financial statements.

Future research might take away some of the aforementioned limitations. Additional research based on DeAngelo (1981) may test the assumption that auditor size is a proxy for audit quality for the specific Dutch context. Additional research may use another method to determine the cost of capital. Instead of calculating the interest rate from the financial statements a ‘credit rating’ could be used (following Kim et al., 2011) or bank information on specific loans (following Tsai & Hua, 2009). This would eliminate the limitations of interest swaps and of interpretation of financial statements.

Since our results on the direction of the association between auditors’ opinion and the cost of debt capital contradict with our hypothesis, further research on this topic is needed to explain our results. Qualitative research, inquiring providers of debt capital of Dutch medium-sized companies about their use of the auditor’s report, might explain the results of this research.

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# Appendix A: firm-year observations without swaps

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| NAAM | INTRATE | BIG4 | OPINION | TYPE | SIZE LN | LEVERAGE | EBITDA | CURRATIO |
| A.J. Jongeneel en Zonen Transport B.V. | 0,044121 | 0 | 1 | 1 | 16,1948 | 0,801862 | 0,30578 | 0,62 |
| A.J. Jongeneel en Zonen Transport B.V. | 0,048393 | 0 | 1 | 1 | 16,26048 | 0,778326 | 0,333293 | 0,77 |
| A.J. Jongeneel en Zonen Transport B.V. | 0,052484 | 0 | 1 | 0 | 15,95846 | 0,800879 | 0,373668 | 0,57 |
| A.J. Tieleman B.V. | 0,033503 | 0 | 1 | 1 | 16,23406 | 0,319507 | 1,947753 | 2,25 |
| A.J. Tieleman B.V. | 0,047593 | 0 | 1 | 1 | 16,18593 | 0,347465 | 1,254114 | 2,21 |
| A.J. Tieleman B.V. | 0,059397 | 0 | 1 | 1 | 16,11621 | 0,319248 | 1,537738 | 1,96 |
| A.L. van de Wetering Beheer B.V. | 0,049566 | 0 | 0 | 0 | 16,46339 | 0,89432 | 0,091802 | 0,94 |
| A.L. van de Wetering Beheer B.V. | 0,053987 | 0 | 0 | 0 | 16,40173 | 0,886105 | 0,222111 | 0,79 |
| A.L. van de Wetering Beheer B.V. | 0,059028 | 0 | 0 | 0 | 16,32017 | 0,830949 | 0,207208 | 1,25 |
| Adriaan Goede B.V. | 0,055096 | 0 | 1 | 1 | 16,42581 | 0,491171 | 0,153071 | 3,23 |
| Adriaan Goede B.V. | 0,058886 | 0 | 1 | 1 | 16,54964 | 0,514541 | 0,462651 | 1,67 |
| Adriaan Goede B.V. | 0,089638 | 0 | 1 | 1 | 16,57391 | 0,48836 | 0,863112 | 1,62 |
| Amsterdam Village Holding B.V. | 0,031614 | 0 | 0 | 1 | 16,359 | 0,918891 | 0,149714 | 0,34 |
| Amsterdam Village Holding B.V. | 0,033896 | 0 | 0 | 1 | 16,5257 | 0,980435 | 0,259068 | 0,48 |
| Asfalt Productie Rotterdam Rijnmond (APRR) B.V. | 0,012415 | 0 | 1 | 1 | 16,41297 | 0,746332 | 0,478622 | 0,88 |
| Asfalt Productie Rotterdam Rijnmond (APRR) B.V. | 0,020653 | 0 | 1 | 1 | 16,56295 | 0,129468 | 0,545492 | 1,15 |
| Asfalt Productie Rotterdam Rijnmond (APRR) B.V. | 0,022433 | 0 | 1 | 1 | 16,62068 | 0,749461 | 0,440001 | 1,08 |
| Beheermaatschappij Cuppen B.V. | 0,040886 | 1 | 1 | 1 | 15,69419 | 0,685504 | 0,38841 | 0,65 |
| Beheermaatschappij Cuppen B.V. | 0,046468 | 1 | 1 | 1 | 15,7041 | 0,714035 | 0,362784 | 0,76 |
| Beheermaatschappij Cuppen B.V. | 0,057963 | 1 | 1 | 1 | 15,70608 | 0,750793 | 0,396651 | 0,68 |
| Betonmortel Nederland B.V. | 0,059374 | 1 | 1 | 1 | 16,5655 | 0,661926 | 0,413937 | 0,84 |
| Bouter B.V. | 0,062839 | 1 | 1 | 1 | 15,82329 | 0,697978 | 0,471293 | 1,35 |
| Bouter B.V. | 0,065515 | 1 | 1 | 1 | 15,69025 | 0,67856 | 0,140892 | 1,59 |
| Bouter B.V. | 0,066182 | 1 | 1 | 1 | 15,83541 | 0,718226 | 0,439498 | 1,5 |
| Breewel Holding B.V. | 0,055057 | 0 | 1 | 0 | 16,07066 | 0,667733 | 0,672117 | 1,41 |
| Breewel Holding B.V. | 0,068675 | 0 | 1 | 0 | 16,18025 | 0,661723 | 0,447773 | 1,36 |
| Breewel Holding B.V. | 0,071492 | 0 | 1 | 0 | 16,26056 | 0,644111 | 0,719877 | 1,29 |
| Carrosseriefabriek Heiwo B.V. | 0,043394 | 1 | 1 | 1 | 15,55067 | 0,576064 | 0,336091 | 2,58 |
| Carrosseriefabriek Heiwo B.V. | 0,058598 | 1 | 1 | 1 | 15,74632 | 0,53767 | 0,597188 | 2,65 |
| Carrosseriefabriek Heiwo B.V. | 0,067684 | 1 | 1 | 1 | 15,66071 | 0,544272 | 0,757883 | 2,69 |
| CaterTech B.V. | 0,054821 | 1 | 1 | 1 | 16,30181 | 0,78648 | 0,063789 | 1,16 |
| CaterTech B.V. | 0,056664 | 1 | 1 | 1 | 16,3782 | 0,774954 | 0,207528 | 1,26 |
| CaterTech B.V. | 0,057365 | 1 | 1 | 1 | 16,33734 | 0,766024 | 0,294909 | 1,17 |
| Comaasing B.V. | 0,042554 | 0 | 1 | 0 | 16,05381 | 0,782227 | 0,296537 | 1,1 |
| Comaasing B.V. | 0,042586 | 0 | 1 | 0 | 15,92106 | 0,785212 | 0,305216 | 1,17 |
| Comaasing B.V. | 0,061611 | 0 | 1 | 0 | 15,77189 | 0,713262 | 0,584604 | 1,26 |
| Combex Holding B.V. | 0,053232 | 1 | 1 | 1 | 16,20657 | 0,679432 | 0,205425 | 0,77 |
| Combex Holding B.V. | 0,053693 | 1 | 1 | 1 | 16,12832 | 0,670961 | 0,201052 | 0,68 |
| DailyCool-Warehousing B.V. | 0,052948 | 0 | 1 | 1 | 15,33044 | 0,891707 | 0,467179 | 0,77 |
| DailyCool-Warehousing B.V. | 0,054016 | 0 | 1 | 1 | 15,33969 | 0,835722 | 0,557865 | 0,9 |
| DailyCool-Warehousing B.V. | 0,055378 | 0 | 1 | 1 | 15,2052 | 0,928255 | 0,416933 | 0,7 |
| NAAM | INTRATE | BIG4 | OPINION | TYPE | SIZE LN | LEVERAGE | EBITDA | CURRATIO |
| Data B. Mailservice Holding B.V. | 0,01611 | 0 | 1 | 1 | 15,95345 | 0,584588 | 0,402119 | 2,7 |
| Data B. Mailservice Holding B.V. | 0,033004 | 0 | 1 | 1 | 15,9205 | 0,500221 | 0,488757 | 4,4 |
| Data B. Mailservice Holding B.V. | 0,03939 | 0 | 1 | 1 | 15,93174 | 0,544623 | 0,468984 | 3,27 |
| De Kroon Beheer B.V. | 0,061821 | 0 | 1 | 1 | 15,35102 | 0,925512 | 0,209806 | 0,88 |
| De Kroon Beheer B.V. | 0,071723 | 0 | 1 | 1 | 15,38568 | 0,924418 | 0,285914 | 0,84 |
| De Kroon Beheer B.V. | 0,084152 | 0 | 1 | 1 | 15,36943 | 0,956555 | 0,12833 | 0,74 |
| De Verwenbakker B.V. | 0,061796 | 1 | 1 | 1 | 16,15446 | 1,038841 | 0,285438 | 0,37 |
| De Verwenbakker B.V. | 0,06285 | 1 | 1 | 1 | 16,13875 | 1,063912 | 0,292778 | 0,28 |
| De Verwenbakker B.V. | 0,063063 | 1 | 1 | 1 | 16,13264 | 1,100077 | 0,20847 | 0,33 |
| De Vreede Vastgoed B.V. | 0,043473 | 0 | 0 | 1 | 16,47009 | 0,732416 | 0,308874 | 1,66 |
| De Vreede Vastgoed B.V. | 0,044203 | 0 | 0 | 1 | 16,54615 | 0,769252 | 0,465046 | 1,62 |
| De Vreede Vastgoed B.V. | 0,052173 | 0 | 1 | 1 | 16,49867 | 0,581488 | 0,758332 | 2,41 |
| De Weerdt Beheer B.V. | 0,063811 | 0 | 1 | 1 | 15,92331 | 0,390076 | 3,955478 | 2,22 |
| De Weerdt Beheer B.V. | 0,065177 | 0 | 1 | 1 | 16,07749 | 0,392207 | 3,110732 | 2,09 |
| De Weerdt Beheer B.V. | 0,074792 | 0 | 1 | 1 | 15,61699 | 0,398269 | 2,018935 | 2,33 |
| Dijkstra Vereenigde Bedrijven B.V. | 0,054441 | 0 | 1 | 0 | 16,50089 | 0,859598 | 0,154793 | 1,36 |
| Dijkstra Vereenigde Bedrijven B.V. | 0,070245 | 0 | 1 | 0 | 16,24147 | 0,718942 | 0,161944 | 1,62 |
| Dijkstra Vereenigde Bedrijven B.V. | 0,075959 | 0 | 1 | 0 | 16,4352 | 0,777056 | 0,158642 | 1,29 |
| Doornenbal Holding B.V. | 0,058915 | 0 | 1 | 1 | 16,1413 | 0,778844 | 0,175754 | 0,98 |
| Doornenbal Holding B.V. | 0,06086 | 0 | 0 | 1 | 16,08611 | 0,764334 | 0,239305 | 1,04 |
| Doornenbal Holding B.V. | 0,066014 | 0 | 0 | 1 | 16,09205 | 0,768672 | 0,221086 | 1 |
| E & M Udenhout B.V. | 0,055599 | 0 | 1 | 1 | 16,2479 | 0,740657 | 0,309553 | 0,85 |
| E & M Udenhout B.V. | 0,060724 | 0 | 1 | 1 | 16,23286 | 0,771227 | 0,21907 | 1,05 |
| E & M Udenhout B.V. | 0,064493 | 0 | 1 | 1 | 16,17743 | 0,76051 | 0,265165 | 1,12 |
| Eijerkamp Holding B.V. | 0,042566 | 0 | 1 | 1 | 16,5277 | 0,784743 | 0,320849 | 1,18 |
| Eijerkamp Holding B.V. | 0,055534 | 0 | 1 | 1 | 16,65365 | 0,812609 | 0,007719 | 1,21 |
| Eijerkamp Holding B.V. | 0,059272 | 0 | 1 | 1 | 16,47247 | 0,806546 | 0,183927 | 1,07 |
| Eijffinger Beheer B.V. | 0,047135 | 0 | 1 | 1 | 16,46524 | 0,556109 | 0,832621 | 1,59 |
| Eijffinger Beheer B.V. | 0,047855 | 0 | 1 | 1 | 16,45304 | 0,531916 | 0,550718 | 1,86 |
