Aalto University
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Accounting quality and terms of debt: Evidence from IFRS firms

Accounting

Master's thesis

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Abstract of master's thesis

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Abstract

RESEARCH OBJECTIVES

This thesis analyzes the relation between accounting quality and terms of debt. The purpose is to examine whether firms with high accounting quality are able to obtain debt financing at better terms (i.e. with lower interest rate, less securitization and longer maturity) than firms with low accounting quality.

DATA

The empirical data is provided by a large, globally operating credit rating agency. It comprises both original (reported by firms) and adjusted (modified by the rating agency) financial statement figures. The research sample consists of 842 firm-year observations from years 2005-2007. It includes data from 61 industries and 47 countries. All sample firms report under the International Financial Reporting Standards (IFRS).

RESULTS

I find evidence supporting the hypothesis that accounting quality is incorporated into debt contracts. The information risk from lower accounting quality is, however, mainly reflected in the interest rate: the lower the accounting quality, the higher the interest rate. The evidence on the association between accounting quality and securitization and maturity is weaker and somewhat mixed.

I also find that financial statement adjustments made by the rating agency, in general, make the sample firms look more risky. For a majority of firms, the adjustments increase leverage and decrease profitability ratios.

Overall, the results indicate that (1) lenders consider borrowers' accounting quality when they determine the terms of debt contract and (2) the financial statement adjustments made by the rating agency provide information that is useful to lenders.

Keywords Accounting quality, debt contracts, loan terms, financial statement adjustments

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Maisterintutkinnon tutkielman tiivistelmä

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Tiivistelmä

TAVOITTEET Tutkimuksen tavoitteena on selvittää, parantaako korkea tilinpäätöksen laatu lainan ehtoja. Toisin sanoen, saavatko korkealaatuista tilinpäätösinformaatiota tuottavat yrityksen lainaa paremmin ehdoin (matalammalla korolla, vähemmin vakuuksin ja pidemmällä maksuajalla) kuin yritykset joiden tilinpäätöksen laatu on heikko.

AINEISTO Tutkimuksen empiirinen aineisto on saatu suurelta, kansainvälisesti toimivalta luottoluokitusyritykseltä. Aineisto sisältää sekä yritysten raportoimat että luottoluokitusyrityksen oikaisemat tilinpäätösluvut. Tutkimusotos koostuu 842 havainnosta vuosilta 2005-2007. Havaintoja on 61 eri toimialalta ja 47 maasta. Kaikki otokseen kuuluvat yritykset raportoivat noudattaen kansainvälisiä IFRS-standardeja (International Financial Reporting Standards).

TULOKSET Tutkimustulokset tukevat hypoteesia, jonka mukaan tilinpäätöksen laatu vaikuttaa velan ehtoihin. Tilinpäätöksen laadun vaikutus kuitenkin heijastuu lähinnä korkotasoon: korkealaatuista tilinpäätösinformaatiota tuottavat yrityksen saavat lainaa matalammalla korolla kuin heikompilaatuista informaatiota tuottavat yritykset. Tilinpäätösinformaation laatu ei juuri näytä vaikuttavan vaadittavien vakuuksien määrään tai laina-aikaan.

Tutkimuksessa havaitaan myös, että oikaistut tilinpäätösluvut saavat yrityksen näyttämään riskisemmältä kuin raportoidut luvut. Suurimmalla osalla yrityksistä oikaisut lisäävät velkaantuneisuutta ja pienentävät kannattavuutta kuvaavia tunnuslukuja.

Yleisesti ottaen tulokset viittaavat siihen, että (1) tilinpäätöksen laatu vaikuttaa velan ehtoihin ja (2) tilinpäätösoikaisut sisältävät lainanantajan kannalta hyödyllistä tietoa.

Avainsanat Tilinpäätösinformaation laatu, lainan ehdot, velan ehdot, tilinpäätösoikaisut

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1 INTRODUCTION

1.1 Background and motivation

Debt is a major source of new external financing. For example Henderson et al. (2001) note that debt issuances are substantially more common than equity issuances. In their cross-country study, they found that during the sample period of 1990 to 2001 firms raised approximately $25.3 trillion of new capital, with debt issuance accounting for $20.8 trillion (82%) of all securities issued. According to Altunbas et al. (2009), corporate bonds and syndicated loans made up 94% of all public funds raised in the European capital markets in 2007, while public equity issuance accounted for only 6%. Armstrong et al. (2010, 214) point out that even though many of the debt issuances are likely to be replacing existing debt, it is clear that firms access debt markets far more frequently than equity markets. Yet they observe that most of the focus of capital markets accounting research has historically been on equity markets.

Just over ten years ago Sloan (2001, 343) noted that "the explicit role of accounting information in debt contracts is extensive, but there is a relative little research in this area". It looks, however, that debt markets have recently begun to gain more and more attention from researchers. For example, a search from Social Science Research Network (SSRN)[1] website yields dozens of recent accounting papers that handle debt contracting issues. Also Armstrong et al. (2010, 217) observe this development. They state that "the literature on how attributes of accounting system affect the design of debt contracts is both relatively new and growing". In their recent paper, Costello and Wittenberg-Moerman (2011, 98) even state that "[t]he role of financial reporting quality in debt contracting is one of the fundamental issues in accounting research".

A central goal of accounting information is to mitigate information asymmetry problems between a firm and those providing resources to a firm (e.g. lenders and shareholders) by providing decision useful information (IASB, 2010). Defining "decision useful" is, however, not straightforward. Li (2011) notes that although lenders and shareholders claim on the same assets and profits, their use of accounting information is likely to be fundamentally different for two main reasons. First, while the upside potential is likely

[1] Social Science Research Network (http://www.ssrn.com) is a website devoted to the rapid worldwide dissemination of social science research. Most accounting related studies are published on SSRN before being submitted to an academic journal.

to be important for shareholders, lenders are mainly concerned about the downside risk. Second, compared to shareholders, lenders are less concerned about the long-term prospects of the firm beyond the debt horizon. Furthermore, Armstrong et al. (2010, 214-215) point out that information needs differ not only between debt and equity providers, but also within various suppliers of debt. That is, the information needs of banks, for example, are likely to differ from those of bondholders.

The importance of credit rating agencies has grown considerably during recent years, and they now have a major role in the debt markets (Jorion et al., 2009). Rating agencies act as information intermediaries that gather and analyze information about companies and provide assessment of their creditworthiness. (Beaver et al., 2006). As a central part of their rating process, rating agencies such as Moody's and Standard & Poor's analyze financial statements and make analytical adjustments to them. The purpose of these adjustments is to modify financial information so that it better reflects the underlying economics of a firm, and facilitates comparability (Moody's, 2005). Furthermore, adjustments aim at producing better estimates of the creditors' risks and rights (Standard & Poor's, 2007). Financial statement adjustments can thus be seen as a mechanism that enhances the decision usefulness of accounting information, at least in the credit risk assessment context.

1.2 Research question

The purpose of this thesis is to examine the association between accounting quality and terms of debt. More specifically, I analyze whether high-quality accounting helps to mitigate the information asymmetry problems between lenders and borrowers so that lenders are able to provide loans with lower interest rates, less securitization and longer maturities. The research question is formulated as follows:

> *Are firms with high accounting quality able to obtain debt financing at better terms than firms with low accounting quality?*

1.3 Data and research design

The data used in the empirical analysis is provided by a large, globally operating credit rating agency. It comprises balance sheet, income statement and cash flow statement information, as well as credit ratings. The special feature of the data is that it includes

both original (reported by firms) and adjusted (modified by the rating agency) financial figures. The research sample consists of 842 firm-year observations from years 2005-2007. It includes data from 61 industries and 47 countries. All sample firms report under the International Financial Reporting Standards (IFRS).

1.4 Results

I find that the financial statement adjustments made by the credit rating agency, in general, make the sample firms appear more risky. The adjustments have a strong impact especially on LEVERAGE, which is adjusted upward for 93.7% of the sample and experiences a median increase of 18.3%. I also find evidence supporting the hypothesis that accounting quality is incorporated into debt contracts. The information risk from lower accounting quality is, however, mainly reflected in the interest rate. The evidence on the association between accounting quality and securitization and maturity is weaker and somewhat mixed. Finally, my results suggest that the impact of accounting quality differs between investment grade and speculative grade firms. Overall, the results indicate that (1) lenders consider borrowers' accounting quality when they determine the terms of debt contract and (2) the financial statement adjustment made by the rating agency provide information that is useful to lenders.

This thesis adds to the growing body of literature examining the association between accounting quality and debt contracting. Contrary to most previous studies that employ US GAAP data, this thesis utilizes data from IFRS firms. Moreover, this thesis provides evidence on the decision usefulness of the rating agency's financial statement adjustments.

1.5 Structure

The rest of this thesis is structured as follows. Chapter 2 presents the theoretical framework. It introduces the concept of accounting quality and provides an overview of debt markets, credit ratings and financial statement adjustments made by credit rating agencies. Chapter 3 reviews prior studies. Chapter 4 motivates and presents the hypotheses. Chapter 5 describes data, variables and methodology used in the empirical analysis. Chapter 6 reports and discusses the empirical results. Chapter 7 concludes.

2 ACCOUNTING QUALITY, DEBT MARKETS AND CREDIT RATINGS

2.1 Accounting quality

The need for financial reporting arises from the separation between ownership and management. It can be viewed as a mechanism that helps owners and other capital providers to monitor the performance and financial situation of the company. In other words, financial reporting serves as a vehicle that reduces the information asymmetry between the outsiders (e.g. lenders) and insiders (e.g. managers) of the company. To succeed in this task, financial reporting must be of high quality, i.e. it must provide faithfully represented information that is relevant for decision making. This section discusses the factors that affect the demand and quality of financial reporting.

2.1.1 The role of accounting information in decreasing information asymmetry

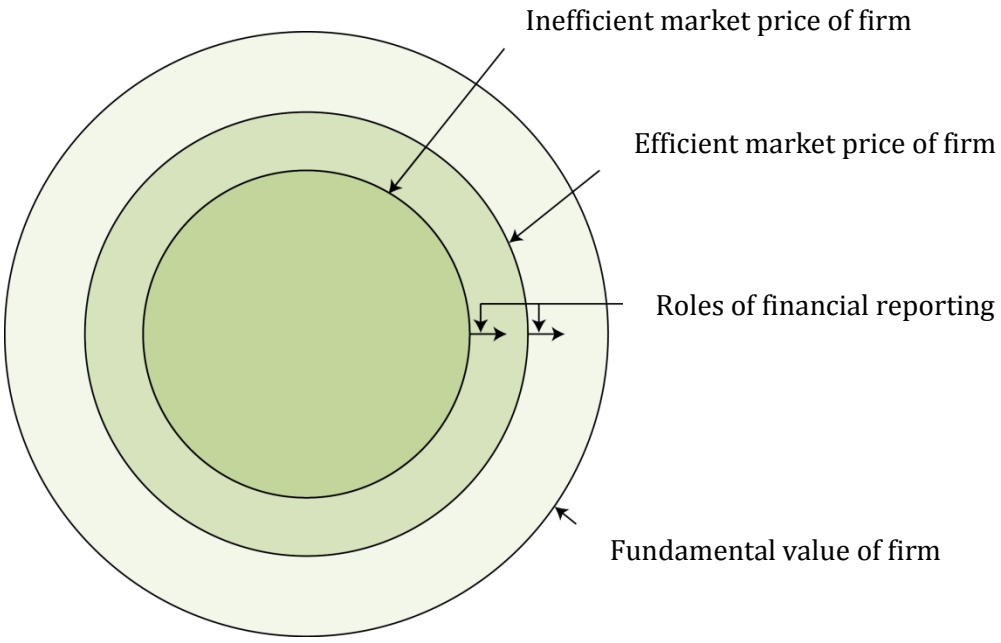
An economy is said to be characterized by information asymmetry when some parties to business transactions may have an information advantage over others**.** There are two major types of information asymmetry – adverse selection and moral hazard. *Adverse selection* occurs when some people (e.g. firm manager or other insiders) know more about the current conditions and future prospects of the firm than outside investors. They can then exploit this information advantage by for example biasing information or delaying its release. This reduces outside investors' abilities to make good investment decisions and make capital markets function less effectively than they should. *Moral hazard*, in turn, occurs when some parties of business transaction can observe the consequences of their action but other parties cannot. Moral hazard problem exist mostly because of the separation of ownership and control that is typical for large business entities. For example, the manager may be tempted to shirk in effort because it is difficult to observe whether deterioration in firm performance is caused by the lack of managerial effort or by other factors. (Scott, 2009, 13-14, 114-117).

Financial accounting and reporting can be seen as a mechanism that helps to convert inside information into public information, thereby reducing the information asymmetry problem. Beyer et al. (2010) identify two important roles that accounting information has in market-based economies. First, it allows capital providers to evaluate the return potential of investment opportunities. This *valuation role* of

accounting information helps to mitigate the adverse selection problems caused by information asymmetry between outside capital providers and firm insiders. Second, it allows capital providers to monitor the use of their capital. This *stewardship role* of accounting information helps to mitigate the moral hazard problems that result from the separation of ownership and control.

Figure 1 illustrates the role of financial reporting in markets that are not fully efficient. The outer circle of the figure depicts the fundamental value of the firm. The second circle depicts the efficient market price of the firm, i.e. price that comprises all publicly available information. The inner circle represents the inefficient market price of the firm, i.e. price that does not corporate all publicly available information. The role of financial reporting is (1) to reduce information asymmetry by converting inside information into outside information (enlarging the second circle) and (2) to reduce inefficiencies by reporting information so that it is easily available and understandable (making the mispricing area between the inner and second circle as small as possible). (Scott, 2009, 116-117, 190).

FIGURE 1: ROLE OF FINANCIAL REPORTING IN DECREASING INFORMATION ASYMMETRY



Source: Scott (2009, 190)

2.1.2 Defining accounting quality

The previous section established that demand for financial accounting arises from the need to mitigate information asymmetry problems between firm insiders and outsiders. This raises a question: How should financial information be prepared and presented so that it can succeed in this task? Scott (2009, 59) states that there does not exist a theoretically correct way to prepare financial statements. He, however, notes that if accountants understand the decision problems of financial statement users, they can tailor financial statement information so that it is more useful.

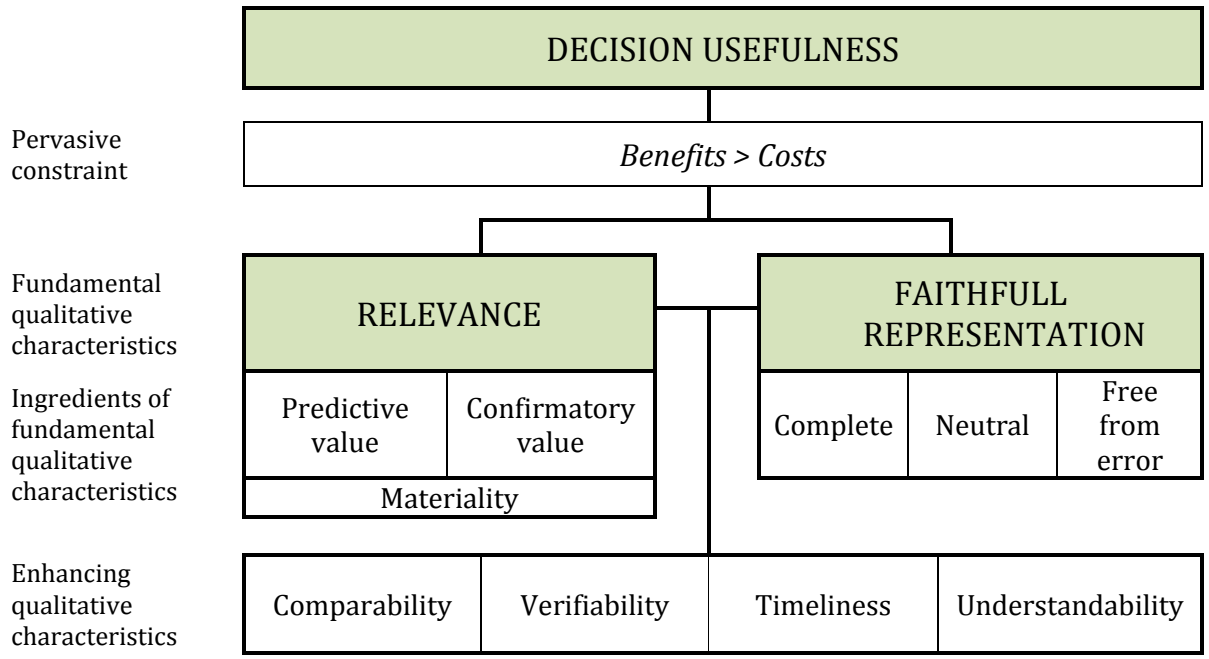
Major accounting standard-setting bodies such as the IASB[2] and FASB[3] have also adopted this decision usefulness approach in their conceptual frameworks (Scott, 2009, 88). For example, the IASB framework (2010) states that the purpose of financial reporting is "to provide financial information about the reporting entity that is useful to existing and potential investors, lenders and other creditors in making decisions about providing resources to the entity. Those decisions involve buying, selling or holding equity and debt instruments, and providing or settling loans and other forms of credit."

Moreover, the IASB Framework (2010) identifies the qualitative characteristics that make the financial statement information useful. The two fundamental qualitative characteristics are relevance and faithful representation. Information is considered to be *relevant* if it is capable of making a difference in the decisions made by users, i.e. if it has predictive or confirmatory value (or both). Materiality is an entity-specific aspect of relevance: information is material if omitting or misstating it could influence the decision making based on financial information. To be useful, financial information must not only represent relevant phenomena – it must also *faithfully represent* the phenomena that it purports to represent. A perfectly faithful representation has three characteristics: it is complete, neutral and free from error. In addition to these two fundamental qualitative characteristics, the framework also lists four enhancing qualitative characteristics: comparability, verifiability, timeliness and understandability. The framework recognizes that financial reports cannot provide all possible information because of cost constraint – reporting financial information imposes costs,

[2] International Accounting Standards Board (IASB) is the standard setting body responsible for developing the International Financial Reporting Standards (IFRS).
[3] Financial Accounting Standards Board (FASB) is the standard setting body responsible for developing the Generally Accepted Accounting Principles in the U.S. (US GAAP).

and these costs must be justified by the benefits. Figure 2 presents the hierarchy of accounting qualities as they are defined in the IASB framework (2010).

FIGURE 2: QUALITATIVE CHARACTERISTICS OF ACCOUNTING INFORMATION



The figure is based on the IASB framework (2010)

Scott (2009, 65) notes that concepts of accounting quality and decision usefulness are closely intertwined. He uses the term "informative" to refer to high-quality, transparent and precise accounting information. Scott (2009, 66) states that the more informative the financial statement, the more decision useful it is. In other words, high-quality accounting information enables better predictions about the future of a firm and thus facilitates decision making. In the debt market context, this implies that when borrower's accounting quality is high, it is easier for the creditor to assess its creditworthiness and thereby make better lending decisions.

Even though accounting quality is a recurring topic in accounting literature, there is no uniform definition of what it exactly comprises. Moreover, since accounting quality cannot be observed directly, there are no unambiguous ways to measure it. (Verleun et al., 2011, 50). As a result, researchers have developed various proxies for accounting

quality. In debt-related accounting research, commonly used quality measures include accruals (e.g. Bharath et al., 2008; Dechow & Dichev, 2002; Francis, Schipper et al., 2005; Jorion et al., 2009; Sufi, 2007) and disclosure policy (e.g. Leuz & Verrecchia, 2000; Sengupta, 1998; Yu, 2005). Research on accounting quality and its impact on debt contracting is reviewed in more detail in chapter 3.

2.1.3 Factors influencing accounting quality

The IASB aims at developing an internationally acceptable set of high quality financial reporting standards. To achieve this goal, it has issued principles-based standards, and taken steps to remove allowable accounting alternatives and to require accounting measurements that better reflect a firm's economic position and performance. (Barth et al., 2008, 468). The purpose of uniform accounting standards is to reduce managers' ability to record similar economic transactions in dissimilar ways. In real world, however, the financial statement information usually does not capture the underlying business reality perfectly. (Palepu et al., 2007, 89-90). Palepu et al. (2007, 89-94) list three potential sources of noise and bias in accounting data: (1) rigidity of accounting standards, (2) forecast errors and (3) managers' accounting choices.

Rigidity of accounting standards

Rigid standards may help to increase the credibility of financial statements by limiting a firm's ability to distort them. The problem is, however, that rigid standards also reduce the flexibility to reflect genuine business differences in a firm's accounting decisions. In other words, accounting rules introduce noise and bias because it is difficult to restrict management discretion without reducing the information content of accounting data. A good example is International Accounting Standard (IAS) 38 issued by the IASB. The standard requires firms to recognize assets for certain development outlays, but requires expensing the preceding research outlays. Since some research expenditures clearly have future value[4], complying with IAS 38 can lead to distorted accounting information. (Palepu et al., 2007, 90-93).

[4] According to Troberg (2007, 156-157) these cost, in economic sense, represent investment in the future. Therefore they should first be capitalized and later on matched with related revenues.

Forecast errors

Many business decisions involve some degree of uncertainty. Because managers do not have perfect foresight, they cannot predict future consequences of current transactions flawlessly. For example, if the manager estimates that the probability of collecting payments from the customers is reasonably certain, firm treats transactions as sales. Since actual customer defaults are likely to differ from those that are estimated, accounting data typically has noise that arises from forecast errors. (Palepu et al., 2007, 93)

Managers' accounting choices

Managers may be tempted to exercise their accounting discretion to achieve certain objectives. First, if a firm is close to violating its debt covenants, managers are likely to choose accounting policies that reduce the probability of covenant violation. Second, managers have incentives to adopt accounting policies that maximize their compensation. Third, managers may make accounting decisions to influence investor perceptions in corporate control contests (e.g. hostile takeovers). Fourth, tax considerations may affect reporting choices. Fifth, managers may make accounting choices to influence regulatory outcomes (e.g. to prevent infringements of competition laws), capital markets or important stakeholders (e.g. labor unions). Sixth, the competitive environment of the company may influence its reporting choices, such as disclosing detailed segment data. The company may also discourage new entrants by making profit-decreasing account choices. (Palepu et al., 2007, 93-94).

2.2 Debt markets

There are two main sources of debt: private debt provided by banks or other financial institutions, and public debt that is sought directly from investors. Debt contracts typically have multiple contract terms: besides defining interest rate and maturity, lenders can also set debt covenants and require collateral. This section discusses the sources of debt and debt contracting terms.