| Eijffinger Beheer B.V. | 0,052262 | 0 | 1 | 1 | 16,48928 | 0,459283 | 0,754897 | 2,68 |
| Embregts Autodiensten B.V. | 0,044606 | 0 | 0 | 1 | 16,1725 | 0,787747 | 0,073033 | 0,56 |
| Embregts Autodiensten B.V. | 0,048253 | 0 | 0 | 1 | 16,12476 | 0,783262 | 0,158952 | 0,51 |
| Embregts Autodiensten B.V. | 0,050232 | 0 | 0 | 1 | 16,18546 | 0,754781 | 0,107657 | 0,74 |
| Esdeka Beheer B.V. | 0,025388 | 0 | 1 | 1 | 16,12112 | 0,681291 | 0,394132 | 0,5 |
| Esdeka Beheer B.V. | 0,035173 | 0 | 1 | 1 | 16,09403 | 0,481768 | 1,651231 | 0,94 |
| Esdeka Beheer B.V. | 0,039136 | 0 | 1 | 1 | 16,02664 | 0,58794 | 0,42205 | 1,82 |
| Estron Beheer B.V. | 0,055386 | 1 | 1 | 1 | 16,17846 | 0,886297 | 0,069614 | 0,93 |
| Estron Beheer B.V. | 0,062633 | 1 | 1 | 1 | 16,05416 | 0,898054 | 0,296945 | 0,87 |
| Estron Beheer B.V. | 0,06503 | 1 | 1 | 1 | 16,04272 | 0,845888 | 0,266419 | 1,03 |
| Famar Nederland B.V. | 0,017555 | 1 | 1 | 1 | 16,56421 | 0,603123 | -0,06536 | 1,15 |
| Famar Nederland B.V. | 0,02909 | 1 | 1 | 1 | 16,58473 | 0,590122 | 0,213997 | 1,22 |
| Famar Nederland B.V. | 0,04148 | 1 | 1 | 1 | 16,57799 | 0,66388 | -0,21604 | 0,93 |
| G & F Holding B.V. | 0,049397 | 0 | 1 | 1 | 16,26476 | 0,450709 | 0,363511 | 1,89 |
| G & F Holding B.V. | 0,052643 | 0 | 1 | 1 | 16,37775 | 0,535617 | -0,16217 | 1,12 |
| NAAM | INTRATE | BIG4 | OPINION | TYPE | SIZE LN | LEVERAGE | EBITDA | CURRATIO |
| G & F Holding B.V. | 0,058994 | 0 | 1 | 1 | 16,31883 | 0,575378 | 0,040169 | 1,05 |
| G.P. Roos Beheer B.V. | 0,055401 | 0 | 1 | 1 | 16,28752 | 0,704332 | 0,403957 | 1,04 |
| G.P. Roos Beheer B.V. | 0,061715 | 0 | 1 | 1 | 16,4078 | 0,746413 | 0,378737 | 0,93 |
| Gebr. Burghouwt Participatie B.V. | 0,033122 | 0 | 0 | 1 | 16,5214 | 0,334975 | 0,182032 | 2,16 |
| Gebr. Burghouwt Participatie B.V. | 0,040646 | 0 | 0 | 1 | 16,57015 | 0,288013 | 0,685237 | 3,66 |
| Gebr. Burghouwt Participatie B.V. | 0,063958 | 0 | 0 | 1 | 16,59183 | 0,339366 | 0,582554 | 2,84 |
| Gerco Brandpreventie B.V. | 0,048703 | 1 | 1 | 1 | 15,80189 | 0,458534 | 1,319381 | 2,88 |
| Goes Aalsmeer B.V. | 0,040575 | 0 | 0 | 1 | 16,07017 | 0,737009 | 0,215856 | 1,13 |
| Goes Aalsmeer B.V. | 0,053847 | 0 | 1 | 1 | 16,13327 | 0,72967 | 0,652794 | 1,05 |
| Goes Aalsmeer B.V. | 0,057278 | 0 | 1 | 1 | 16,21818 | 0,738543 | 0,438574 | 1 |
| Go-Tan B.V. | 0,058888 | 0 | 1 | 1 | 15,79896 | 0,671679 | 0,402886 | 1,37 |
| Go-Tan B.V. | 0,062441 | 0 | 1 | 1 | 15,7817 | 0,646849 | 0,374402 | 1,48 |
| Go-Tan B.V. | 0,065493 | 1 | 1 | 1 | 15,67512 | 0,629348 | 0,037206 | 1,52 |
| H.B. Wijlens Beheer B.V. | 0,06203 | 0 | 0 | 1 | 16,08577 | 0,546101 | 0,217375 | 1,77 |
| H.B. Wijlens Beheer B.V. | 0,063055 | 0 | 0 | 1 | 16,04961 | 0,527201 | 0,635239 | 1,89 |
| H.B. Wijlens Beheer B.V. | 0,089801 | 0 | 0 | 1 | 15,98979 | 0,516977 | 1,387747 | 2,27 |
| H.N. Post en Zonen Holding B.V. | 0,04011 | 0 | 1 | 1 | 16,04252 | 0,788231 | 0,218445 | 1,24 |
| H.N. Post en Zonen Holding B.V. | 0,05094 | 0 | 1 | 1 | 15,97566 | 0,74019 | 0,551863 | 1,53 |
| H.N. Post en Zonen Holding B.V. | 0,052479 | 0 | 1 | 1 | 16,24861 | 0,95938 | 0,186852 | 1,29 |
| Heeren Beheermaatschappij B.V. | 0,04441 | 0 | 1 | 1 | 16,26546 | 0,74362 | 0,2185 | 0,39 |
| Heeren Beheermaatschappij B.V. | 0,046978 | 0 | 1 | 1 | 16,28565 | 0,689217 | 0,377397 | 0,54 |
| Heeren Beheermaatschappij B.V. | 0,051586 | 0 | 1 | 1 | 16,42499 | 0,728394 | 0,358821 | 0,35 |
| Hoffmann Bodemtechnieken B.V. | 0,026745 | 0 | 0 | 1 | 16,55636 | 0,695105 | 0,053243 | 1,1 |
| Hoffmann Bodemtechnieken B.V. | 0,029494 | 0 | 0 | 1 | 16,50466 | 0,701101 | 0,082974 | 1,06 |
| Hoffmann Bodemtechnieken B.V. | 0,041408 | 0 | 0 | 1 | 16,52749 | 0,643375 | 0,052734 | 1,18 |
| Horecaexploitatiemaatschappij Mebo B.V. | 0,065433 | 0 | 0 | 1 | 15,79466 | 0,824482 | 0,119455 | 0,83 |
| Horecaexploitatiemaatschappij Mebo B.V. | 0,067471 | 0 | 0 | 1 | 15,58085 | 0,800091 | 0,274304 | 0,92 |
| Horecaexploitatiemaatschappij Mebo B.V. | 0,071761 | 0 | 0 | 1 | 16,00471 | 0,749493 | 0,019764 | 0,85 |
| Internationaal Transportbedrijf G. Snel B.V. | 0,031876 | 0 | 1 | 1 | 15,80633 | 0,598515 | 0,773949 | 1,72 |
| Internationaal Transportbedrijf G. Snel B.V. | 0,043813 | 0 | 1 | 1 | 15,89655 | 0,71062 | 0,38839 | 1,62 |
| Internationaal Transportbedrijf P. Daemen B.V. | 0,034816 | 0 | 1 | 1 | 15,53655 | 0,765451 | 0,171602 | 1,29 |
| Internationaal Transportbedrijf P. Daemen B.V. | 0,03487 | 0 | 1 | 1 | 15,61148 | 0,760119 | 0,182411 | 1,3 |
| Internationaal Transportbedrijf P. Daemen B.V. | 0,027207 | 0 | 1 | 1 | 15,23446 | 0,671486 | -0,01169 | 1,48 |
| IQ Investments B.V. | 0,091592 | 0 | 1 | 1 | 16,20521 | 0,473908 | 0,355854 | 2,77 |
| IQ Investments B.V. | 0,095524 | 0 | 1 | 1 | 16,1611 | 0,360607 | 1,013712 | 3,58 |
| IQ Investments B.V. | 0,103418 | 0 | 1 | 1 | 16,37233 | 0,409286 | 0,515482 | 3,1 |
| J.H. Oenema Beheer B.V. | 0,051835 | 0 | 0 | 1 | 15,93433 | 0,698838 | 0,387415 | 0,54 |
| J.H. Oenema Beheer B.V. | 0,05479 | 0 | 0 | 1 | 15,87766 | 0,682018 | 0,067981 | 0,58 |
| J.H. Oenema Beheer B.V. | 0,060805 | 0 | 0 | 1 | 15,90516 | 0,74865 | 0,203879 | 0,59 |
| Jan Karseboom Holding B.V. | 0,045851 | 0 | 0 | 0 | 16,52784 | 0,564433 | 0,309528 | 2,05 |
| Jan Karseboom Holding B.V. | 0,047916 | 0 | 0 | 0 | 16,61638 | 0,547149 | 0,314026 | 1,99 |
| Jan Karseboom Holding B.V. | 0,054604 | 0 | 0 | 0 | 16,6042 | 0,498783 | 0,277962 | 2,36 |
| NAAM | INTRATE | BIG4 | OPINION | TYPE | SIZE LN | LEVERAGE | EBITDA | CURRATIO |
| JATMAR Holding B.V. | 0,062096 | 0 | 1 | 1 | 15,82084 | 0,697004 | 0,312367 | 1,53 |
| JATMAR Holding B.V. | 0,080057 | 0 | 1 | 1 | 15,87525 | 0,729445 | 0,52103 | 0,87 |
| JATMAR Holding B.V. | 0,08066 | 0 | 1 | 1 | 15,86289 | 0,772889 | 0,272436 | 0,94 |
| Jerolybi Holding B.V. | 0,024823 | 0 | 1 | 1 | 16,00881 | 0,59441 | 0,235908 | 1,67 |
| Jerolybi Holding B.V. | 0,026529 | 0 | 1 | 1 | 15,99159 | 0,611074 | 0,320688 | 1,56 |
| Jerolybi Holding B.V. | 0,032277 | 0 | 1 | 1 | 15,88662 | 0,608656 | 0,430386 | 1,23 |
| Kinkelder B.V. | 0,021544 | 1 | 1 | 1 | 16,30229 | 0,339422 | 1,869181 | 2,69 |
| Kinkelder B.V. | 0,033624 | 1 | 1 | 1 | 16,60589 | 0,48805 | 0,815152 | 1,86 |
| Kinkelder B.V. | 0,051932 | 1 | 1 | 1 | 16,08489 | 0,41795 | -0,37662 | 2,11 |
| Kobout B.V. | 0,039363 | 0 | 1 | 1 | 15,91096 | 0,484212 | 0,227543 | 2,54 |
| Kobout B.V. | 0,049616 | 0 | 1 | 1 | 16,05069 | 0,531437 | 0,243849 | 2,17 |
| Kobout B.V. | 0,056275 | 0 | 1 | 1 | 16,19367 | 0,54024 | 0,332543 | 2,1 |
| Koninklijke Wöhrmann B.V. | 0,032139 | 1 | 1 | 1 | 16,53324 | 0,678174 | 0,449973 | 2,39 |
| Koninklijke Wöhrmann B.V. | 0,051456 | 1 | 1 | 1 | 16,52879 | 0,742896 | 0,104429 | 1,83 |
| Koninklijke Wöhrmann B.V. | 0,060494 | 1 | 1 | 1 | 16,69143 | 0,709024 | 0,30824 | 1,61 |
| L. Manders Holding B.V. | 0,050595 | 0 | 1 | 1 | 16,25061 | 0,608003 | -0,05308 | 1,56 |
| L. Manders Holding B.V. | 0,07042 | 0 | 1 | 1 | 16,11642 | 0,574941 | 0,603357 | 1,6 |
| L. Manders Holding B.V. | 0,071056 | 0 | 1 | 1 | 16,06512 | 0,613303 | 0,33357 | 1,69 |
| Megro Beheer B.V. | 0,048001 | 1 | 1 | 1 | 15,88518 | 0,632737 | 0,53597 | 0,88 |
| Megro Beheer B.V. | 0,049112 | 1 | 1 | 1 | 15,87112 | 0,646917 | 0,41304 | 0,96 |
| Megro Beheer B.V. | 0,053427 | 1 | 1 | 1 | 15,93433 | 0,698673 | 0,235852 | 0,78 |
| Mens-Zeist Beheer B.V. | 0,03632 | 1 | 1 | 1 | 16,19154 | 0,617916 | 0,41457 | 2,57 |
| Mens-Zeist Beheer B.V. | 0,041762 | 1 | 1 | 1 | 16,16144 | 0,639103 | 0,350491 | 2,07 |
| Mens-Zeist Beheer B.V. | 0,043929 | 1 | 1 | 1 | 16,11092 | 0,586541 | 0,453152 | 2,8 |
| Mens-Zeist Beheer II B.V. | 0,035874 | 1 | 1 | 1 | 16,17634 | 0,651253 | 0,413327 | 2,31 |
| Mens-Zeist Beheer II B.V. | 0,03947 | 1 | 1 | 1 | 16,2711 | 0,680066 | 0,349743 | 1,73 |
| Mens-Zeist Beheer II B.V. | 0,043105 | 1 | 1 | 1 | 16,09325 | 0,616674 | 0,453059 | 2,47 |
| Netimex B.V. | 0,029713 | 0 | 1 | 0 | 16,59857 | 0,616311 | 0,374669 | 1,11 |
| Netimex B.V. | 0,060516 | 0 | 1 | 0 | 16,56574 | 0,684518 | 0,431854 | 1,05 |
| Netimex B.V. | 0,073196 | 0 | 1 | 0 | 16,65403 | 0,666921 | 0,487092 | 1,1 |
| Nijl Holding B.V. | 0,038503 | 0 | 1 | 1 | 15,81573 | 1,022079 | -0,08824 | 0,74 |
| Nijl Holding B.V. | 0,038728 | 0 | 1 | 1 | 15,6809 | 0,923031 | 0,226709 | 0,76 |
| Nijl Holding B.V. | 0,051414 | 0 | 1 | 1 | 15,6434 | 1,090258 | 0,108684 | 0,76 |
| OSN Beheer B.V. | 0,04221 | 0 | 0 | 1 | 15,65976 | 1,344193 | -0,11006 | 0,59 |
| OSN Beheer B.V. | 0,048256 | 0 | 0 | 1 | 15,6361 | 1,438557 | 0,032062 | 0,6 |
| OSN Beheer B.V. | 0,06193 | 0 | 0 | 1 | 15,98758 | 1,399271 | 0,054125 | 0,51 |
| P.K. Beheer B.V. | 0,019103 | 1 | 1 | 1 | 16,31443 | 0,367339 | 4,327469 | 2,13 |
| P.K. Beheer B.V. | 0,019853 | 1 | 1 | 1 | 16,20004 | 0,365957 | 1,296478 | 1,82 |
| P.K. Beheer B.V. | 0,035264 | 1 | 1 | 1 | 16,3277 | 0,397317 | 0,581472 | 1,51 |
| PB Vastgoed B.V. | 0,047723 | 0 | 1 | 1 | 15,59911 | 0,8857 | 0,03194 | 1,03 |
| PB Vastgoed B.V. | 0,054899 | 0 | 1 | 1 | 15,55211 | 0,878638 | 0,162027 | 1,1 |
| PB Vastgoed B.V. | 0,055241 | 0 | 1 | 1 | 15,51112 | 0,882175 | 0,077903 | 1,02 |
| Pharminvest Groep B.V. | 0,047014 | 0 | 1 | 1 | 16,42971 | 1,306769 | 0,188936 | 0,74 |
| Pharminvest Groep B.V. | 0,047242 | 0 | 0 | 1 | 16,15586 | 1,667002 | 0,042859 | 0,65 |
| NAAM | INTRATE | BIG4 | OPINION | TYPE | SIZE LN | LEVERAGE | EBITDA | CURRATIO |
| Pharminvest Groep B.V. | 0,047522 | 0 | 1 | 1 | 16,36916 | 1,402867 | 0,078603 | 0,72 |
| R. Breijer Holding B.V. | 0,027355 | 0 | 1 | 1 | 16,96033 | 0,579314 | 0,297454 | 1,43 |
| R. Breijer Holding B.V. | 0,034487 | 0 | 1 | 1 | 16,62089 | 0,735584 | -0,48592 | 1,16 |
| R. Breijer Holding B.V. | 0,088424 | 0 | 1 | 1 | 17,14782 | 0,666635 | 0,464484 | 1,26 |
| Rodepa Holding B.V. | 0,067294 | 0 | 0 | 1 | 16,35155 | 0,680102 | 0,775023 | 1,22 |
| Rodepa Holding B.V. | 0,07773 | 0 | 0 | 1 | 16,29545 | 0,731986 | 0,526538 | 1,04 |
| Rollepaal Holding B.V. | 0,06212 | 1 | 1 | 1 | 16,35562 | 0,994874 | 0,052417 | 1,77 |
| Rollepaal Holding B.V. | 0,063332 | 1 | 1 | 1 | 16,46537 | 0,659695 | 0,112702 | 1,43 |
| Rollepaal Holding B.V. | 0,094236 | 1 | 1 | 1 | 16,58497 | 0,546583 | 0,923381 | 1,47 |
| Ropa Beheer B.V. | 0,036974 | 0 | 1 | 0 | 16,56109 | 0,641625 | 0,394344 | 1,5 |
| Ropa Beheer B.V. | 0,041932 | 0 | 1 | 1 | 16,47799 | 0,664064 | 2,004844 | 1,42 |
| Ropa Beheer B.V. | 0,047646 | 0 | 1 | 0 | 16,48635 | 0,624298 | 0,542426 | 1,57 |
| ROVA Holding B.V. | 0,053556 | 0 | 1 | 1 | 16,30977 | 0,685789 | 0,201691 | 1,67 |
| ROVA Holding B.V. | 0,053667 | 0 | 1 | 1 | 16,27527 | 0,621281 | 0,314346 | 2,42 |
| ROVA Holding B.V. | 0,054403 | 0 | 1 | 1 | 16,31716 | 0,69723 | 0,13872 | 1,59 |
| Samco Aircraft Maintenance B.V. | 0,048538 | 0 | 1 | 1 | 15,86734 | 0,744505 | 0,416911 | 1,38 |
| Samco Aircraft Maintenance B.V. | 0,052657 | 0 | 1 | 1 | 15,79606 | 0,727451 | 0,416554 | 1,4 |
| Samco Aircraft Maintenance B.V. | 0,066733 | 0 | 1 | 1 | 15,92067 | 0,699482 | 0,313347 | 1,42 |
| Schouten Blokker B.V. | 0,049853 | 0 | 1 | 1 | 16,63588 | 0,436692 | 0,588635 | 1,62 |
| Schouten Blokker B.V. | 0,052825 | 0 | 1 | 1 | 16,56315 | 0,451926 | 0,324228 | 1,69 |
| Schouten Blokker B.V. | 0,062477 | 0 | 1 | 1 | 16,62148 | 0,495017 | 0,176309 | 1,53 |
| Square 25 B.V. | 0,027219 | 1 | 1 | 1 | 16,65177 | 0,536938 | 1,07706 | 1,83 |
| Square 25 B.V. | 0,031377 | 1 | 1 | 1 | 16,62927 | 0,522773 | 0,953458 | 2,04 |
| Square 25 B.V. | 0,058669 | 1 | 1 | 1 | 16,64893 | 0,516205 | 1,433187 | 1,93 |
| T. de Bruine Beheer B.V. | 0,026845 | 1 | 1 | 1 | 16,57955 | 0,635321 | -0,0622 | 1,44 |
| T. de Bruine Beheer B.V. | 0,041554 | 1 | 1 | 1 | 16,52058 | 0,57852 | 0,510006 | 1,55 |
| T. de Bruine Beheer B.V. | 0,042247 | 1 | 1 | 1 | 16,53718 | 0,597457 | 0,376921 | 1,03 |
| Tjoa Holding B.V. | 0,034376 | 0 | 1 | 1 | 15,45687 | 0,80628 | 0,049715 | 0,76 |
| Tjoa Holding B.V. | 0,044653 | 0 | 1 | 1 | 16,22741 | 0,913622 | 0,24578 | 0,96 |
| Tjoa Holding B.V. | 0,060892 | 0 | 1 | 1 | 15,40451 | 0,748883 | 0,464786 | 0,99 |
| Tolsma Beheer Emmeloord B.V. | 0,046534 | 0 | 0 | 1 | 16,47435 | 0,649617 | 0,601019 | 2,14 |
| Tolsma Beheer Emmeloord B.V. | 0,047564 | 0 | 0 | 1 | 16,65581 | 0,547356 | 1,271161 | 2,66 |
| Tolsma Beheer Emmeloord B.V. | 0,04813 | 0 | 0 | 1 | 16,33403 | 0,643915 | 0,250988 | 3,55 |
| Ulamo Holding B.V. | 0,049954 | 0 | 1 | 1 | 16,31718 | 0,838494 | 0,292013 | 1,06 |
| Ulamo Holding B.V. | 0,053002 | 0 | 1 | 1 | 16,40587 | 0,834957 | 0,224715 | 0,99 |
| Ulamo Holding B.V. | 0,054988 | 0 | 1 | 1 | 16,44611 | 0,86339 | 0,162941 | 0,94 |
| UniCom Oost B.V. | 0,060875 | 0 | 0 | 1 | 15,52443 | 0,763636 | 0,277962 | 0,91 |
| UniCom Oost B.V. | 0,06484 | 0 | 0 | 1 | 15,50922 | 0,830958 | 0,164598 | 0,83 |
| UniCom Oost B.V. | 0,074073 | 0 | 0 | 1 | 15,3303 | 0,797446 | 0,464899 | 0,76 |
| Valid Holding B.V. | 0,013029 | 0 | 1 | 1 | 16,08509 | 0,728549 | 0,172887 | 1,5 |
| Valid Holding B.V. | 0,019084 | 0 | 1 | 1 | 16,20547 | 0,690934 | 0,82604 | 1,57 |
| Valid Holding B.V. | 0,022054 | 0 | 1 | 1 | 16,05457 | 0,727041 | -0,49696 | 1,72 |
| Van Boekel Zeeland B.V. | 0,120454 | 1 | 1 | 1 | 16,10148 | 0,982412 | -0,56562 | 0,9 |
| Van Boekel Zeeland B.V. | 0,125241 | 1 | 1 | 1 | 16,0836 | 0,896525 | 0,574638 | 0,82 |
| NAAM | INTRATE | BIG4 | OPINION | TYPE | SIZE LN | LEVERAGE | EBITDA | CURRATIO |
| Van Boekel Zeeland B.V. | 0,143886 | 1 | 1 | 1 | 16,04397 | 0,950041 | 0,318001 | 0,68 |
| Van de Graaf en Meeusen Holding B.V. | 0,025546 | 0 | 0 | 1 | 16,04747 | 0,723945 | 0,06901 | 0,89 |
| Van de Graaf en Meeusen Holding B.V. | 0,032226 | 0 | 0 | 1 | 16,07573 | 0,710164 | 0,189018 | 0,66 |
| Van de Graaf en Meeusen Holding B.V. | 0,043392 | 0 | 0 | 1 | 15,98817 | 0,713457 | 0,176589 | 0,61 |
| Van Spreuwel Beheer B.V. | 0,045968 | 0 | 0 | 0 | 16,27324 | 0,834804 | -0,00234 | 0,55 |
| Van Spreuwel Beheer B.V. | 0,052759 | 0 | 0 | 0 | 16,27313 | 0,741122 | 0,163793 | 1,01 |
| Van Spreuwel Beheer B.V. | 0,05423 | 0 | 0 | 0 | 16,26251 | 0,724657 | 0,171324 | 1,11 |
| Van Stigt B.V. | 0,049445 | 0 | 1 | 1 | 16,20163 | 0,443973 | 0,367127 | 2,93 |
| Van Stigt B.V. | 0,061083 | 0 | 1 | 1 | 16,26141 | 0,459368 | 0,426523 | 2,75 |
| Van Stigt B.V. | 0,101196 | 0 | 1 | 1 | 16,37612 | 0,54814 | 0,632063 | 2,05 |
| Verhagen B.V. | 0,048865 | 0 | 1 | 1 | 16,05022 | 0,716311 | 0,447041 | 0,61 |
| Verhagen B.V. | 0,053797 | 0 | 1 | 1 | 15,76516 | 0,578497 | 1,195694 | 0,5 |
| Verhagen B.V. | 0,055095 | 0 | 1 | 1 | 15,91705 | 0,637896 | 0,703605 | 0,38 |
| Verzinkerij van Aert B.V. | 0,045822 | 0 | 1 | 1 | 16,14152 | 0,355274 | 0,418695 | 2,24 |
| Verzinkerij van Aert B.V. | 0,053058 | 0 | 1 | 1 | 16,25082 | 0,461932 | -0,06175 | 1,22 |
| Verzinkerij van Aert B.V. | 0,059524 | 0 | 1 | 1 | 16,20761 | 0,493533 | 0,181116 | 1,22 |
| Vos Groep B.V. | 0,042364 | 0 | 1 | 1 | 15,57673 | 0,519999 | 0,433948 | 2,01 |
| Vos Groep B.V. | 0,046699 | 0 | 1 | 1 | 15,49019 | 0,6855 | 0,49468 | 1,39 |
| Vos Groep B.V. | 0,05535 | 0 | 1 | 1 | 15,58563 | 0,576173 | 0,701317 | 1,78 |
| Vos Transport B.V. | 0,029255 | 0 | 1 | 1 | 16,43744 | 0,659425 | 0,655221 | 1,8 |
| Vos Transport B.V. | 0,035006 | 0 | 1 | 1 | 15,94142 | 0,731086 | 0,482608 | 1,41 |
| Vos Transport B.V. | 0,037161 | 0 | 1 | 1 | 16,07136 | 0,661271 | 0,790383 | 1,44 |
| Wemmers Tanktransport B.V. | 0,034385 | 0 | 1 | 1 | 15,82207 | 0,484114 | 0,280916 | 0,85 |
| Wemmers Tanktransport B.V. | 0,038782 | 0 | 1 | 1 | 15,83748 | 0,459316 | 0,287141 | 0,96 |
| Wemmers Tanktransport B.V. | 0,053368 | 0 | 1 | 1 | 15,93533 | 0,516586 | 0,373656 | 1,22 |
|  |  |  |  |  |  |  |  |  |
| TOTAL: 240 firm-year observations |  |  |  |  |  |  |  |  |