2.2.1 Sources of debt

There are two primary sources of debt financing: private and public debt markets. Private debt is typically provided by banks or other financial institutions. Public debt is sought directly from investors, for example through sales of commercial paper or

through the issuance of bonds. (Palepu et al., 2007, 402-403). Lenders in these two markets differ e.g. with respect to their access to information, ability to monitor the borrower, flexibility in resetting contract terms and the cost of renegotiating the contract.

Since public debt is typically held by dispersed arm's-length investors, monitoring the debt and renegotiating the contract is difficult because of coordination and free-rider problems. In contrast, private lenders, such as banks, have superior access to information and they make investments in monitoring the borrower. Consequently, they face lower renegotiation cost and are able to write detailed and tailor-made contracts, breaches of which trigger renegotiation. (Bharath et al., 2008).

Syndicated loans are private debt securities that also have features of public debt, such as credit ratings and a secondary market (Wittenberg-Moerman, 2009). In Europe, however, the secondary market is relatively nascent and illiquid, especially compared with that in the U.S. (Standard & Poor's, 2010). In a syndicated loan, two or more lenders agree jointly to make a loan to a borrower. Every syndicate member has a separate claim on the debtor, although there is a single loan agreement contract. The syndicate is led by one or several arrangers that are responsible for bringing together the syndicate that lends money at the specified set of terms. Corporate borrowers usually have their relationship banks at the core of the syndicate and they may bring in other institutions according to the size, complexity and the pricing of the loan. Arranging a syndicated loan is typically quicker and less costly (in terms of set-up fees) than a bond issuance. (Casu et al., 2006, 90-91).

2.2.2 Terms of debt

Interest rate

In general, the interest rate increases with the riskiness of the borrower. When determining the interest rate, it is important to assure that the yield on the loan is sufficient to cover (1) the lender's cost of borrowed funds, (2) the lenders cost of administering and servicing the loan, (3) a premium for exposure to default risk, and (4) at least a normal return on the equity capital necessary to support the lending operation. (Palepu et al., 2007,411-413).

Maturity

Short-term loans carry the advantage that the lender can frequently review the borrower and make adjustments to the terms of the loan when necessary (Palepu et al., 2007, 406). Borrowers with high probability of having insufficient cash flows therefore often have no choice but to borrow short term (Stohs & Mauer, 1996). Renegotiation, however, imposes various transaction costs. The academic literature suggests that small firms with lower transaction costs are likely to issue short-term debt, while large firms are more likely to issue long-term debt to take advantage of economies of scale. (Alcock et al., 2012).

Covenants

The covenants represent a mechanism for ensuring that the business will remain as strong as the two parties anticipated at the time the loan was granted. The lender may, for example, require that the borrower maintains certain level of net worth, or a minimum coverage ratio. The lender can also set covenants that restrict certain actions, such as other borrowing activity, pledging assets to other lenders, selling of substantial part of assets, engaging in mergers or acquisitions, and payment of dividends. Violation of a covenant can cause immediate acceleration of the debt payment. In most cases, however, lender uses it as an opportunity to re-examine the situation and either waive the violation or renegotiate the loan. (Palepu et al., 2007, 410-411).

Securitization

If the firm has suitable collateral available, it may be able to reduce its borrowing costs by committing not to sell assets. It can do so credibly by securing the debt contract. A debt contract is said to be secured if the borrower pledges assets as security until the loan is paid in full. When debt is secured, the firm cannot dispose of the pledged assets without borrowers' approval. Moreover, if the firm files for bankruptcy, secured creditors acquire title to the pledged assets prior to any other claimant. The advantage of secured debt is that it is typically not as expensive to monitor as other forms of bond covenants. (Morellec, 2001).

2.3 Credit ratings

The purpose of credit ratings is to provide objective assessment of the creditworthiness of a borrower. Credit ratings are provided by rating agencies such as Moody's and Standards & Poor's, and they play an important role in the corporate debt markets. Adjusting financial statements to better fit the rating agencies' analytical purposes is a central part of the credit rating analysis. This section discusses credit ratings and credit rating agencies' financial statement adjustments.

2.3.1 Credit ratings and credit risk

Credit ratings are opinions about credit risk. They express the rating agency's opinion about the ability and willingness of a debt issuer to meet its financial obligations in full and on time (Standard & Poor's, 2011). The purpose of credit ratings is to provide objective, consistent and simple measures of creditworthiness. For a typical investor (e.g. bondholder) it is difficult to assess the credit risk and monitor the ongoing activities of the debt issuer. Rating agencies, on the other hand, have economies of scale and expertise to perform these tasks. Ratings can thus help reduce the information asymmetry between debt issuers and investors. As a result, credit ratings, in aggregate, lower the costs of borrowing and lending and increase overall market efficiency for both issuers and investors (Moody's, 2002).

Credit ratings play an important role in corporate financing and investment decisions. A firm that can issue higher rated bonds can usually obtain debt at better terms than a firm that issue only lower rated bonds. The two major rating services for corporate debt are Moody's and Standard & Poor's (S&P). (Blume et al., 1998). The rating schemes used by these two firms are presented in Table 1.

Loan pricing may vary according to factors such as the type of borrower, purpose of the loan, and whether the loan is secured or not. Typically, however, the size of margin (i.e. spread over LIBOR or some other benchmark rate) increases with credit risk. Triple-A rated loans have the lowest credit risk and thus have the lowest margins. Loans that have a credit rating less that BBB are regarded as speculative, making these types of credit most costly. (Casu et al., 2006, 92-93).

TABLE 1: CREDIT RATING SYMBOLS

Moody's	S&P	Quality of issue	
Aaa	AAA	Highest quality. Very small risk of default	
Aa1 Aa2 Aa3	AA+ AA AA-	High quality. Small risk of default.	INVESTMENT GRADE
A1 A2 A3	A+ A A-	High medium. Strong attributes, but potentially vulnerable.	
Baa1 Baa2 Baa3	BBB+ BBB BBB-	Medium quality. Currently adequate, but potentially unreliable.	
Ba1 Ba2 Ba3	BB+ BB BB-	Some speculative element. Long-run prospects questionable.	
B1 B2 B3	B+ B B-	Able to pay currently, but at risk of default at the future.	SPECULATIVE GRADE
Caa1 Caa2 Caa3	CCC+ CCC CCC-	Poor quality. Clear danger of default.	
Ca	CC	High speculative quality. May be in default.	
C	C	Lowest rated. Poor prospects of repayment.	
-	D	In default.	

Source: Casu et al., (2006, 93); Moody's, (2009); Standard & Poor's, (2009)

2.3.2 Financial statement adjustments as a part of the rating process

Adjusting financial statements is a fundamental part of credit rating process for rating agencies such as Moody's and Standard & Poor's (S&P). According to Moody's (2005), the purpose of financial statement adjustments is to "better reflect, for analytical purposes, the underlying economics of transactions and events and to improve comparability of a company's financial statements with those of its peers." S&P (Standard & Poor's, 2007) states that the objectives of specific adjustments can be classified into one or more of the following categories:

- Facilitate comparability
- Facilitate period-over-period comparisons
- Better reflect underlying economics
- Normalize different estimates and assumptions
- Adjust for inconsistencies within accounting treatments
- Better reflect creditor's risks and rights
- Enhance forecasting

Both Moody's and S&P emphasize that their adjustments do not imply that companies' reported financial statements fail to comply with accounting standards. Moody's (2005) notes that their goal is to enhance the analytical value of financial statement, not to assess compliance with rules. According to S&P (2007), adjustments reflect the fundamental difference between accounting and analysis: the accountant must find one number to use in presenting the financial data, while the analyst's task is to pick apart the numbers in order to depict situation differently for a specific purpose or to gain another vantage point.

The adjustments made by Moody's (2005) and S&P (2007) can be divided into two main categories: Standard adjustments are calculated systematically (e.g. using standardized worksheets), and are applied routinely for the majority of companies. Non-standard adjustments, in turn, are applied at the discretion of rating analysts. Moody's (2005) notes that its standard adjustments are mostly based on publicly available information, but non-standard adjustments may also incorporate private information. Similarly, S&P (2007) states that their adjustments are occasionally based (in whole or in part) on nonpublic information, but that their published data refers only to publicly available information.

Batta et al. (2011) note that the adjustments used by Moody's and S&P are very similar to recommendations in financial analysis textbooks, and are representative of adjustments practices most widely accepted by profession and academe. The rest of this section presents the standard adjustments as they are defined in Moody's (2005) rating methodology for non-financial companies reporting under IFRS. An overview of the reporting problems related to adjustments is given first, and is followed by Table 2, which describes in more detail the impact the adjustments have on the financial statements.

Defined benefit pensions

Accounting standards permit artificial smoothing of pension expense, which can distort the measurement of pension expense and liabilities. Moreover, accounting standards require companies to classify cash contributions to the pension trust as an operating cash flow, even though these contributions (when they reduce plan underfunding) in economic sense represent reduction of debt, which is a financing activity. Moody's views the underfunded portion of the pension plan as debt-like obligation, and adjusts financial statements accordingly. In addition, Moody's aims at improving comparability between pre-funded and unfunded pension schemes. This is done by simulating a pre-funding of pension obligations for those companies that have unfunded pension arrangements. (Moody's, 2005).

Operating leases

Pay-as-you-go accounting for operating leases often does not reflect the true nature of these lease obligations. Moody's lists three main reasons for adjusting operating leases. First, companies do not recognize debt, even though failure to make a lease payment can trigger default, as if the obligation was debt. Second, incurring operation lease obligations reduces a company's borrowing capacity. Third, in the absence of a lease financing option, the company would likely to borrow money and buy the asset. Consequently, Moody's capitalizes operating leases, i.e. recognizes debt and an increases fixed assets. (Moody's, 2005).

Capitalized interest

Under certain circumstances, companies are allowed to capitalize interest cost as a part of the cost of a qualifying asset. Moody's views capitalized interest cost as a cost of obtaining finance, and expenses all capitalized interest costs. (Moody's, 2005).

Capitalized development costs

Capitalization of product development costs is not permitted under US GAAP, but is mandatory under IFRS when certain criteria are met. In addition, capitalization produces an intangible asset, which is difficult to value and can sometimes have a relatively short life. Moody's views capitalized development costs as an operating expense, and expenses all capitalized development costs. (Moody's, 2005).

Interest expense related to discounted long-term liabilities other than debt

Under IFRS, certain long-term liabilities other than debt are discounted to present value, and the unwinding of the discount is recorded as an interest expense. This reporting distorts the relationship between interest expense and debt, and undermines the comparability of companies. Consequently, Moody's reclassifies the interest expense arising from discounting to operating expenses. (Moody's, 2005).

Hybrid securities

Contrary to their accounting treatment, hybrid securities are generally not pure debt or pure equity. Moody's assigns weights to the debt and equity features of the security (e.g. 75% debt and 25% equity) and reclassifies them accordingly. (Moody's, 2005).

Securitizations

In certain circumstances, companies can report the transfer of financial assets (e.g. receivables) to securitization trust as sale. If company still retains significant risks related to these transferred assets, which is often the case, Moody's views the securitization transactions as collateralized borrowing, and adds debt and assets to the balance sheet. (Moody's, 2005).

Consistent measurement of funds from operations

When reporting the cash flow from operations, IFRS companies using the indirect method can choose the starting point for the calculation between net income, operating profit and pretax income. This flexibility causes inconsistent measurement of funds from operations (FFO, i.e. cash from operations before changes in working capital). Moody's adjusts working capital so that calculation of FFO is consistent with those companies that use net income as a starting point for their cash flow statement. (Moody's, 2005).

Unusual and non-recurring items

Unusual and non-recurring transactions, if not separately considered, can create a misleading impression about a company's financial situation and future trends. Consequently, Moody's captures the effect of these transactions and events in special income statement and cash flow statement captions. Moody's computation of key ratios excludes these captions. (Moody's, 2005).

TABLE 2: FINANCIAL STATEMENT ADJUSTMENTS

Adjustment	Balance sheet	Income statement	Cash flow statement
Defined benefit pensions (PART 1: Pre-funded and unfunded schemes)	The underfunded defined pension obligation is recognized as debt. All other pension assets and liabilities recognized under IFRS are removed.	All pension costs are reversed. The operating cost of the pension plan is recognized as service cost. The related interest cost is reclassified from other income/expense to interest expense. Actual losses or gains on pension assets are added or subtracted in other income/expense (but only in an amount up to the interest cost after attributing interest expense to pension-related debt).	Only the service cost is recognized as an outflow from CFO. Other employer cash pension contributions are reclassified as CFF.
Defined benefit pensions (PART 2: Incremental adjustments to unfunded schemes)	The portion of the debt recognized in Part 1 is reversed, and corresponding increase in equity is recorded. This "equity credit" simulates a pre-funding of pension obligations.	Interest expense is aligned with the debt adjustment.	-
Operating leases	Operating leases are capitalized by adding both debt and fixed assets.	Operating expense (or COGS and SG&A expenses proportionally) are reclassified so that one-third of the rent expense is reclassified to interest expense and the remaining two-thirds rent to "Depreciation – Capitalized Operating Leases" (a component of operating profit).	Principal portion of lease payments is reclassified from CFO to FFO.
Capitalized interest	PP&E is reduced by the amount of interest capitalized during the period. Deferred taxes are adjusted accordingly. Retained earnings are reduced by the after-tax cost of the additional interest expense recognized on the income statement.	Interest expense is increased by the amount of interest capitalized during the period. Applicable tax expense is reduced.	Capitalized interest is reclassified from CFI to CFO.
Capitalized development costs	Intangible assets are reduced by the cumulative amount of capitalized development costs. Deferred taxes are adjusted accordingly. Retained earnings are reduced by the cumulative amount of capitalized development costs, net of tax.	Operating expenses are increased by the amount of capitalized interest costs for the period. Amortization charge related to the capitalized development costs is removed. Applicable tax expense is adjusted.	Capitalized development costs are reclassified from CFI to CFO.

TABLE 2 (CONTINUED)

Adjustment	Balance sheet	Income statement	Cash flow statement
Interest expense related to discounted long-term liabilities other than debt	-	Operating expenses are increased by the cost of unwinding the discounted liabilities. Interest expense is reduced by that same amount.	-
Hybrid securities	Hybrid securities are reclassified in accordance with the weights assigned to their debt and equity features (e.g. 75% debt and 25% equity).	If debt instrument has an "equity-like" component, the ratable amount of interest expense is reclassified to dividends. If equity instrument has a "debt-like" component, the ratable amount of dividends is reclassified to interest expense.	If interest expense is reclassified as dividends, the cash flow is reclassified from CFO to CFI, and vice versa.
Securitizations	Debt is increased by the ending balance of uncollected or unrealized assets that are transferred in the securitization arrangement. The assets of appropriate category are increased by the same amount.	Interest expense is imputed on the amount of additional debt recognized (at the company's short-term borrowing rate). Other expenses are reduced by the same amount.	Upon the initial derecognition of assets, the CFO is reclassified to CFF. If the amount of uncollected receivables in the securitization increases, the amount of that increase is reclassified from CFO to CFF. If it decreases, the amount of that decrease is reclassified from CFF to CFO.
Consistent measurement of FFO	-	-	If cash flow statement starting point is pre-tax income or operating profit, working capital is adjusted by the difference between current tax expense and tax paid. If the starting point is operating profit, working capital is also adjusted by the difference between net interest expense (including capitalized interest) and net interest paid.
Unusual and non-recurring items	Adjusted only if unusual or non-recurring items could have material impact.	The effects of unusual or non-recurring items (net of the related tax effect) are reclassified to a special income statement caption that is below net profit after tax. They are excluded when computing key ratios.	The effects of unusual or non-recurring operating cash inflows and outflows are reclassified to a special caption in the CFO. They are excluded when computing key ratios.

Notes: PP&E is the property, plant and equipment. COGS is the cost of goods sold. SG&A is selling, general and administrative expenses. CFO is operating cash flow. CFI is investing cash flow. CFF is financing cash flow.

source: Moody's (2005)

3 PRIOR RESEARCH AND LITERATURE ON ACCOUNTING QUALITY AND ITS IMPACT ON DEBT CONTRACTING

3.1 Accruals quality

Sloan (1996) separates reported earnings into cash flow and accrual components. He examines these two components separately and finds that the accrual component has lower persistence than the cash flow component. This finding suggests that high level of accruals is associated with low quality of earnings. Additionally, Sloan (1996) documents – contrary to the traditional efficient market theory – that investors fail to correctly distinguish between the different persistence levels of these two earnings components. Consequently, firms with relatively high accrual levels experience negative abnormal stock returns (and low accrual firms positive abnormal stock returns) that are concentrated around future earnings announcements.

Hirshleifer et al. (2004) use a balance sheet based approach to measure the difference between cash and earnings profitability (i.e. total accruals). More specifically, they demonstrate that the level of net operating assets (NOA)[5] represents the difference between cumulative earnings and cumulative free cash flow over time. Hirshleifer et al. (2004) note that accumulation of earnings is not sustainable unless there is a commensurate accumulation of free cash flows. A high level of NOA therefore indicates that the past accounting performance has been good, but equally good performance is unlikely to be sustained in the future. Hirshleifer et al. (2004) hypothesize that investors often fail to discount for this sustainability effect, which leads to excessive investor optimism and systematic errors in market prices. Consistent with this hypothesis, they find that firms with high net operating assets earn negative long-run abnormal returns.

Even though the mispricing of accruals was first studied in the context of equity markets, subsequent research has shown that accruals are relevant also in the debt markets. For example Bhojraj and Swaminathan (2009) point out that since debt payments are made from cash flows – not from reported earnings – also lenders should

[5] Hirshleifer et al. (2004) measure NOA as the difference between operating assets (total assets – cash and short-term investments) and operating liabilities (total assets – total debt – minority interest – preferred stock – common equity) scaled by lagged total assets (assets at the beginning of financial year).

pay attention to cash flows and earnings quality. They examine the accruals anomaly in bond markets and find that corporate bonds of firms with low operating accruals perform better than bonds of high operating accruals firms. Their results therefore support the theory that mispricing of accruals documented in equity markets also extends to bond markets.

Francis et al. (2005) show that higher-quality accruals are associated with lower cost of debt. Moreover, Francis et al. (2005) examine whether the pricing of accruals quality differs depending on the source of accruals quality. They find that the discretionary accruals component (i.e. accruals that represent managerial choices) has significantly smaller pricing effect than the innate accruals component (i.e. accruals that are driven by the firm's business model and operating environment). They hypothesize that discretionary accruals component reflects a mixture of information-risk decreasing and information-risk increasing effects[6], and that these conflicting effects lower the discretionary accruals' overall cost of capital impact. Finally, Francis et al. (2005) conclude that their findings support the view that information risk is a priced risk factor in capital markets.

Bharath et al. (2008) show that high-quality accounting, measured with the magnitude of operating accruals, lowers the cost of debt. Moreover, they demonstrate that accounting quality affects the choice of debt market, as well as the debt contract design. Bharath et al. (2008) show that firms with poorer accounting quality are more likely to choose private debt than public debt. Additionally, they document significant differences in the debt contract design between these two markets. In the case of private debt, there is substantial variation in all contract terms based on variation in borrower accounting quality: firms with low accounting quality pay higher interest rates, obtain shorter maturities and are more likely to post collateral. In public debt contracts, however, the higher risk from poorer accounting quality is entirely reflected in the interest spread. Bharath et al. (2008) hypothesize that these distinctions result from institutional differences between private and public lenders. Because private

[6] Discretion allows reporting choices that can be used to improve earnings as a performance indicator. However, discretion can also be exploited to manage earnings in order to extract opportunistic gains.

lenders (e.g. banks) have superior information access[7] and recontracting flexibility compared to public lenders (e.g. bondholders), they are better able to fine-tune debt contracts on both price and non-price dimensions. Finally, Bharath et al. (2008) conjecture that accounting quality proxies for the information risk associated with estimating future cash flows of the firm, and that this information risk is priced incremental to borrower default risk.

3.2 Completeness of accounting information and disclosure quality

Duffie and Lando (2001) develop a theoretical model that analyses the economic consequences of accounting quality in the secondary corporate bond markets. More specifically, they show that imperfect information affects the level and shape of term structures of yield spreads[8] on corporate bonds. Their logic is as follows: Bond prices often drop abruptly at or around the time of default, because default "surprises" investors with imperfect information. If the investors had perfect information, there would be no surprises, and bond prices would converge continuously to their default-contingent values. Consequently, Duffie and Lando (2001) demonstrate that with perfect information, yield spreads for surviving firms are zero at zero maturity, but eventually climb rapidly with maturity for risky firms. Furthermore, they show that with imperfect information, the uncertainty about the default probability of a firm increases. As a result, yield spreads become positive at zero maturity, and their variation with maturity is more moderate.

Consistent with Duffie and Lando (2001), Yu (2005) finds that firms with high quality disclosures have lower credit spreads in secondary bond markets, and that this "transparency spread" is especially large among short-term bonds. Furthermore, Yu (2005) shows that even though credit ratings incorporate some information about accounting quality, they do not fully absorb the effect of information disclosure. Consequently, among issuers with the same credit rating, those with higher disclosure quality have lower credit spreads.

[7] Private debt holders often base their lending decisions on proprietary information that is unavailable to the public (e.g. internal financial forecasts, detailed data on sales and inventory and capital expenditure budgets) (Armstrong et al., 2010, 214).

[8] The "term structure" refers to the relationship between the term to a maturity of a bond and its yield to maturity. The yield includes not only the interest income, but also any anticipated gain or loss due to the current price being lower or greater than the maturity value. The shape and level of the yield curve therefore reflect market's expectations of the future. (Casu et al., 2006, 457).

Also a number of other studies have used disclosure quality as a proxy for accounting quality. Sengupta (1998) finds a significant negative association between firms' disclosure quality and borrowing cost. He concludes that firms that constantly make timely and informative (i.e. high quality) disclosures are less likely to withhold value-relevant unfavorable information, and are therefore charged a lower risk premium. Leuz and Verrechia (2000) document that increased disclosure reduces information asymmetry and thereby lowers firms' cost of capital. They examine German firms that have switched from the local to an international reporting regime (IAS or US GAAP), and show that this commitment to substantially increased level of disclosure is associated with lower bid-ask spreads.