# Appendix B: firm-year observations with swaps

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| NAAM | INTRATE | BIG4 | OPINION | TYPE | SIZE LN | LEVERAGE | EBITDA | CURRATIO |
| AVK Plastics B.V. | 0,0446063 | 1 | 1 | 1 | 16,232209 | 0,674187 | 0,162244 | 1,09 |
| AVK Plastics B.V. | 0,0406574 | 1 | 1 | 1 | 16,500474 | 0,655701 | 0,221249 | 1,36 |
| AVK Plastics B.V. | 0,0417161 | 1 | 1 | 1 | 16,591182 | 0,635193 | 0,318633 | 1,2 |
| B.A.C. Holding B.V. | 0,0642952 | 1 | 1 | 1 | 16,678078 | 0,794968 | 0,327768 | 0,51 |
| B.A.C. Holding B.V. | 0,0560361 | 1 | 1 | 1 | 16,672798 | 0,750849 | 0,407515 | 0,61 |
| B.A.C. Holding B.V. | 0,0536888 | 1 | 1 | 1 | 16,633702 | 0,813922 | 0,469996 | 0,7 |
| B.V. Filtropa | 0,0585965 | 1 | 1 | 1 | 16,013735 | 0,438339 | 0,125000 | 4,86 |
| B.V. Filtropa | 0,0522034 | 1 | 1 | 1 | 16,037319 | 0,448829 | 0,199655 | 4,46 |
| B.V. Filtropa | 0,0531148 | 1 | 1 | 1 | 16,063534 | 0,477347 | 0,293000 | 3,68 |
| Beheermaatschappij Visser Assen B.V. | 0,0626634 | 0 | 1 | 1 | 16,315718 | 0,529808 | 0,667523 | 3,58 |
| Beheermaatschappij Visser Assen B.V. | 0,0650013 | 0 | 1 | 1 | 16,290674 | 0,492429 | 0,742823 | 3,92 |
| Beheermaatschappij Visser Assen B.V. | 0,0662586 | 0 | 1 | 1 | 16,478798 | 0,479882 | 0,937326 | 2,92 |
| Bezemer Group B.V. | 0,0446565 | 0 | 0 | 1 | 16,471759 | 0,737464 | 1,528427 | 0,8 |
| Bezemer Group B.V. | 0,0443474 | 0 | 0 | 1 | 16,598702 | 0,734079 | 1,718955 | 0,77 |
| Bezemer Group B.V. | 0,0463518 | 0 | 1 | 1 | 16,555734 | 0,701796 | 2,553649 | 0,9 |
| Bor Transport Beheer B.V. | 0,0411580 | 0 | 1 | 1 | 15,803899 | 0,554165 | 0,154420 | 1,61 |
| Bor Transport Beheer B.V. | 0,0428755 | 0 | 1 | 1 | 15,835899 | 0,566051 | 0,269819 | 1,68 |
| Bor Transport Beheer B.V. | 0,0407035 | 0 | 1 | 1 | 15,829204 | 0,558052 | 0,328364 | 1,41 |
| Cirex B.V. | 0,0494560 | 0 | 1 | 1 | 16,257508 | 0,747518 | -0,216236 | 1,32 |
| Cirex B.V. | 0,0509165 | 0 | 1 | 1 | 16,469181 | 0,782368 | 0,291411 | 1,15 |
| Cirex B.V. | 0,0529270 | 0 | 1 | 1 | 16,536527 | 0,770360 | 0,306248 | 1,08 |
| Coban Holding B.V. | 0,0918122 | 0 | 1 | 1 | 15,753353 | 0,711445 | 0,027742 | 1,24 |
| Coban Holding B.V. | 0,0689763 | 0 | 1 | 1 | 15,741090 | 0,675083 | 0,095163 | 1,2 |
| Coban Holding B.V. | 0,0613693 | 1 | 1 | 1 | 15,788458 | 0,694121 | 0,104030 | 1,17 |
| ConDoor Group B.V. | 0,0660997 | 0 | 1 | 1 | 16,345568 | 0,417606 | 0,816467 | 2,45 |
| ConDoor Group B.V. | 0,0690485 | 0 | 1 | 1 | 16,517879 | 0,385701 | 1,873947 | 2,7 |
| ConDoor Group B.V. | 0,0708297 | 0 | 1 | 1 | 16,570748 | 0,340224 | 2,722938 | 2,94 |
| DDM Onroerend Goed B.V. | 0,0766584 | 1 | 1 | 1 | 16,726222 | 0,863706 | 0,069379 | 0,82 |
| DDM Onroerend Goed B.V. | 0,0750960 | 1 | 1 | 1 | 16,600320 | 0,769777 | 0,410716 | 0,83 |
| DDM Onroerend Goed B.V. | 0,0669238 | 1 | 1 | 1 | 16,611594 | 0,759680 | 0,413192 | 0,89 |
| De Haas Beheer B.V. | 0,0480392 | 0 | 1 | 1 | 16,614151 | 0,541342 | 0,668194 | 0,81 |
| De Haas Beheer B.V. | 0,0281098 | 0 | 1 | 1 | 16,681830 | 0,542189 | 0,794854 | 1,05 |
| De Haas Beheer B.V. | 0,0555734 | 0 | 1 | 1 | 16,551238 | 0,561331 | 0,964032 | 0,73 |
| Elton Beheer B.V. | 0,0575294 | 0 | 1 | 1 | 16,525080 | 0,460102 | 0,480221 | 1,94 |
| Elton Beheer B.V. | 0,0322091 | 0 | 1 | 1 | 16,482052 | 0,410871 | 0,487401 | 2,03 |
| Elton Beheer B.V. | 0,0515945 | 0 | 1 | 1 | 16,369841 | 0,402469 | 0,492243 | 1,9 |
| G. Sonder Beheer B.V. | 0,0443888 | 0 | 1 | 1 | 16,510211 | 0,483048 | 0,332621 | 1,65 |
| G. Sonder Beheer B.V. | 0,0432865 | 0 | 1 | 1 | 16,337098 | 0,477088 | 0,433637 | 1,71 |
| G. Sonder Beheer B.V. | 0,0867388 | 0 | 1 | 1 | 16,025622 | 0,390448 | 0,535176 | 1,92 |
| Gaming Support B.V. | 0,0513096 | 1 | 1 | 1 | 16,275758 | 0,742614 | 0,574840 | 1,14 |
| Gaming Support B.V. | 0,0463518 | 1 | 1 | 1 | 16,268376 | 0,733760 | 0,909704 | 1,33 |
| NAAM | INTRATE | BIG4 | OPINION | TYPE | SIZE LN | LEVERAGE | EBITDA | CURRATIO |
| Gaming Support B.V. | 0,0592089 | 1 | 1 | 1 | 16,080934 | 0,649644 | 1,164511 | 1,36 |
| Gebroeders Hoefnagels Beheer B.V. | 0,0508965 | 0 | 1 | 0 | 16,280472 | 0,792635 | 0,211678 | 0,77 |
| Gebroeders Hoefnagels Beheer B.V. | 0,0552403 | 0 | 1 | 0 | 16,212096 | 0,775759 | 0,340630 | 0,78 |
| Gerrit Boks Holding B.V. | 0,0490977 | 0 | 0 | 1 | 15,775939 | 0,931866 | -0,022804 | 1,03 |
| Gerrit Boks Holding B.V. | 0,0481666 | 0 | 0 | 1 | 15,830018 | 0,806838 | 0,084296 | 1,03 |
| Gerrit Boks Holding B.V. | 0,0467773 | 0 | 0 | 1 | 15,810627 | 0,813579 | 0,088199 | 1,05 |
| H.J.M. Kuipers Holding B.V. | 0,0394531 | 0 | 1 | 1 | 15,671804 | 0,733687 | 0,546499 | 1,44 |
| H.J.M. Kuipers Holding B.V. | 0,0482079 | 0 | 1 | 1 | 15,810890 | 0,768267 | 0,810430 | 1,16 |
| H.J.M. Kuipers Holding B.V. | 0,0572579 | 0 | 1 | 1 | 15,773089 | 0,759339 | 0,885165 | 1,18 |
| Heembloemex Holding B.V. | 0,0340418 | 0 | 0 | 0 | 16,432918 | 0,688588 | 0,167808 | 1,53 |
| Heembloemex Holding B.V. | 0,0360611 | 0 | 0 | 0 | 16,476305 | 0,672183 | 0,200250 | 1,54 |
| Heembloemex Holding B.V. | 0,0454345 | 0 | 0 | 1 | 16,471562 | 0,644686 | 0,258189 | 1,6 |
| Helmers Beheer Hoogezand B.V. | 0,0792528 | 1 | 1 | 1 | 15,671568 | 0,650863 | 0,198530 | 1,48 |
| Helmers Beheer Hoogezand B.V. | 0,1117586 | 1 | 1 | 1 | 15,698808 | 0,617008 | 0,221417 | 1,68 |
| Helmers Beheer Hoogezand B.V. | 0,0622169 | 1 | 1 | 1 | 17,567922 | 0,937618 | 0,804290 | 2,75 |
| Hoitsema Universeeldruk B.V. | 0,0554488 | 0 | 1 | 1 | 16,376477 | 0,859168 | 0,212712 | 0,97 |
| Hoitsema Universeeldruk B.V. | 0,0605396 | 0 | 1 | 1 | 16,372064 | 0,835043 | 0,260149 | 0,99 |
| Hoitsema Universeeldruk B.V. | 0,0567766 | 0 | 1 | 1 | 16,344718 | 0,790365 | 0,375046 | 1,07 |
| Hoza Holding B.V. | 0,0542600 | 1 | 1 | 1 | 16,263234 | 0,891801 | 0,106857 | 1,02 |
| Hoza Holding B.V. | 0,0514697 | 1 | 1 | 1 | 16,449196 | 0,865781 | 0,333503 | 0,9 |
| Hoza Holding B.V. | 0,0581631 | 1 | 1 | 1 | 16,201609 | 0,593230 | 1,706724 | 1,6 |
| Hulskamp Beheer B.V. | 0,0482600 | 0 | 1 | 1 | 16,661126 | 0,837860 | 0,084895 | 0,6 |
| Hulskamp Beheer B.V. | 0,0456885 | 0 | 1 | 1 | 16,529593 | 0,816618 | 0,216850 | 0,66 |
| Hulskamp Beheer B.V. | 0,0475311 | 0 | 1 | 1 | 16,610840 | 0,827879 | 0,218171 | 0,64 |
| IJssel Technologie B.V. | 0,0416574 | 0 | 1 | 1 | 16,240595 | 0,546142 | 0,356590 | 1,94 |
| IJssel Technologie B.V. | 0,0634260 | 1 | 1 | 1 | 16,065483 | 0,556810 | 0,426284 | 1,95 |
| IJssel Technologie B.V. | 0,0892782 | 0 | 1 | 1 | 16,169358 | 0,532075 | 1,946817 | 2,04 |
| J. van Enckevort Blerick B.V. | 0,0349731 | 1 | 1 | 1 | 16,615350 | 0,631797 | 0,157174 | 2,28 |
| J. van Enckevort Blerick B.V. | 0,0414167 | 1 | 1 | 1 | 16,574254 | 0,605830 | 0,230394 | 2,41 |
| J. van Enckevort Blerick B.V. | 0,0451381 | 1 | 1 | 1 | 16,552278 | 0,569541 | 0,329932 | 2,5 |
| J.G. van den Pol Holding B.V. | 0,0456856 | 0 | 1 | 1 | 15,886385 | 0,769088 | 0,175474 | 1,43 |
| J.G. van den Pol Holding B.V. | 0,0490679 | 0 | 0 | 1 | 15,913682 | 0,745857 | 0,321559 | 1,43 |
| J.G. van den Pol Holding B.V. | 0,0504427 | 0 | 0 | 1 | 15,963376 | 0,682742 | 0,553030 | 1,6 |
| J.G. van der Most Beheer B.V. | 0,0547947 | 1 | 1 | 1 | 15,936334 | 0,898020 | 0,122538 | 0,68 |
| J.G. van der Most Beheer B.V. | 0,0531328 | 1 | 1 | 1 | 16,019776 | 0,881339 | 0,281654 | 0,73 |
| J.G. van der Most Beheer B.V. | 0,0498535 | 1 | 1 | 1 | 16,328909 | 0,859007 | 0,325044 | 0,66 |
| Kerstens Holding B.V. | 0,1092818 | 0 | 0 | 1 | 15,922730 | 0,952328 | 0,186888 | 0,78 |
| Kerstens Holding B.V. | 0,1034586 | 0 | 0 | 1 | 16,040593 | 0,840430 | 0,202295 | 0,81 |
| Kerstens Holding B.V. | 0,0850278 | 0 | 0 | 1 | 16,062572 | 0,818350 | 0,288854 | 0,95 |
| Leferink Office Works Holding B.V. | 0,0569471 | 0 | 1 | 1 | 16,303524 | 0,885640 | 0,310182 | 0,91 |
| Leferink Office Works Holding B.V. | 0,0617473 | 0 | 1 | 1 | 16,430895 | 0,855692 | 0,343720 | 1 |
| Leferink Office Works Holding B.V. | 0,0584942 | 0 | 1 | 1 | 16,379963 | 0,836295 | 0,473804 | 0,87 |
| L'Ortye B.V. | 0,0799181 | 0 | 1 | 1 | 16,271736 | 0,749991 | 0,276029 | 1,62 |
| L'Ortye B.V. | 0,0770588 | 0 | 1 | 1 | 16,296134 | 0,777931 | 0,277447 | 1,09 |
| NAAM | INTRATE | BIG4 | OPINION | TYPE | SIZE LN | LEVERAGE | EBITDA | CURRATIO |
| L'Ortye B.V. | 0,0748606 | 0 | 1 | 1 | 16,363990 | 0,730680 | 0,316485 | 1,55 |
| Mic-RO H.H. Michaelis B.V. | 0,0423430 | 0 | 1 | 1 | 16,523827 | 0,335177 | 0,183558 | 3,02 |
| Mic-RO H.H. Michaelis B.V. | 0,0742438 | 0 | 1 | 1 | 16,531132 | 0,328371 | 0,446943 | 2,92 |
| Nederhoff Interholding B.V. | 0,0569340 | 0 | 1 | 1 | 16,781933 | 0,811515 | 0,128138 | 0,34 |
| Nederhoff Interholding B.V. | 0,0601096 | 0 | 1 | 1 | 16,941124 | 0,793647 | 0,132466 | 0,31 |
| Nederhoff Interholding B.V. | 0,0553463 | 0 | 1 | 1 | 16,640903 | 0,807851 | 0,257879 | 0,33 |
| Nieuwkoop Europe B.V. | 0,0212742 | 0 | 0 | 1 | 16,329850 | 0,597135 | -0,033508 | 3,32 |
| Nieuwkoop Europe B.V. | 0,0368579 | 0 | 0 | 1 | 16,535810 | 0,664353 | 0,060705 | 2,21 |
| Nieuwkoop Europe B.V. | 0,0238013 | 0 | 0 | 1 | 16,642078 | 0,685599 | 0,077629 | 1,92 |
| Paro Beheer B.V. | 0,0317428 | 1 | 1 | 1 | 16,411788 | 0,471769 | -0,161516 | 2,16 |
| Paro Beheer B.V. | 0,0329723 | 1 | 1 | 1 | 16,484158 | 0,506145 | 0,250614 | 1,89 |
| Paro Beheer B.V. | 0,0571174 | 1 | 1 | 1 | 16,310654 | 0,627919 | 0,318420 | 1,98 |
| Reina-Hoeve B.V. | 0,0386362 | 0 | 1 | 1 | 15,884046 | 0,400969 | 0,084280 | 1,83 |
| Reina-Hoeve B.V. | 0,0398884 | 0 | 1 | 1 | 15,958261 | 0,421043 | 0,163554 | 1,73 |
| Reina-Hoeve B.V. | 0,0216349 | 0 | 1 | 1 | 15,984616 | 0,416815 | 0,292265 | 2,13 |
| RVC Beheer B.V. | 0,1251238 | 1 | 1 | 1 | 15,332079 | 0,762588 | 0,475527 | 1,38 |
| RVC Beheer B.V. | 0,1275024 | 1 | 1 | 1 | 15,543386 | 0,718910 | 0,890219 | 1,45 |
| RVC Beheer B.V. | 0,1257962 | 1 | 1 | 1 | 15,582150 | 0,655542 | 1,158137 | 1,55 |
| Scholten Groep B.V. | 0,0476172 | 1 | 1 | 1 | 16,106879 | 0,539104 | 0,344245 | 1,41 |
| Scholten Groep B.V. | 0,0421098 | 1 | 1 | 1 | 16,109061 | 0,617077 | 0,377035 | 1,69 |
| Scholten Groep B.V. | 0,0473429 | 1 | 1 | 1 | 16,076248 | 0,539381 | 0,445225 | 1,5 |
| Schotpoort Group B.V. | 0,0652926 | 1 | 1 | 1 | 16,566994 | 0,929411 | -0,051889 | 0,5 |
| Schotpoort Group B.V. | 0,0589314 | 1 | 1 | 1 | 16,443410 | 0,960419 | 0,144029 | 0,43 |
| Schotpoort Group B.V. | 0,0640027 | 1 | 1 | 1 | 16,356988 | 0,958235 | 0,174735 | 0,46 |
| Selo Holding B.V. | 0,1076019 | 1 | 1 | 1 | 16,267767 | 0,875103 | 0,321037 | 1,39 |
| Selo Holding B.V. | 0,0816278 | 1 | 1 | 1 | 16,333910 | 0,838039 | 0,484030 | 1,43 |
| Selo Holding B.V. | 0,1024106 | 1 | 1 | 1 | 16,532556 | 0,810998 | 0,866458 | 1,43 |
| Stekelenburg Beheer B.V. | 0,0659195 | 0 | 0 | 1 | 15,546162 | 1,262350 | 0,032308 | 0,59 |
| Stekelenburg Beheer B.V. | 0,0721200 | 0 | 0 | 1 | 15,835518 | 1,195798 | 0,039752 | 0,72 |
| Stekelenburg Beheer B.V. | 0,0724695 | 0 | 1 | 1 | 15,835476 | 1,155171 | 0,046872 | 0,78 |
| Van de Ree AG B.V. | 0,0554314 | 0 | 1 | 1 | 16,264498 | 0,738464 | 0,125861 | 4,13 |
| Van de Ree AG B.V. | 0,0624922 | 0 | 1 | 1 | 16,299924 | 0,769768 | 0,128318 | 1,82 |
| Van de Ree AG B.V. | 0,0682976 | 0 | 1 | 1 | 16,285228 | 0,789820 | 0,184644 | 1,78 |
| Van der Ploeg Beheer B.V. | 0,0407611 | 1 | 1 | 1 | 15,987860 | 0,716304 | 0,125070 | 1,34 |
| Van der Ploeg Beheer B.V. | 0,0415511 | 1 | 1 | 1 | 15,928345 | 0,704581 | 0,127645 | 1,43 |
| Van der Ploeg Beheer B.V. | 0,0451126 | 1 | 1 | 1 | 15,762263 | 0,636848 | 0,230275 | 1,76 |
| Van Reenen Barneveld Beheer B.V. | 0,0495773 | 0 | 1 | 1 | 16,012568 | 0,676549 | 0,530232 | 1,98 |
| Van Reenen Barneveld Beheer B.V. | 0,0478517 | 0 | 1 | 1 | 16,018994 | 0,670100 | 0,575959 | 1,27 |
| Van Reenen Barneveld Beheer B.V. | 0,0627857 | 0 | 1 | 1 | 16,167136 | 0,649226 | 0,695760 | 1,44 |
| Van Wieren Beheer B.V. | 0,0640842 | 0 | 1 | 1 | 16,434316 | 0,874714 | 0,121293 | 0,65 |
| Van Wieren Beheer B.V. | 0,0595112 | 0 | 1 | 1 | 16,370746 | 0,732993 | 0,299072 | 1,09 |
| Van Wieren Beheer B.V. | 0,0644429 | 0 | 1 | 1 | 16,223924 | 0,701788 | 0,344039 | 1,02 |
| Verweij jr. Holding B.V. | 0,0451243 | 0 | 1 | 1 | 16,388348 | 0,670524 | 0,099769 | 1,1 |
| Verweij jr. Holding B.V. | 0,0494731 | 0 | 1 | 1 | 16,453272 | 0,663878 | 0,187827 | 1,11 |
| NAAM | INTRATE | BIG4 | OPINION | TYPE | SIZE LN | LEVERAGE | EBITDA | CURRATIO |
| Verweij jr. Holding B.V. | 0,0530853 | 0 | 1 | 1 | 16,478234 | 0,653452 | 0,385377 | 1,17 |
| WILLEMS GROEP B.V. | 0,0528807 | 0 | 0 | 1 | 15,840326 | 0,865287 | 0,152696 | 1,12 |
| WILLEMS GROEP B.V. | 0,0467223 | 0 | 0 | 1 | 15,760838 | 0,855692 | 0,169210 | 1,17 |
| WILLEMS GROEP B.V. | 0,0483857 | 0 | 0 | 1 | 15,795442 | 0,865600 | 0,205846 | 0,62 |
|  |  |  |  |  |  |  |  |  |
| TOTAL: 133 firm-year observations |  |  |  |  |  |  |  |  |