3.3 Internal control reports

Under the Sarbanes-Oxley Act, US public companies are required to assess the effectiveness of their internal controls over financial reporting and to provide periodic auditor-attested evaluations of their internal control effectiveness (Kim et al., 2011). Internal control reports thus provide a rigorous assessment of the reliability of a firm's financial reporting (Costello & Wittenberg-Moerman, 2011). Kim et al. (2011) examine how the disclosure of material internal control weakness (ICW) affects bank loan contracting, while Costello and Wittenberg-Moerman (2011) study the impact of ICW in the syndicated loan markets. Both studies show that ICW firms pay higher interest rates and face higher likelihood of a loan being secured than non-ICW firms. Costello and Wittenberg-Moerman (2011) further document that the number of financial covenants imposed by lenders decreases following ICW. They conjecture that when an ICW indicates that reporting quality is low, lenders are likely to trade off more timely financial ratios for more reliable credit ratings, and to move toward security and price protection.

Dhaliwal et al. (2011) focus on the impact of ICW in the public debt market. Consistent with Kim et al. (2011) and Costello and Wittenberg-Moerman (2011), they find that a firm's cost of debt increases after it discloses an ICW. Moreover, Dhaliwal et al. (2011) document that this result is more pronounced for firms that are not monitored by credit rating agencies or banks, and that the effect of bank monitoring seems to be especially important.

3.4 Conservatism

A number of studies discuss accounting conservatism[9] and its implications for debt markets. Watts (2003) suggests that conservative accounting constraints overpayments to managers and shareholders, and thus protects the claims of debt holders and facilitates more efficient debt contracting. Although this view has received some criticism (e.g. Gigler et al., 2009; Guay & Verrecchia, 2006), the persistent influence of conservatism in accounting suggests that it can offer economic benefits (Bushman & Piotroski, 2006). Consistent with this perspective, Ahmed et al. (2002) show that conservative accounting helps to mitigate bondholder-shareholder conflicts over dividend policy. Moreover, they document that firms that adopt more conservative accounting practices have, on average, lower debt costs and more favorable debt ratings. Also findings of Zhang (2008), Hong et al. (2009) and Wittenberg-Moerman (2009) suggest that conservative accounting is associated with more efficient debt contracting and lower cost of debt.

3.5 Evidence from syndicated loan markets

Many accounting quality studies exploit the recent rapid growth in the syndicated debt market. Sufi (2007) shows that information asymmetries affect the syndicate structure. When borrowers are opaque, the lead arrangers retain a larger portion of the loan, and form a more concentrated syndicate. By increasing their risk exposure to the loan, the lead arrangers signal to the other syndicate members that they are actively investigating and monitoring the borrower. Ball et al. (2008) document similar results. Moreover, they find that when borrowers' accounting information possesses high debt-contracting value (i.e. provides timely and informative signals about their credit quality), it helps to mitigate the information asymmetry problems between the lead arranger and other syndicate participants. As a result, lead arrangers are able to hold smaller proportions of loans, and form a less concentrated syndicate.

Wittenberg-Moerman (2008; 2009) demonstrates that on the secondary syndicated loan market, the bid-ask spread in the loan trade is strongly associated with a

[9] Basu (1997, 4) defines conservatism as "capturing accountants' tendency to require a higher degree of verification for recognizing good news than bad news in financial statements." Givoly and Hayn (2000), in turn, give a more elaborate definition. They define conservatism as "a selection criterion between accounting principles that leads to the minimization of cumulative reported earnings by slower revenue recognition, faster expense recognition, lower asset valuation, and higher liability valuation."

borrower's information opacity. Wittenberg-Moerman (2008) shows that loans of public firms, loans with an available credit rating, loans of profit firms and loans syndicated by more reputable arrangers are traded at lower bid–ask spreads. Moreover, Wittenberg-Moerman (2009) finds that information asymmetry affects debt contracting terms. She shows that a higher bid-ask spread on a borrower's traded loans leads into higher interest rates and shorter loan maturities on its subsequently issued loans. She concludes that higher accounting quality reduces information asymmetry and therefore lowers cost of debt. Finally, she notes that a shorter maturity induces more frequent refinancing of loans to lower accounting quality borrowers, which allows lenders to more frequently renegotiate the loan contractual terms.

3.6 Financial statement adjustments

Kraft (2011) documents that a major rating agency (Moody's) makes extensive adjustments to US GAAP financial statements. She finds that most significant adjustments, relative to total assets, are those incorporating the impact of off-balance sheet financing arrangements, such as operating leases. Kraft (2011) shows that long-term debt is adjusted upward in 96% of the sample firms (with the median increase of 6% relative to total assets). This higher level of indebtedness also has a significant impact on the adjusted leverage and coverage ratios. The total debt leverage ratio (total debt divided by total assets), for example, experiences a median increase of 14%. Moreover, Kraft examines the impact of both "hard" (quantitative) and "soft" (qualitative) adjustments on bond yields. She finds that both adjustment types are significantly associated with lower ratings and higher bond yields. Kraft (2011) states that this evidence is consistent with the view that ratings agencies are, for the most part, efficient processors of accounting information. She concludes that the rating agency's financial statement adjustments and its qualitative credit risk assessments are not merely "window dressing", but actually generate more accurate estimates of default risk. Nevertheless, she notes that soft adjustments may be too conservative relative to bond yields.

Seppänen et al. (2010) examine the decision usefulness of rating agency's financial statement adjustments in the context of global telecom industry. Consistent with the view that adjustments provide useful information and thereby reduce information risk,

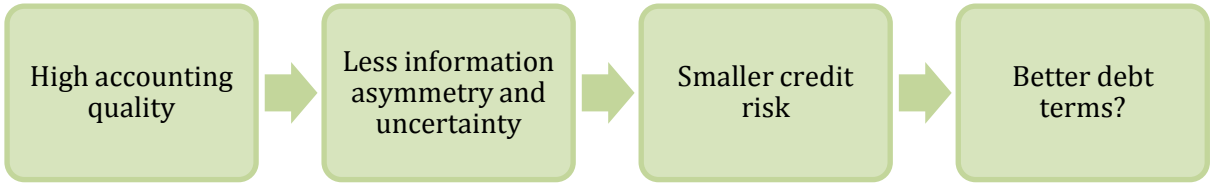
they document that absolute magnitude of adjustments is significantly and positively associated with credit ratings. Moreover, Seppänen et al. (2010) examine whether the adjustments provide useful information for equity investors. They show that adjustments, especially those related to total debt, are negatively associated with firm value. This finding suggest that information incorporated in the adjustments is at least implicitly used in equity valuation, and that greater degree of adjustments reflects information risk and thus reduces firm value. However, the results of Seppänen et al. (2010) seem to hold mainly for US GAAP reporters. Somewhat surprisingly, there is little evidence on the decision usefulness of IFRS adjustments.

Batta et al. (2011) examine the importance of financial statement recasting for credit pricing and credit portfolio loss estimation. They find that adjusted financial ratios have superior explanatory power for bond yield spreads over reported ratios. Furthermore, they show that this difference remains even when ratings dummies are included in the regression. Additionally, Batta et al. (2011) document that some individual adjustment categories (off-balance sheet leases, defined benefit pensions and securitized debt) provide information that is useful in credit risk assessment, and that the incremental explanatory power of individual adjustments does not significantly change when all adjustments are examined simultaneously. Overall, the results of Batta et al. (2011) indicate that credit markets extract information from adjustments, and that this information is at least partly incremental to rating information.

4 HYPOTHESES

When a firm constantly provides timely and informative (i.e. high quality) accounting information, it is less likely withhold value-relevant unfavorable information (Sengupta, 1998). This indicates that high-quality accounting can help to mitigate information asymmetry problems between borrowers and lenders: when a firm's accounting quality is high, there is less uncertainty regarding its future, and it is easier for the lenders to assess its creditworthiness. In this thesis, I examine whether high accounting quality translates into better terms of debt. Figure 3 summarizes my research question.

FIGURE 3: RESEARCH QUESTION



Consistent with the view that a firm's reporting practices can affect its debt contracting, many recent asset-pricing studies demonstrate that high-quality accounting is associated with lower cost of capital (e.g. Easley & O'Hara, 2004; Lambert et al., 2011; Lambert et al., 2007; Leuz & Verrecchia, 2005). Moreover, there is empirical evidence suggesting that informationally opaque firms are charged a risk premium that is priced incremental to borrower default risk (e.g. Bharath et al., 2008; Francis et al., 2005; Yu, 2005). This leads to the first hypothesis:

H1: Firms with high accounting quality pay lower interest rates on their loans than firms with low accounting quality.

Accounting quality is also likely to affect the non-price terms of debt. Shorter loan maturities induce more frequent refinancing of debt, and thus renegotiation of debt contract terms (Wittenberg-Moerman, 2009). This leads to the second hypothesis:

H2: Firms with high accounting quality have longer loan maturities than firms with low accounting quality.

If a borrower faces financial distress, holders of secured debt are better protected than holders of unsecured debt. Since low-quality accounting numbers are less efficient in signaling changes in a borrower's accounting quality, I expect lenders to demand more collateral to compensate for this information risk. This leads to the third hypothesis:

H3: Firms with high accounting quality are able to obtain loans with less securitization than firms with low accounting quality.

5 DATA, VARIABLES AND METHODOLOGY

5.1 Data

The data used in the empirical analysis is provided by a large, globally operating credit rating agency. It comprises balance sheet, income statement and cash flow statement information, as well as credit ratings. The special feature of the data is that it includes both original (reported by firms) and adjusted (modified by the rating agency) financial figures. The original data consists of financial information of 528 companies reporting under the International Financial Reporting Standards (IFRS) over the period 2005-2007 – a total of 1584 firm-year observations. After removing observations with missing credit ratings (-435 observations) and missing financial statement information (-307 observations), the final sample is reduced to 842 firm-year observations. This sample includes data from 371 companies, 61 industries and 47 countries. The sample breakdown by industry and country is presented in the Appendix.

5.2 Variables

This section discusses the variables used in the empirical analysis. Dependent variables (terms of debt) are presented first, followed by independent variables (accounting quality) and control variables.

5.2.1 Dependent variables: Terms of debt

The terms of debt analyzed in this thesis are interest cost, securitization and maturity. As discussed in the previous chapter, I expect that high accounting quality is associated with lower interest rates, less securitization, and longer maturities.

- *LnINTEREST* is the natural logarithm of a firm's effective interest rate, calculated as the ratio of interest expense to average debt.
- *SECDEBT* is the ratio of secured debt to total debt.
- *LnMATURITY* is the natural logarithm of a firm's debt maturity, calculated as the ratio of long-term debt to long-term debt payments.

5.2.2 Independent variables

Two types of variables are used to measure accounting quality: accruals variables and adjustment variables. Also variables controlling credit risk, firm size and year, industry and country fixed effects are added to the empirical model.

Accounting quality: Accruals

Accruals are the difference between earnings and cash flows. Previous research has shown that firms with high accruals (i.e. low cash flows relative to earnings) tend to have lower future earnings and cash flows than firms with low accruals (e.g. Bhojraj & Swaminathan, 2009). Since earnings performance of firms with high accruals is unlikely to be sustainable, I expect that high accruals are negatively associated with accounting quality and thus negatively associated with terms of debt. I use two accruals measures.