# Appendix C: SPSS output sample without swaps

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Notes** | | | | | | |
| Output Created | | | | | 23-APR-2013 10:54:58 | |
| Comments | | | | |  | |
| Input | | Active Dataset | | | DataSet1 | |
| Filter | | | <none> | |
| Weight | | | <none> | |
| Split File | | | <none> | |
| N of Rows in Working Data File | | | 240 | |
| Missing Value Handling | | Definition of Missing | | | User-defined missing values are treated as missing. | |
| Cases Used | | | Statistics are based on cases with no missing values for any variable used. | |
| Syntax | | | | | REGRESSION  /DESCRIPTIVES MEAN STDDEV CORR SIG N  /MISSING LISTWISE  /STATISTICS COEFF OUTS BCOV R ANOVA COLLIN TOL CHANGE ZPP  /CRITERIA=PIN(.05) POUT(.10)  /NOORIGIN  /DEPENDENT INTRATE  /METHOD=ENTER SIZELN LEVERAGE EBITDA CURRATIO  /METHOD=ENTER BIG4 OPINION TYPE. | |
| Resources | | Processor Time | | | 00:00:00,02 | |
| Elapsed Time | | | 00:00:00,02 | |
| Memory Required | | | 3572 bytes | |
| Additional Memory Required for Residual Plots | | | 0 bytes | |
| **Descriptive Statistics** | | | | | |
|  | Mean | | Std. Deviation | N | |
| INTRATE | 5,1822% | | 1,81538% | 240 | |
| SIZE LN | 16,1428963 | | ,35028601 | 240 | |
| LEVERAGE | ,6883704 | | ,20088195 | 240 | |
| EBITDA | ,4285255 | | ,53697667 | 240 | |
| CURRATIO | 1,4093333 | | ,71305722 | 240 | |
| BIG4 | ,23 | | ,424 | 240 | |
| OPINION | ,80 | | ,404 | 240 | |
| TYPE | ,90 | | ,301 | 240 | |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Correlations** | | | | | | |
|  | | INTRATE | SIZE LN | LEVERAGE | EBITDA | CURRATIO |
| Pearson Correlation | INTRATE | 1,000 | -,102 | ,119 | -,013 | -,045 |
| SIZE LN | -,102 | 1,000 | -,232 | ,032 | ,173 |
| LEVERAGE | ,119 | -,232 | 1,000 | -,437 | -,619 |
| EBITDA | -,013 | ,032 | -,437 | 1,000 | ,327 |
| CURRATIO | -,045 | ,173 | -,619 | ,327 | 1,000 |
| BIG4 | ,038 | ,077 | -,041 | ,049 | ,060 |
| OPINION | ,001 | -,056 | -,182 | ,141 | ,117 |
| TYPE | -,049 | -,182 | -,045 | ,063 | ,059 |
| Sig. (1-tailed) | INTRATE | . | ,057 | ,032 | ,423 | ,242 |
| SIZE LN | ,057 | . | ,000 | ,312 | ,004 |
| LEVERAGE | ,032 | ,000 | . | ,000 | ,000 |
| EBITDA | ,423 | ,312 | ,000 | . | ,000 |
| CURRATIO | ,242 | ,004 | ,000 | ,000 | . |
| BIG4 | ,281 | ,119 | ,264 | ,223 | ,178 |
| OPINION | ,495 | ,194 | ,002 | ,015 | ,035 |
| TYPE | ,227 | ,002 | ,245 | ,166 | ,182 |
| N | INTRATE | 240 | 240 | 240 | 240 | 240 |
| SIZE LN | 240 | 240 | 240 | 240 | 240 |
| LEVERAGE | 240 | 240 | 240 | 240 | 240 |
| EBITDA | 240 | 240 | 240 | 240 | 240 |
| CURRATIO | 240 | 240 | 240 | 240 | 240 |
| BIG4 | 240 | 240 | 240 | 240 | 240 |
| OPINION | 240 | 240 | 240 | 240 | 240 |
| TYPE | 240 | 240 | 240 | 240 | 240 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Correlations** | | | | |
|  | | BIG4 | OPINION | TYPE |
| Pearson Correlation | INTRATE | ,038 | ,001 | -,049 |
| SIZE LN | ,077 | -,056 | -,182 |
| LEVERAGE | -,041 | -,182 | -,045 |
| EBITDA | ,049 | ,141 | ,063 |
| CURRATIO | ,060 | ,117 | ,059 |
| BIG4 | 1,000 | ,279 | ,184 |
| OPINION | ,279 | 1,000 | ,141 |
| TYPE | ,184 | ,141 | 1,000 |
| Sig. (1-tailed) | INTRATE | ,281 | ,495 | ,227 |
| SIZE LN | ,119 | ,194 | ,002 |
| LEVERAGE | ,264 | ,002 | ,245 |
| EBITDA | ,223 | ,015 | ,166 |
| CURRATIO | ,178 | ,035 | ,182 |
| BIG4 | . | ,000 | ,002 |
| OPINION | ,000 | . | ,014 |
| TYPE | ,002 | ,014 | . |
| N | INTRATE | 240 | 240 | 240 |
| SIZE LN | 240 | 240 | 240 |
| LEVERAGE | 240 | 240 | 240 |
| EBITDA | 240 | 240 | 240 |
| CURRATIO | 240 | 240 | 240 |
| BIG4 | 240 | 240 | 240 |
| OPINION | 240 | 240 | 240 |
| TYPE | 240 | 240 | 240 |

|  |  |  |  |
| --- | --- | --- | --- |
| **Variables Entered/Removeda** | | | |
| Model | Variables Entered | Variables Removed | Method |
| 1 | CURRATIO, SIZE LN, EBITDA, LEVERAGEb | . | Enter |
| 2 | BIG4, TYPE, OPINIONb | . | Enter |

|  |
| --- |
| a. Dependent Variable: INTRATE |
| b. All requested variables entered. |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Model Summary** | | | | | | |
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | |
| R Square Change | F Change |
| 1 | ,151a | ,023 | ,006 | 1,80968% | ,023 | 1,376 |
| 2 | ,174b | ,030 | ,001 | 1,81445% | ,007 | ,589 |

|  |  |  |  |
| --- | --- | --- | --- |
| **Model Summary** | | | |
| Model | Change Statistics | | |
| df1 | df2 | Sig. F Change |
| 1 | 4a | 235 | ,243 |
| 2 | 3b | 232 | ,623 |

|  |
| --- |
| a. Predictors: (Constant), CURRATIO, SIZE LN, EBITDA, LEVERAGE |
| b. Predictors: (Constant), CURRATIO, SIZE LN, EBITDA, LEVERAGE, BIG4, TYPE, OPINION |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **ANOVAa** | | | | | | |
| Model | | Sum of Squares | df | Mean Square | F | Sig. |
| 1 | Regression | 18,031 | 4 | 4,508 | 1,376 | ,243b |
| Residual | 769,615 | 235 | 3,275 |  |  |
| Total | 787,646 | 239 |  |  |  |
| 2 | Regression | 23,851 | 7 | 3,407 | 1,035 | ,407c |
| Residual | 763,794 | 232 | 3,292 |  |  |
| Total | 787,646 | 239 |  |  |  |

|  |
| --- |
| a. Dependent Variable: INTRATE |
| b. Predictors: (Constant), CURRATIO, SIZE LN, EBITDA, LEVERAGE |
| c. Predictors: (Constant), CURRATIO, SIZE LN, EBITDA, LEVERAGE, BIG4, TYPE, OPINION |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coefficientsa** | | | | | | | | | | | | |
| Model | | | Unstandardized Coefficients | | | | Standardized Coefficients | | t | | Sig. | |
| B | | Std. Error | | Beta | |
| 1 | (Constant) | | 10,522 | | 5,716 | |  | | 1,841 | | ,067 | |
| SIZE LN | | -,401 | | ,345 | | -,077 | | -1,163 | | ,246 | |
| LEVERAGE | | 1,329 | | ,794 | | ,147 | | 1,673 | | ,096 | |
| EBITDA | | ,132 | | ,244 | | ,039 | | ,540 | | ,590 | |
| CURRATIO | | ,118 | | ,210 | | ,046 | | ,562 | | ,574 | |
| 2 | (Constant) | | 12,494 | | 6,022 | |  | | 2,075 | | ,039 | |
| SIZE LN | | -,501 | | ,357 | | -,097 | | -1,404 | | ,162 | |
| LEVERAGE | | 1,295 | | ,805 | | ,143 | | 1,609 | | ,109 | |
| EBITDA | | ,131 | | ,245 | | ,039 | | ,532 | | ,595 | |
| CURRATIO | | ,122 | | ,211 | | ,048 | | ,578 | | ,564 | |
| BIG4 | | ,252 | | ,295 | | ,059 | | ,857 | | ,392 | |
| OPINION | | ,021 | | ,311 | | ,005 | | ,069 | | ,945 | |
| TYPE | | -,462 | | ,408 | | -,076 | | -1,131 | | ,259 | |
| **Coefficientsa** | | | | | | | | | | | | | |
| Model | | | | Correlations | | | | | | Collinearity Statistics | | | |
| Zero-order | | Partial | | Part | | Tolerance | | VIF | |
| 1 | | (Constant) | |  | |  | |  | |  | |  | |
| SIZE LN | | -,102 | | -,076 | | -,075 | | ,938 | | 1,066 | |
| LEVERAGE | | ,119 | | ,109 | | ,108 | | ,538 | | 1,859 | |
| EBITDA | | -,013 | | ,035 | | ,035 | | ,798 | | 1,253 | |
| CURRATIO | | -,045 | | ,037 | | ,036 | | ,612 | | 1,634 | |
| 2 | | (Constant) | |  | |  | |  | |  | |  | |
| SIZE LN | | -,102 | | -,092 | | -,091 | | ,881 | | 1,135 | |
| LEVERAGE | | ,119 | | ,105 | | ,104 | | ,527 | | 1,897 | |
| EBITDA | | -,013 | | ,035 | | ,034 | | ,795 | | 1,258 | |
| CURRATIO | | -,045 | | ,038 | | ,037 | | ,610 | | 1,639 | |
| BIG4 | | ,038 | | ,056 | | ,055 | | ,883 | | 1,132 | |
| OPINION | | ,001 | | ,004 | | ,004 | | ,872 | | 1,146 | |
| TYPE | | -,049 | | -,074 | | -,073 | | ,915 | | 1,093 | |

|  |
| --- |
| a. Dependent Variable: INTRATE |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Excluded Variablesa** | | | | | | | |
| Model | | Beta In | t | Sig. | Partial Correlation | Collinearity Statistics | |
| Tolerance | VIF |
| 1 | BIG4 | ,045b | ,700 | ,485 | ,046 | ,990 | 1,010 |
| OPINION | ,013b | ,195 | ,845 | ,013 | ,953 | 1,049 |
| TYPE | -,064b | -,971 | ,333 | -,063 | ,956 | 1,046 |

|  |  |  |
| --- | --- | --- |
| **Excluded Variablesa** | | |
| Model | | Collinearity Statistics |
| Minimum Tolerance |
| 1 | BIG4 | ,538b |
| OPINION | ,529b |
| TYPE | ,537b |