- *ACCRUALS* are the deviation between earnings and cash flows during one financial year. It is calculated as the difference between net income and cash flow from operations, scaled by average total assets.
- *BSBLOAT* reflects a full history of earnings and cash flows. It is a cumulative measure of the difference over time between accounting value added and cash value added – "balance sheet bloat". It is calculated from the balance sheet as the difference between operating assets (total assets – cash and short-term investments) and operating liabilities (total assets – total debt – minority interest – preferred stock – common equity), scaled by lagged total assets. For a more detailed discussion on this variable, see Hirshleifer et al. (2004).

Accounting quality: Financial statement adjustments

As discussed in section 2.3.2, rating agencies routinely adjust financial statements as a part of their rating process. The purpose of these adjustments is to make financial statement numbers better reflect the underlying economics of a firm. Adjustment can therefore be seen as a measure of accounting quality: the more there is need to adjust the reported numbers, the lower the accounting quality. I examine the impact of adjustments on the financial figures reflecting profitability, leverage, liquidity and free cash flow.

- *PROFITABILITY* is the ratio of EBIT (earnings before interest and taxes) to average total assets. Since more profitable companies are typically better able to meet their financial obligations, I expect profitability-decreasing adjustments to be negatively associated with terms of debt.

- *LEVERAGE* is the ratio of total debt to total assets. Since more highly levered firms are typically riskier, I expect leverage-increasing adjustments to be negatively associated with terms of debt.

- *LIQUIDITY* is measured with quick ratio, that is, the ratio of cash and cash equivalents plus net trade receivables to current liabilities. Since liquidity measures a firm's ability to repay its current liabilities, I expect liquidity-reducing adjustments to be negatively associated with terms of debt.

- Free cash flow, *FCF,* is calculated as operating cash flow minus capital expenditures. Since free cash flow represents the cash available to investors, I expect FCF-reducing adjustments to be negatively associated with terms of debt.

All adjustments are calculated as the difference between adjusted figure and reported figure, scaled by reported figure.

Control variables

RATING is added to the model to control for the credit risk. Following prior literature (e.g. Cheng & Subramanyam, 2008; Francis et al., 2005; Kraft, 2011), ratings are converted into numerical values, which range from 1 (C) to 21 (Aaa). Since firms with high rating as less likely to face financial distress, I expect rating to be positively associated with terms of debt.

LnASSETS is added to the model to control for the firm size. Larger firms tend to be older and have more established product lines and more varied sources of revenues and are therefore less risky (Blume et al., 1998). Consequently, I expect size to be positively associated with terms of debt.

YEAR, *INDUSTRY* and *COUNTRY* fixed effects are controlled by including dummy variables to the model.

TABLE 3: DEFINITION OF VARIABLES

PANEL A – Dependent variables: Terms of debt

LnINTEREST	Natural logarithm of effective interest rate	= Ln [Interest expense / Average debt], where Average debt = Average of beginning and ending total debt
SECDEBT	Secured debt to Total debt	= Secured debt / Total debt
LnMATURITY	Natural logarithm of debt maturity	= Ln [Long-term debt / Long-term debt payments]

PANEL B – Accounting quality: Accruals

ACCRUALS	Accruals	= [Net income – Cash flow from operations] / Average assets, where Average assets = Average of beginning and ending total assets
BSBLOAT	Net operating assets, "Balance sheet bloat"	= [Operating assets – Operating liabilities] / Lagged assets, where Operating assets = Total assets – Cash and short-term investments Operating liabilities = Total assets – Total debt – Preferred stock – Minority interest – Common equity Lagged assets = Beginning total assets

PANEL C – Accounting quality: Financial statement adjustments

Adj% Item	Amount of adjustment	= [Adjusted item – Reported item] / Reported item, where items are
	PROFITABILITY	= [EBIT / Average total assets]
	LEVERAGE	= [Total debt / Total assets]
	LIQUIDITY	= [Cash & cash equivalents + Net trade receivables] / Current liabilities
	FCF	= Cash flow from operations - CAPEX

TABLE 3 (CONTINUED)

PANEL D – Control variables: Credit risk, size and year, industry and country fixed effects

RATING	Long-term credit rating	= Long-term credit rating converted into numerical values from 1 (C) to 21 (Aaa)
LnASSETS	Natural logarithm of Total assets	= Ln [Total assets]
YEAR	Year dummies	Dummy variable that takes value 1 or 0
INDUSTRY	Industry dummies	Dummy variable that takes value 1 or 0
COUNTRY	Country dummies	Dummy variable that takes value 1 or 0

Notes: EBIT is Earning before interest and taxes. CAPEX is capital expenditure. In order to avoid unnecessary loss of observations, missing values of following items are treated as zeros: Secured debt, Preferred stock, Minority interest.

5.3 Methodology

5.3.1 Ordinary least squares (OLS) regression

The empirical analysis in thesis utilizes ordinary least squares (OLS) regression model. The general form of OLS regression model can be written as follows:

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \cdots + \beta_k X_{ki} + u_i \quad (1)$$

where

- Y_i is the ith observation on the dependent variable
- $X_{1i}, X_{2i}, \ldots X_{ki}$ are the ith observations on each of the k regressors
- $\beta_1 \ldots \beta_k$ are slope coefficients that provide an estimate of the influence of each X variable on Y, holding the all the other X variables constant
- β_0 is the intercept, i.e. the expected value of Y when all the X's equal zero
- u_i is the error term

Given a set of n observations on $Y, X_1, \ldots, X_k$, least square analysis is used to fit the equation (2)

$$\hat{Y}_i = b_0 + b_1 X_{1i} + b_2 X_{2i} + \cdots + b_k X_{ki} + u_i \quad (2)$$

so that the sum of the squares of the residuals, given by (3), is minimized.

$$\sum_{i=1}^{n} e^2 = \sum_{i=1}^{n} \left(Y_i - \hat{Y}_i\right)^2 = \sum_{i=1}^{n} (Y_i - b_0 - b_1 X_{1i} - \cdots - b_k X_{ki})^2 \quad (3)$$

(Dougherty, 2002, Ch. 4; Stock & Watson, 2003, Ch. 5)

5.3.2 Regression model design

Figure 4 summarizes the three regression models used in this thesis. Model 0 is a benchmark model that only includes the control variables. Variables describing accounting quality are added to models 1 and 2. Model 1 incorporates control variables and accruals variables, while model 2 also includes financial statement adjustment variables. Each model is run separately for the three dependent variables LnINTEREST, SECDEBT and LnMATURITY.

FIGURE 4: REGRESSION MODEL DESIGN

Dependent variables		*Independent variables*				
Terms of debt	=	**Control variables**	+	**Accounting quality: Accruals**	+	**Accounting quality: Financial statement adjustments**
LnINTEREST SECDEBT LnMATURITY		RATING LnASSETS YEAR INDUSTRY COUNTRY		ACCRUALS BSBLOAT		Adj% PROFITABILITY Adj% LEVERAGE Adj% LIQUIDITY Adj% FCF
		Model 0				
		Model 1				
		Model 2				

Figure 4 summarizes the three regression models used in this thesis. All variables are defined in Table 3.

5.3.3 Assessing the regression model

This section discusses the potential problems related to OLS regressions and assesses the validity of the regression models used in this thesis.

Outliers

Outliers are observations that are very different from the rest of the data. They are typically generated by some unusual factors. When ordinary least square method is used, the estimates of the regression parameters can be substantially influenced by a few outliers. (Maddala, 1988, 54-55). In order to reduce the influence of outliers, all continuous variables in this thesis are winsorized at the 1% and 99% levels. That is, observations below the 1st percentile are set to the 1st percentile, and observations above the 99th percentile are set to the 99th percentile.

One way to detect outliers is to examine standardized residuals. If the model is a poor fit of the sample data, the residuals will be large. A general rule is that no more than 5% of cases should have absolute values above 2. Another commonly used method is to look at Cook's distance: any value above 1 indicates a case that might be influencing the model. (Field, 2005, Ch. 5). Outlier diagnostics for this thesis are reported in Table 4. The table shows that percentage of cases with standardized residuals not within the ±2 limit is slightly higher than 5% for regression models with LnINTEREST and SECDEBT as dependent variables. The maximum values of Cook's distance, however, are well below one in all three models. The diagnostics therefore indicate that outliers are not a major concern.

TABLE 4: OUTLIER DIAGNOSTICS

	Dependent variable		
	LnINTEREST	**SECDEBT**	**LnMATURITY**
Standardized residuals			
Cases with absolute value above 2	46	55	21
Cases with absolute value above 2, % of the total sample	5,46 %	6,53 %	2,49 %
Cook's Distance (maximum)	0,232	0,068	0,121

The outlier diagnostics are based on Model 2. The sample consists of 842 firm-year observations. All variables are defined in Table 3.

Multicollinearity

Multicollinearity exists when there is a strong correlation between two or more predictors in a regression model. As collinearity increases, so do the standard errors of coefficients, which in turn affects whether these coefficients are found to be statistically significant. That is, high levels of collinearity increase the probability that a good predictor will be found non-significant and rejected from the model. Multicollinearity also affects the size of R. When the predictors are uncorrelated (i.e. there is no multicollinearity), each new variable is likely to account for different variance in the outcome to that accounted for by other predictors, which leads to higher R. Furthermore, multicollinearity between predictors makes it difficult to assess the individual importance of each predictor, and leads to unstable estimates of the regression coefficients values. (Field, 2005, 174-175). In practice, all regressions suffer from multicollinearity to some extent. (Dougherty, 2002, 128). Multicollinearity is therefore a problem only when it is serious.

One simple way of identifying multicollinearity is to examine the correlation matrix to see whether the predictor variables are highly correlated. This method, however, misses more subtle forms of multicollinearity (Field, 2005, 175). There are also more sophisticated multicollinearity measures. Two commonly used diagnostics are the variance inflation factor (VIF) and the condition index (CI). There are no definitive rules about what values of VIF and CI should be cause of concern. A general rule of thumb is that VIFs exceeding 4 warrant further investigation, while VIFs exceeding 10 are signs of serious multicollinearity problem (Simon, 2009). As regards to condition indices, CI exceeding 15 is generally thought to be a concern, while CI exceeding 30 is a very serious concern (Williams, 2011).

As can be seen from Panel A of Table 5, all VIF values are well below 10. The variable with the highest VIF (4.30) is RATING. CI values are reported in Panel B. At initial examination, the CI values seemed relatively high (>60). Further tests, however, revealed that the scaling of the variable LnASSETS has a major impact on the CI, even though it does not affect the regression coefficients, or the VIF values. When the scaling of LnASSETS is changed, the CI drops below 30. As can be seen from the bottom of Panel B, also the large number of control dummies increases the CI. All in all, I conclude that multicollinearity is not a serious problem.

TABLE 5: MULTICOLLINEARITY DIAGNOSTICS

Panel A: Variance inflation factor (VIF)	Model 0	Model 1	Model 2
RATING	4.11	4.21	4.30
LnASSETS	3.34	3.45	3.48
ACCRUALS		1.93	1.94
BSBLOAT		1.76	1.88
Adj_PROFITABILITY			1.28
Adj_LEVERAGE			1.84
Adj_LIQUIDITY			1.51
Adj_FCF			1.14
Year, industry and country fixed effects			
Maximum VIF	3.62	3.63	3.64
Average VIF	1.42	1.44	1.46

Panel B: Condition index (CI)	Model 0	Model 1	Model 2
The effect of scaling of LnASSETS			
LnASSETS (USD thousand)	62.78	69.14	70.86
LnASSETS (USD million)	35.04	38.56	39.59
LnASSETS (USD billion)	25.52	28.54	29.30
The effect of dropping variables			
LnASSETS	22.02	24.88	25.64
Year, industry and country fixed effects (when LnASSETS is measured in USD billion)	10.13	12.34	12.96
Ln ASSETS & Year, industry and country fixed effects	7.45	10.13	10.76

The table shows the multicollinearity diagnostics for the regression models used in this thesis. The sample consists of 842 firm-year observations. All variables are defined in Table 3.