|  |
| --- |
| a. Dependent Variable: INTRATE |
| b. Predictors in the Model: (Constant), CURRATIO, SIZE LN, EBITDA, LEVERAGE |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Coefficient Correlationsa** | | | | | | | |
| Model | | | CURRATIO | SIZE LN | EBITDA | LEVERAGE | BIG4 |
| 1 | Correlations | CURRATIO | 1,000 | -,045 | -,084 | ,542 |  |
| SIZE LN | -,045 | 1,000 | ,083 | ,179 |  |
| EBITDA | -,084 | ,083 | 1,000 | ,324 |  |
| LEVERAGE | ,542 | ,179 | ,324 | 1,000 |  |
| Covariances | CURRATIO | ,044 | -,003 | -,004 | ,090 |  |
| SIZE LN | -,003 | ,119 | ,007 | ,049 |  |
| EBITDA | -,004 | ,007 | ,060 | ,063 |  |
| LEVERAGE | ,090 | ,049 | ,063 | ,631 |  |
| 2 | Correlations | CURRATIO | 1,000 | -,049 | -,082 | ,536 | -,031 |
| SIZE LN | -,049 | 1,000 | ,072 | ,195 | -,133 |
| EBITDA | -,082 | ,072 | 1,000 | ,313 | -,017 |
| LEVERAGE | ,536 | ,195 | ,313 | 1,000 | -,060 |
| BIG4 | -,031 | -,133 | -,017 | -,060 | 1,000 |
| TYPE | -,039 | ,205 | -,019 | ,027 | -,173 |
| OPINION | ,009 | ,106 | -,051 | ,136 | -,268 |
| Covariances | CURRATIO | ,044 | -,004 | -,004 | ,091 | -,002 |
| SIZE LN | -,004 | ,127 | ,006 | ,056 | -,014 |
| EBITDA | -,004 | ,006 | ,060 | ,062 | -,001 |
| LEVERAGE | ,091 | ,056 | ,062 | ,648 | -,014 |
| BIG4 | -,002 | -,014 | -,001 | -,014 | ,087 |
| TYPE | -,003 | ,030 | -,002 | ,009 | -,021 |
| OPINION | ,001 | ,012 | -,004 | ,034 | -,025 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Coefficient Correlationsa** | | | | |
| Model | | | TYPE | OPINION |
| 1 | Correlations | CURRATIO |  |  |
| SIZE LN |  |  |
| EBITDA |  |  |
| LEVERAGE |  |  |
| Covariances | CURRATIO |  |  |
| SIZE LN |  |  |
| EBITDA |  |  |
| LEVERAGE |  |  |
| 2 | Correlations | CURRATIO | -,039 | ,009 |
| SIZE LN | ,205 | ,106 |
| EBITDA | -,019 | -,051 |
| LEVERAGE | ,027 | ,136 |
| BIG4 | -,173 | -,268 |
| TYPE | 1,000 | -,064 |
| OPINION | -,064 | 1,000 |
| Covariances | CURRATIO | -,003 | ,001 |
| SIZE LN | ,030 | ,012 |
| EBITDA | -,002 | -,004 |
| LEVERAGE | ,009 | ,034 |
| BIG4 | -,021 | -,025 |
| TYPE | ,167 | -,008 |
| OPINION | -,008 | ,097 |

|  |
| --- |
| a. Dependent Variable: INTRATE |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Collinearity Diagnosticsa** | | | | | | | |
| Model | Dimension | Eigenvalue | Condition Index | Variance Proportions | | | |
| (Constant) | SIZE LN | LEVERAGE | EBITDA |
| 1 | 1 | 4,205 | 1,000 | ,00 | ,00 | ,00 | ,01 |
| 2 | ,586 | 2,679 | ,00 | ,00 | ,01 | ,65 |
| 3 | ,187 | 4,736 | ,00 | ,00 | ,04 | ,25 |
| 4 | ,021 | 14,061 | ,00 | ,01 | ,88 | ,08 |
| 5 | ,000 | 139,799 | 1,00 | ,99 | ,06 | ,01 |
| 2 | 1 | 6,229 | 1,000 | ,00 | ,00 | ,00 | ,01 |
| 2 | ,720 | 2,941 | ,00 | ,00 | ,00 | ,03 |
| 3 | ,598 | 3,229 | ,00 | ,00 | ,01 | ,63 |
| 4 | ,188 | 5,751 | ,00 | ,00 | ,04 | ,25 |
| 5 | ,163 | 6,185 | ,00 | ,00 | ,01 | ,00 |
| 6 | ,082 | 8,714 | ,00 | ,00 | ,06 | ,01 |
| 7 | ,020 | 17,817 | ,00 | ,01 | ,81 | ,06 |
| 8 | ,000 | 177,177 | 1,00 | ,99 | ,07 | ,01 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Collinearity Diagnosticsa** | | | | | |
| Model | Dimension | Variance Proportions | | | |
| CURRATIO | BIG4 | OPINION | TYPE |
| 1 | 1 | ,01 |  |  |  |
| 2 | ,00 |  |  |  |
| 3 | ,46 |  |  |  |
| 4 | ,53 |  |  |  |
| 5 | ,00 |  |  |  |
| 2 | 1 | ,00 | ,01 | ,00 | ,00 |
| 2 | ,00 | ,86 | ,00 | ,00 |
| 3 | ,00 | ,02 | ,00 | ,00 |
| 4 | ,45 | ,00 | ,01 | ,00 |
| 5 | ,05 | ,07 | ,92 | ,01 |
| 6 | ,03 | ,02 | ,00 | ,89 |
| 7 | ,47 | ,00 | ,05 | ,04 |
| 8 | ,00 | ,02 | ,02 | ,05 |

|  |
| --- |
| a. Dependent Variable: INTRATE |

# Appendix D: SPSS output sample with swaps

|  |  |  |
| --- | --- | --- |
| **Notes** | | |
| Output Created | | 22-APR-2013 15:43:13 |
| Comments | |  |
| Input | Active Dataset | DataSet2 |
| Filter | <none> |
| Weight | <none> |
| Split File | <none> |
| N of Rows in Working Data File | 133 |
| Missing Value Handling | Definition of Missing | User-defined missing values are treated as missing. |
| Cases Used | Statistics are based on cases with no missing values for any variable used. |
| Syntax | | REGRESSION  /DESCRIPTIVES MEAN STDDEV CORR SIG N  /MISSING LISTWISE  /STATISTICS COEFF OUTS BCOV R ANOVA COLLIN TOL CHANGE ZPP  /CRITERIA=PIN(.05) POUT(.10)  /NOORIGIN  /DEPENDENT INTRATE  /METHOD=ENTER SIZELN LEVERAGE EBITDA CURRATIO  /METHOD=ENTER BIG4 OPINION TYPE. |
| Resources | Processor Time | 00:00:00,02 |
| Elapsed Time | 00:00:00,01 |
| Memory Required | 3572 bytes |
| Additional Memory Required for Residual Plots | 0 bytes |

|  |  |  |  |
| --- | --- | --- | --- |
| **Descriptive Statistics** | | | |
|  | Mean | Std. Deviation | N |
| INTRATE | 5,7499% | 1,97213% | 133 |
| SIZE LN | 16,2464352 | ,34009541 | 133 |
| LEVERAGE | ,6986003 | ,17119170 | 133 |
| EBITDA | ,4137483 | ,46277960 | 133 |
| CURRATIO | 1,4806015 | ,84183850 | 133 |
| BIG4 | ,35 | ,480 | 133 |
| OPINION | ,84 | ,366 | 133 |
| TYPE | ,97 | ,171 | 133 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Correlations** | | | | | | |
|  | | INTRATE | SIZE LN | LEVERAGE | EBITDA | CURRATIO |
| Pearson Correlation | INTRATE | 1,000 | -,263 | ,229 | ,171 | -,082 |
| SIZE LN | -,263 | 1,000 | -,076 | ,145 | -,007 |
| LEVERAGE | ,229 | -,076 | 1,000 | -,293 | -,645 |
| EBITDA | ,171 | ,145 | -,293 | 1,000 | ,125 |
| CURRATIO | -,082 | -,007 | -,645 | ,125 | 1,000 |
| BIG4 | ,163 | ,013 | ,046 | -,052 | ,042 |
| OPINION | ,098 | ,190 | -,289 | ,108 | ,111 |
| TYPE | ,120 | -,054 | -,035 | ,070 | ,068 |
| Sig. (1-tailed) | INTRATE | . | ,001 | ,004 | ,025 | ,175 |
| SIZE LN | ,001 | . | ,193 | ,048 | ,468 |
| LEVERAGE | ,004 | ,193 | . | ,000 | ,000 |
| EBITDA | ,025 | ,048 | ,000 | . | ,075 |
| CURRATIO | ,175 | ,468 | ,000 | ,075 | . |
| BIG4 | ,030 | ,442 | ,301 | ,278 | ,315 |
| OPINION | ,130 | ,014 | ,000 | ,109 | ,102 |
| TYPE | ,084 | ,268 | ,346 | ,211 | ,217 |
| N | INTRATE | 133 | 133 | 133 | 133 | 133 |
| SIZE LN | 133 | 133 | 133 | 133 | 133 |
| LEVERAGE | 133 | 133 | 133 | 133 | 133 |
| EBITDA | 133 | 133 | 133 | 133 | 133 |
| CURRATIO | 133 | 133 | 133 | 133 | 133 |
| BIG4 | 133 | 133 | 133 | 133 | 133 |
| OPINION | 133 | 133 | 133 | 133 | 133 |
| TYPE | 133 | 133 | 133 | 133 | 133 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Correlations** | | | | |
|  | | BIG4 | OPINION | TYPE |
| Pearson Correlation | INTRATE | ,163 | ,098 | ,120 |
| SIZE LN | ,013 | ,190 | -,054 |
| LEVERAGE | ,046 | -,289 | -,035 |
| EBITDA | -,052 | ,108 | ,070 |
| CURRATIO | ,042 | ,111 | ,068 |
| BIG4 | 1,000 | ,320 | ,130 |
| OPINION | ,320 | 1,000 | ,165 |
| TYPE | ,130 | ,165 | 1,000 |
| Sig. (1-tailed) | INTRATE | ,030 | ,130 | ,084 |
| SIZE LN | ,442 | ,014 | ,268 |
| LEVERAGE | ,301 | ,000 | ,346 |
| EBITDA | ,278 | ,109 | ,211 |
| CURRATIO | ,315 | ,102 | ,217 |
| BIG4 | . | ,000 | ,068 |
| OPINION | ,000 | . | ,029 |
| TYPE | ,068 | ,029 | . |
| N | INTRATE | 133 | 133 | 133 |
| SIZE LN | 133 | 133 | 133 |
| LEVERAGE | 133 | 133 | 133 |
| EBITDA | 133 | 133 | 133 |
| CURRATIO | 133 | 133 | 133 |
| BIG4 | 133 | 133 | 133 |
| OPINION | 133 | 133 | 133 |
| TYPE | 133 | 133 | 133 |

|  |  |  |  |
| --- | --- | --- | --- |
| **Variables Entered/Removeda** | | | |
| Model | Variables Entered | Variables Removed | Method |
| 1 | CURRATIO, SIZE LN, EBITDA, LEVERAGEb | . | Enter |
| 2 | BIG4, TYPE, OPINIONb | . | Enter |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| a. Dependent Variable: INTRATE | | | | |
| b. All requested variables entered. | | | | |
| **Model Summary** | | | | | | | |
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | | Change Statistics | |
| R Square Change | F Change |
| 1 | ,448a | ,201 | ,176 | 1,79024% | | ,201 | 8,046 |
| 2 | ,511b | ,261 | ,220 | 1,74162% | | ,061 | 3,416 |

|  |  |  |  |
| --- | --- | --- | --- |
| **Model Summary** | | | |
| Model | Change Statistics | | |
| df1 | df2 | Sig. F Change |
| 1 | 4a | 128 | ,000 |
| 2 | 3b | 125 | ,020 |