Autocorrelation

In time series data, the value of Y in one period typically is correlated with its value in the next period (Stock & Watson, 2003, 434). As a result, the error terms are often not determined independently. That is, the error term u_t at the time period t is correlated with error terms u_{t+1}, u_{t+2},... and u_{t-1}, u_{t-2},... and so on. This is called autocorrelation. (Maddala, 1988, 186). A common way to detect autocorrelation is to use the Durbin-Watson test. The test statistic can vary between 0 and 4 with a value of 2 meaning that the residuals are uncorrelated. (Field, 2005, 170). For Model 2, the values of Durbin-Watson statistic are 1.97, 1.96 and 1.93 for dependent variables LnINTEREST, SECDEBT

and LnMATURITY, respectively. I therefore conclude that autocorrelation should not be a problem.

Heteroskedasticity

Heteroskedasticity refers to a situation where the regression residuals do not have a constant variance. It is likely to occur when the values of the variables vary substantially in different observations. If heteroskedasticity is present, the OLS estimators become inefficient. Heteroskedasticity also affects the estimation of standard errors, typically causing them to be underestimated (and t statistics overestimated), thus leading to a wrong impression of the precision of the regression coefficients. (Dougherty, 2002, 220-223). There are two remedies that are often used to solve heteroskedasticity problems: the data can either be transformed into logarithms, or the variables can be deflated with some measure of size (Maddala, 1988, 172).

Heteroskedasticity can often be detected by visually examining the plot of Regression Standardized Residuals against Regression Standardized Predicted Values. This graph should look like a random array of dots evenly dispersed around zero – if it funnels out, it is likely that there is heteroskedasticity in the data. (Field, 2005, 202). As can be seen from Panel A of Figure 5, there are no signs that the regression models used in this thesis suffer from any major heteroskedasticity problems. The graph with SECDEBT as dependent variable, however, shows a straight line that is caused by fact that majority (over 60%) of the sample firms do not have secured debt.

Linearity

OLS regression assumes linear relationship between variables. If the actual relationship is non-linear, it limits the generalizability of the results. Linearity problems can also often be detected by examining the plot of Regression Standardized Residuals against Regression Standardized Predicted Values – if there is any sort of curve in this graph, it indicates that the data have broken the assumptions of linearity. (Field, 2005, 170, 202-203). Panel A of Figure 5 show no indications of such a problem.

Distribution of error terms

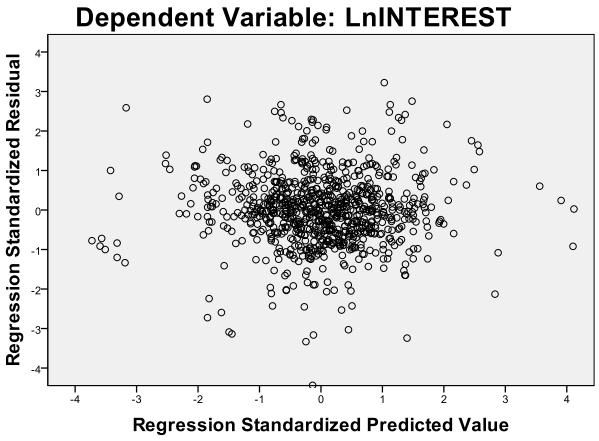
The differences between the model and observed data should be random, normally distributed variables with a mean of 0. That is, the differences much greater than zero happen only occasionally. The normality of residuals can be assessed by visually

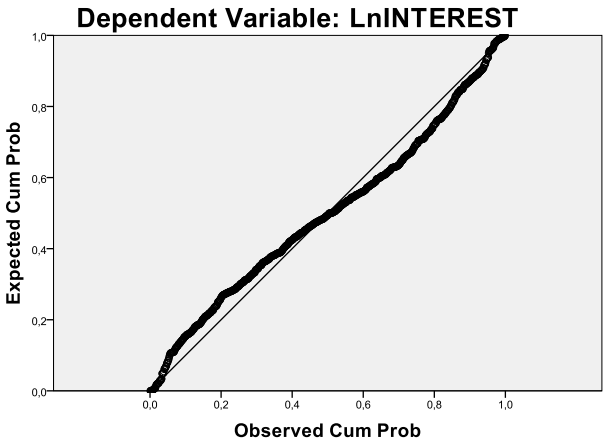
examining the normal probability plot. The straight line in this plot represents a normal distribution – if the observed residuals are very distant from the line, it indicates large deviation from normality. (Field, 2005, 170, 204-205). Figure 5, Panel B shows the normal probability plots of the data used in this thesis. For the dependent variables LnINTEREST and LnMATURITY, the normal probability plot of the residuals is approximately a diagonal straight line. The plot with SECDEBT as dependent variable, however, has is a slight S-shaped pattern indicating some departure from normality.

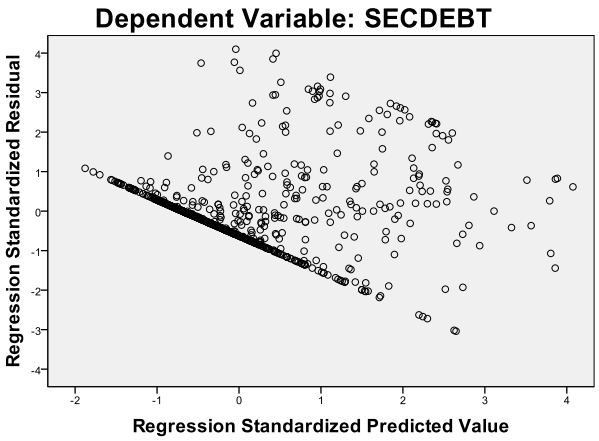
FIGURE 5: HETEROSKEDASTICITY, LINEARITY AND NORMALITY OF RESIDUALS

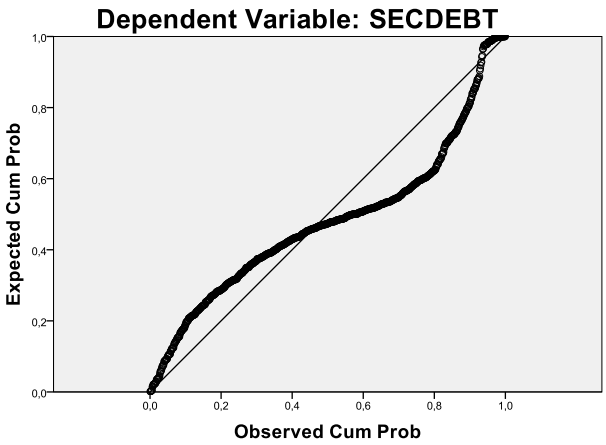
PANEL A:
Heteroskedasticity and linearity

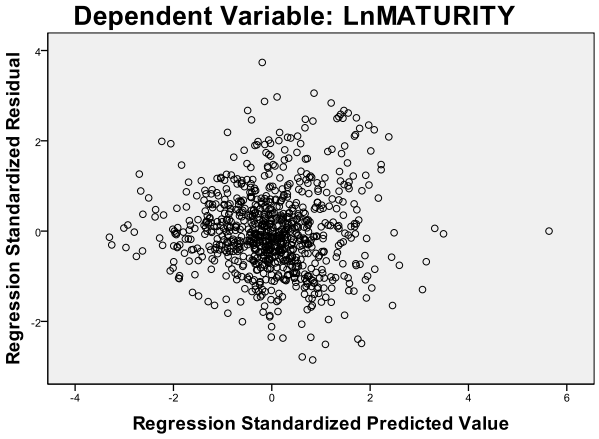
Panel B:
Normality of residuals

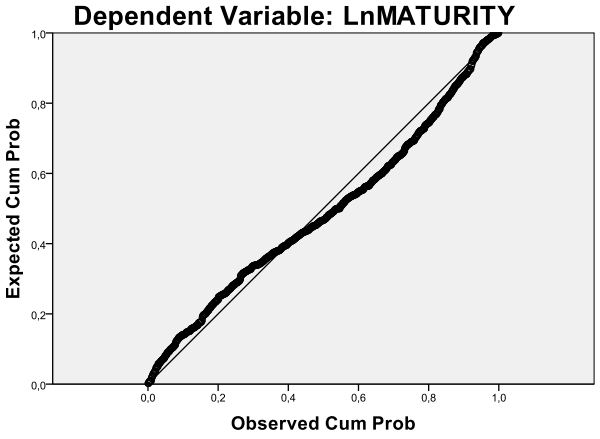












The figure shows the graphs of regression standardized residuals plotted against their predicted values (Panel A) and the normal probability plots of residuals (Panel B) for the three dependent variables LnINTEREST, SECDEBT and LnMATURITY. Figures are based on Model 2. The sample consists of 842 firm-year observations. All variables are defined in Table 3.

6 RESULTS

6.1 Descriptive statistics

TABLE 6: DESCRIPTIVE STATISTICS

	Mean	Std. Dev.	25 %	50 %	75 %	Model(s)
INTEREST[a]	0.078	0.045	0.051	0.067	0.093	0-2
SECDEBT	0.124	0.256	0.000	0.000	0.073	0-2
MATURITY[a]	34.900	123.151	2.578	5.462	13.729	0-2
RATING	12.837	3.510	10	13	15	0-2
ASSETS[a] (USD million)	21 796	37 630	2 898	8 252	20 514	0-2
ACCRUALS	-0.032	0.077	-0.069	-0.036	-0.008	1-2
BSBLOAT	0.702	0.351	0.501	0.676	0.844	1-2
Adj% LEVERAGE	0.459	0.867	0.059	0.183	0.494	2
Adj% PROFITABILITY	-0.066	0.615	-0.173	-0.062	-0.001	2
Adj% LIQUIDITY	0.016	0.239	-0.027	-0.010	0.000	2
Adj% FCF	-0.084	1.460	-0.196	0.000	0.092	2

[a] In the regressions, natural logarithm of these values (LnINTEREST, LnMATURITY and LnASSETS) are used.
The sample consists of 842 firm-year observations. All variables are defined in Table 3.

Table 6 presents descriptive statistics of the variables used in the regression models. The table shows that sample consist primarily of large firms with median (mean) assets of about 8.3 billion (21.8 billion) USD. The sample firms also have relatively high credit ratings. The median (mean) RATING is 13 (12.8) which corresponds to a rating symbol Baa2. That is, over half of the sample firms are considered to be investment grade.

The median (mean) INTEREST is 6.7% (7.8%). The median firm has no SECDEBT (mean 12.4%), indicating that sample firms are likely to rely more on debt terms other than securitization. The median (mean) MATURITY is 5.5 years (34.9 years). The standard deviation of MATURITY is 123.2, which shows that debt maturity varies substantially across the sample.

Median (mean) ACCRUALS are -3.6% (-3.2%). The sign of ACCRUALS is still negative at the 75 percentile. It therefore seems that majority of sample firms are more likely

underestimate than overestimate their earnings relative to cash flows. The median (mean) BSBLOAT is 67.6% (70.2%). The BSBLOAT values are close to those reported by Hirshleifer et al. (2004) who also report median and mean values around 70%.