|  |
| --- |
| a. Predictors: (Constant), CURRATIO, SIZE LN, EBITDA, LEVERAGE |
| b. Predictors: (Constant), CURRATIO, SIZE LN, EBITDA, LEVERAGE, BIG4, TYPE, OPINION |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ANOVAa** | | | | | | | | | | | | | | | | | |
| Model | | | | Sum of Squares | | | df | | Mean Square | | | F | | | Sig. | | |
| 1 | Regression | | | 103,151 | | | 4 | | 25,788 | | | 8,046 | | | ,000b | | |
| Residual | | | 410,235 | | | 128 | | 3,205 | | |  | | |  | | |
| Total | | | 513,387 | | | 132 | |  | | |  | | |  | | |
| 2 | Regression | | | 134,232 | | | 7 | | 19,176 | | | 6,322 | | | ,000c | | |
| Residual | | | 379,155 | | | 125 | | 3,033 | | |  | | |  | | |
| Total | | | 513,387 | | | 132 | |  | | |  | | |  | | |
| a. Dependent Variable: INTRATE | | | | | | | | | | | | | | | | | |
| b. Predictors: (Constant), CURRATIO, SIZE LN, EBITDA, LEVERAGE | | | | | | | | | | | | | | | | | |
| c. Predictors: (Constant), CURRATIO, SIZE LN, EBITDA, LEVERAGE, BIG4, TYPE, OPINION | | | | | | | | | | | | | | | | | |
| **Coefficientsa** | | | | | | | | | | | | | | | | | | |
| Model | | | Unstandardized Coefficients | | | | | | | Standardized Coefficients | | | t | | | Sig. | | |
| B | | | Std. Error | | | | Beta | | |
| 1 | (Constant) | | 28,015 | | | 7,697 | | | |  | | | 3,639 | | | ,000 | | |
| SIZE LN | | -1,614 | | | ,464 | | | | -,278 | | | -3,476 | | | ,001 | | |
| LEVERAGE | | 4,299 | | | 1,243 | | | | ,373 | | | 3,459 | | | ,001 | | |
| EBITDA | | 1,300 | | | ,356 | | | | ,305 | | | 3,652 | | | ,000 | | |
| CURRATIO | | ,278 | | | ,244 | | | | ,119 | | | 1,141 | | | ,256 | | |
| 2 | (Constant) | | 29,021 | | | 7,643 | | | |  | | | 3,797 | | | ,000 | | |
| SIZE LN | | -1,800 | | | ,460 | | | | -,310 | | | -3,910 | | | ,000 | | |
| LEVERAGE | | 4,972 | | | 1,279 | | | | ,432 | | | 3,887 | | | ,000 | | |
| EBITDA | | 1,303 | | | ,348 | | | | ,306 | | | 3,747 | | | ,000 | | |
| CURRATIO | | ,298 | | | ,241 | | | | ,127 | | | 1,237 | | | ,218 | | |
| BIG4 | | ,363 | | | ,342 | | | | ,088 | | | 1,060 | | | ,291 | | |
| OPINION | | 1,074 | | | ,479 | | | | ,199 | | | 2,244 | | | ,027 | | |
| TYPE | | ,507 | | | ,908 | | | | ,044 | | | ,559 | | | ,577 | | |
| **Coefficientsa** | | | | | | | | | | | | | | | | | | | |
| Model | | | | | Correlations | | | | | | | | | Collinearity Statistics | | | | | |
| Zero-order | | | Partial | | | Part | | | Tolerance | | | VIF | | |
| 1 | | (Constant) | | |  | | |  | | |  | | |  | | |  | | |
| SIZE LN | | | -,263 | | | -,294 | | | -,275 | | | ,974 | | | 1,027 | | |
| LEVERAGE | | | ,229 | | | ,292 | | | ,273 | | | ,536 | | | 1,865 | | |
| EBITDA | | | ,171 | | | ,307 | | | ,289 | | | ,894 | | | 1,119 | | |
| CURRATIO | | | -,082 | | | ,100 | | | ,090 | | | ,577 | | | 1,732 | | |
| 2 | | (Constant) | | |  | | |  | | |  | | |  | | |  | | |
| SIZE LN | | | -,263 | | | -,330 | | | -,301 | | | ,937 | | | 1,067 | | |
| LEVERAGE | | | ,229 | | | ,328 | | | ,299 | | | ,479 | | | 2,086 | | |
| EBITDA | | | ,171 | | | ,318 | | | ,288 | | | ,887 | | | 1,127 | | |
| CURRATIO | | | -,082 | | | ,110 | | | ,095 | | | ,560 | | | 1,787 | | |
| BIG4 | | | ,163 | | | ,094 | | | ,082 | | | ,853 | | | 1,173 | | |
| OPINION | | | ,098 | | | ,197 | | | ,172 | | | ,748 | | | 1,337 | | |
| TYPE | | | ,120 | | | ,050 | | | ,043 | | | ,949 | | | 1,054 | | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| a. Dependent Variable: INTRATE | | | | | | | | |
| **Excluded Variablesa** | | | | | | | |
| Model | | Beta In | t | Sig. | Partial Correlation | Collinearity Statistics | |
| Tolerance | VIF |
| 1 | BIG4 | ,162b | 2,069 | ,041 | ,181 | ,987 | 1,013 |
| OPINION | ,242b | 2,958 | ,004 | ,254 | ,881 | 1,136 |
| TYPE | ,090b | 1,134 | ,259 | ,100 | ,987 | 1,013 |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Excluded Variablesa** | | | | | | | | | | |
| Model | | | | | | Collinearity Statistics | | | | |
| Minimum Tolerance | | | | |
| 1 | | BIG4 | | | | ,532b | | | | |
| OPINION | | | | ,499b | | | | |
| TYPE | | | | ,536b | | | | |
| a. Dependent Variable: INTRATE | | | | | | | | | | |
| b. Predictors in the Model: (Constant), CURRATIO, SIZE LN, EBITDA, LEVERAGE | | | | | | | | | | |
| **Coefficient Correlationsa** | | | | | | | | | |
| Model | | | | CURRATIO | SIZE LN | | EBITDA | LEVERAGE | BIG4 |
| 1 | Correlations | | CURRATIO | 1,000 | ,063 | | ,078 | ,643 |  |
| SIZE LN | ,063 | 1,000 | | -,123 | ,068 |  |
| EBITDA | ,078 | -,123 | | 1,000 | ,268 |  |
| LEVERAGE | ,643 | ,068 | | ,268 | 1,000 |  |
| Covariances | | CURRATIO | ,059 | ,007 | | ,007 | ,195 |  |
| SIZE LN | ,007 | ,216 | | -,020 | ,039 |  |
| EBITDA | ,007 | -,020 | | ,127 | ,119 |  |
| LEVERAGE | ,195 | ,039 | | ,119 | 1,545 |  |
| 2 | Correlations | | CURRATIO | 1,000 | ,034 | | ,078 | ,651 | -,128 |
| SIZE LN | ,034 | 1,000 | | -,127 | ,007 | ,030 |
| EBITDA | ,078 | -,127 | | 1,000 | ,252 | ,042 |
| LEVERAGE | ,651 | ,007 | | ,252 | 1,000 | -,182 |
| BIG4 | -,128 | ,030 | | ,042 | -,182 | 1,000 |
| TYPE | -,070 | ,090 | | -,080 | -,061 | -,071 |
| OPINION | ,142 | -,181 | | ,003 | ,315 | -,348 |
| Covariances | | CURRATIO | ,058 | ,004 | | ,006 | ,200 | -,011 |
| SIZE LN | ,004 | ,212 | | -,020 | ,004 | ,005 |
| EBITDA | ,006 | -,020 | | ,121 | ,112 | ,005 |
| LEVERAGE | ,200 | ,004 | | ,112 | 1,636 | -,080 |
| BIG4 | -,011 | ,005 | | ,005 | -,080 | ,117 |
| TYPE | -,015 | ,038 | | -,025 | -,070 | -,022 |
| OPINION | ,016 | -,040 | | ,000 | ,193 | -,057 |

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coefficient Correlationsa** | | | | | | | | | | | |
| Model | | | | | | | TYPE | | | OPINION | |
| 1 | | Correlations | | | CURRATIO | |  | | |  | |
| SIZE LN | |  | | |  | |
| EBITDA | |  | | |  | |
| LEVERAGE | |  | | |  | |
| Covariances | | | CURRATIO | |  | | |  | |
| SIZE LN | |  | | |  | |
| EBITDA | |  | | |  | |
| LEVERAGE | |  | | |  | |
| 2 | | Correlations | | | CURRATIO | | -,070 | | | ,142 | |
| SIZE LN | | ,090 | | | -,181 | |
| EBITDA | | -,080 | | | ,003 | |
| LEVERAGE | | -,061 | | | ,315 | |
| BIG4 | | -,071 | | | -,348 | |
| TYPE | | 1,000 | | | -,146 | |
| OPINION | | -,146 | | | 1,000 | |
| Covariances | | | CURRATIO | | -,015 | | | ,016 | |
| SIZE LN | | ,038 | | | -,040 | |
| EBITDA | | -,025 | | | ,000 | |
| LEVERAGE | | -,070 | | | ,193 | |
| BIG4 | | -,022 | | | -,057 | |
| TYPE | | ,824 | | | -,063 | |
| OPINION | | -,063 | | | ,229 | |
| a. Dependent Variable: INTRATE | | | | | | | | | | | |
| **Collinearity Diagnosticsa** | | | | | | | | | | | |
| Model | Dimension | | Eigenvalue | Condition Index | | Variance Proportions | | | | | |
| (Constant) | | SIZE LN | LEVERAGE | | EBITDA |
| 1 | 1 | | 4,238 | 1,000 | | ,00 | | ,00 | ,00 | | ,02 |
| 2 | | ,500 | 2,911 | | ,00 | | ,00 | ,01 | | ,83 |
| 3 | | ,245 | 4,155 | | ,00 | | ,00 | ,03 | | ,04 |
| 4 | | ,016 | 16,461 | | ,01 | | ,01 | ,95 | | ,10 |
| 5 | | ,000 | 142,524 | | ,99 | | ,99 | ,02 | | ,01 |
| 2 | 1 | | 6,470 | 1,000 | | ,00 | | ,00 | ,00 | | ,01 |
| 2 | | ,648 | 3,159 | | ,00 | | ,00 | ,00 | | ,23 |
| 3 | | ,469 | 3,715 | | ,00 | | ,00 | ,00 | | ,62 |
| 4 | | ,248 | 5,111 | | ,00 | | ,00 | ,02 | | ,04 |
| 5 | | ,127 | 7,125 | | ,00 | | ,00 | ,02 | | ,02 |
| 6 | | ,026 | 15,836 | | ,00 | | ,00 | ,21 | | ,02 |
| 7 | | ,012 | 23,627 | | ,01 | | ,01 | ,74 | | ,05 |
| 8 | | ,000 | 179,273 | | ,99 | | ,99 | ,01 | | ,01 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Collinearity Diagnosticsa** | | | | | |
| Model | Dimension | Variance Proportions | | | |
| CURRATIO | BIG4 | OPINION | TYPE |
| 1 | 1 | ,01 |  |  |  |
| 2 | ,00 |  |  |  |
| 3 | ,42 |  |  |  |
| 4 | ,55 |  |  |  |
| 5 | ,02 |  |  |  |
| 2 | 1 | ,00 | ,01 | ,00 | ,00 |
| 2 | ,00 | ,58 | ,00 | ,00 |
| 3 | ,00 | ,27 | ,00 | ,00 |
| 4 | ,42 | ,00 | ,00 | ,00 |
| 5 | ,04 | ,10 | ,77 | ,00 |
| 6 | ,12 | ,00 | ,07 | ,83 |
| 7 | ,40 | ,05 | ,14 | ,15 |
| 8 | ,01 | ,00 | ,02 | ,02 |
| a. Dependent Variable: INTRATE | | | | | |

1. Based on search per February 24, 2013. [↑](#footnote-ref-1)