As can be seen from Table 7 and Figure 6, most adjustments lead to an increase in LEVERAGE and decrease in PROFITABILITY and LIQUIDITY. That is, the adjusted financial statements, in general, make the sample firms look more risky than the reported financial statements. The adjustments have strong impact especially on LEVERAGE (18.3% increase for a median firm) and PROFITABILITY (6.2% decrease for a median firm). Their impact on LIQUIDITY is smaller (1.0% decrease for a median firm). The adjustments made on FCF are relatively large (median absolute magnitude is 12.7%), but distributed quite evenly between positive ("up") and negative ("down") adjustments.

TABLE 7: FREQUENCIES AND ABSOLUTE MAGNITUDES OF FINANCIAL STATEMENT ADJUSTMENTS

PANEL A: Frequencies of Financial statement adjustments

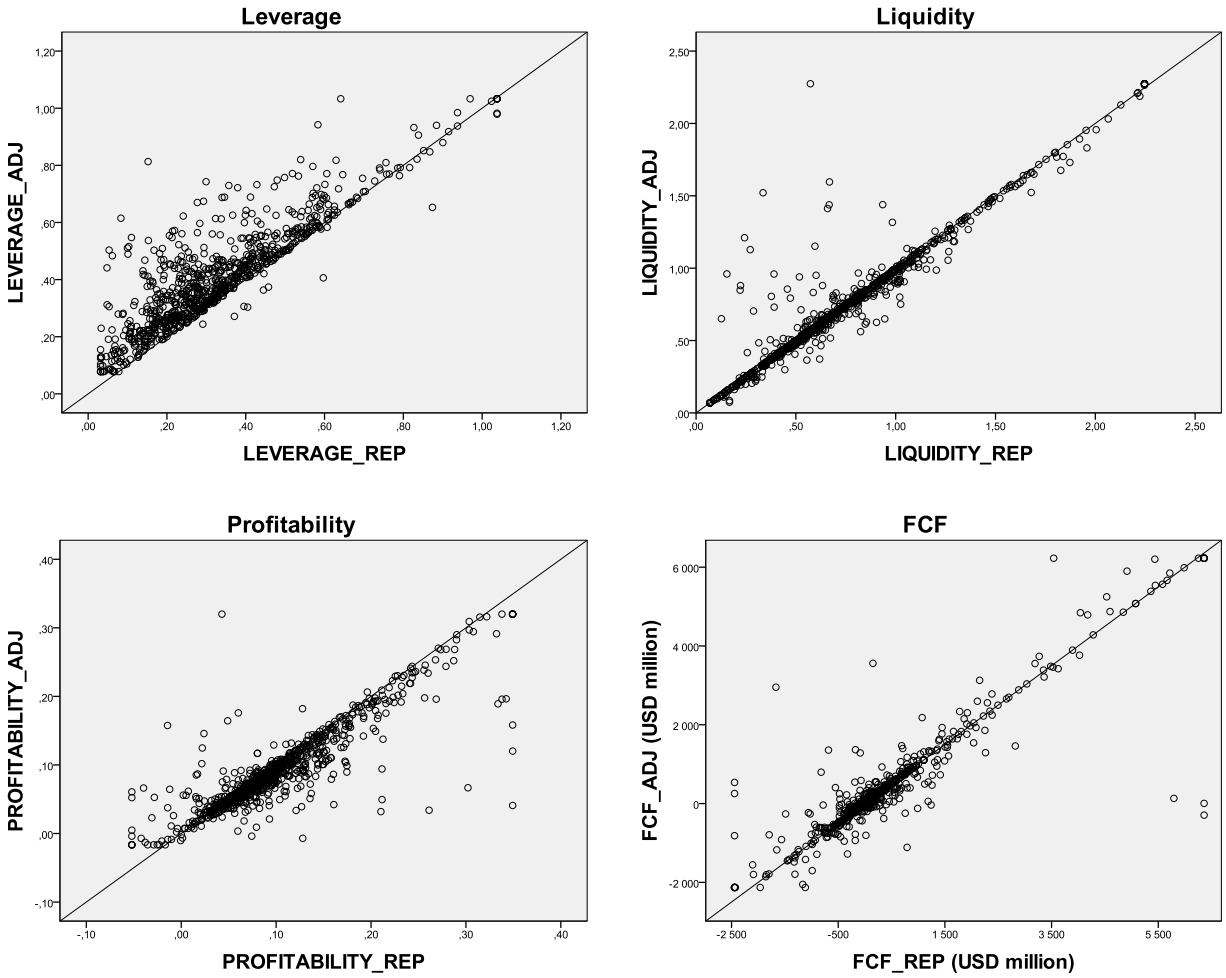
	Total	Up	Down
Adj% LEVERAGE	97,1 %	93,7 %	3,4 %
Adj% PROFITABILITY	98,5 %	22,9 %	75,5 %
Adj% LIQUIDITY	88,8 %	13,5 %	75,3 %
Adj% FCF	76,0 %	37,2 %	38,8 %

PANEL B: Absolute magnitudes of Financial statement adjustments

	Mean	Std. Dev.	25 %	50 %	75 %
|Adj% LEVERAGE|	0,464	0,865	0,063	0,184	0,494
|Adj% PROFITABILITY|	0,251	0,566	0,033	0,096	0,229
|Adj% LIQUIDITY|	0,071	0,228	0,004	0,017	0,046
|Adj% FCF|	0,582	1,341	0,002	0,127	0,531

The sample consists of 842 firm-year observations. All variables are defined in Table 3.

FIGURE 6: REPORTED VERSUS ADJUSTED RATIOS



The scatter plots show reported versus adjusted LEVERAGE, PROFITABILITY and LIQUIDITY ratios and Free Cash Flows (FCF). All variables are defined in Table 3. The 45 degree line is shown for reference.

6.2 Correlation analysis

A correlation is a measure of the linear relationship between variables. The value of a correlation coefficient lies between -1 and +1. A coefficient of +1 indicates a perfect positive correlation, -1 indicates a perfect negative correlation and 0 indicates that there is no linear relationship. Two commonly used correlation measures are the Pearson product-moment correlation coefficient and the Spearman's rank correlation coefficient. The Pearson correlation assumes that variables are measured on interval scales. Additionally, testing the significance of the Pearson's correlation requires the data to be normally distributed. Spearman's correlation, on the other hand, works by first ranking the data and can therefore be used also for non-normally distributed data.

Both Pearson's and Spearman's correlation coefficients are bivariate. That is, they measure the relationship between two variables without controlling the effect of any other additional variables. It is also important to note that correlation coefficients give no indication of the direction of causality. (Field, 2005, Ch. 4).

Table 8 presents both Pearson (lower left) and Spearman (upper right) correlation coefficients. As expected, both control variables RATING and LnASSETS and are significantly negatively correlated with LnINTEREST and SECDEBT. Also the positive correlation between Adj%LEVERAGE and LnINTEREST, negative correlation between Adj%LIQUIDITY and LnINTEREST, and positive correlation between BSBLOAT and SECDEBT follow the expectations. Surprisingly, however, both ACCRUALS and BSBLOAT are negatively correlated with LnINTEREST, and Adj%LEVERAGE negatively correlated with SECDEBT.

MATURITY is not strongly correlated with any of the explanatory variables. The relatively small but statistically significant correlation between ACCRUALS and MATURITY is negative as expected. The only other variable that is significantly correlated with MATURITY is Adj%LIQUIDITY which, contrary to expectations, has a negative correlation coefficient. Of the four adjustment variables, Adj%LEVERAGE seems to be most strongly associated with terms of debt. There is also evidence on the association between Adj%LIQUIDITY and terms of debt. Adj%PROFITABILITY and Adj%FCF, on the other hand, are not statistically significantly correlated with any of the dependent variables.

TABLE 8: CORRELATIONS

	Ln INTEREST	SECDEBT	Ln MATURITY	RATING	LnASSETS	ACCRUALS	BSBLOAT	Adj% LEVERAGE	Adj% PROFITAB.	Adj% LIQUIDITY	Adj% FCF
LnINTEREST		**0,075**	**-0,094**	**-0,286**	**-0,166**	**-0,170**	**-0,313**	**0,266**	-0,063	**-0,103**	0,003
SECDEBT	-0,008		-0,053	**-0,329**	**-0,254**	0,067	**0,229**	**-0,143**	-0,006	-0,018	-0,038
LnMATURITY	-0,049	-0,023		0,026	-0,003	**-0,070**	-0,054	-0,020	-0,049	**-0,133**	-0,031
RATING	**-0,202**	**-0,357**	0,029		**0,575**	0,036	**-0,077**	**0,080**	-0,024	**0,082**	0,042
LnASSETS	**-0,107**	**-0,267**	-0,033	**0,599**		0,033	**-0,141**	**0,198**	**-0,092**	0,054	0,030
ACCRUALS	**-0,243**	0,057	**-0,122**	0,023	-0,009		**0,108**	-0,023	**-0,154**	**0,071**	-0,062
BSBLOAT	**-0,256**	**0,207**	-0,036	**-0,123**	**-0,134**	**0,147**		**-0,568**	**0,106**	**0,099**	-0,048
Adj% LEVERAGE	**0,321**	**-0,114**	-0,038	**0,120**	**0,112**	-0,055	**-0,349**		**-0,155**	**-0,155**	**0,065**
Adj% PROFITABILITY	-0,036	-0,014	-0,050	0,049	0,016	-0,044	-0,056	**0,140**		**0,119**	0,003
Adj% LIQUIDITY	-0,033	-0,062	-0,045	**0,146**	**0,075**	0,005	**-0,070**	**0,193**	**0,207**		0,003
Adj% FCF	-0,044	-0,058	-0,015	0,034	0,016	-0,020	0,012	-0,047	-0,016	0,025	

The table presents Pearson (lower left) and Spearman rank (upper right) correlation coefficients. **Bold font** indicates that the correlation is statistically significant at the 5% level. Correlation coefficients are highlighted based on their values: the bigger the correlation, the darker the background. The sample consists of 842 firm-year observations. All variables are defined in Table 3.

6.3 Regression results

In the previous section, the relationship between variables was examined with correlation analysis. In this section, a more comprehensive analysis is conducted with ordinary least squares multiple regression analysis. Unlike correlation analysis, multiple regression analysis can simultaneously take into account a number of explanatory variables. The three regression models presented in section 5.3.2 are next run separately for each dependent variable.

6.3.1 LnINTEREST as dependent variable

TABLE 9: REGRESSION RESULTS – LNINTEREST AS DEPENDENT VARIABLE

	Pred. sign	**Model 0**	**Model 1**	**Model 2**
(Constant)		-1.810 *** [-11.80]	-1.731 *** [-11.27]	-1.755 *** [-12.13]
RATING	-	-0.012 [-1.51]	-0.018 * [-2.28]	-0.025 *** [-3.34]
LnASSETS	-	-0.057 ** [-3.24]	-0.044 * [-2.53]	-0.040 * [-2.43]
ACCRUALS	+		-0.059 [-0.24]	-0.066 [-0.29]
BSBLOAT	+		-0.261 *** [-5.15]	-0.138 ** [-2.82]
Adj% PROFITABILITY	-			-0.059 * [-2.58]
Adj% LEVERAGE	+			0.201 *** [10.25]
Adj% LIQUIDITY	-			-0.128 * [-2.19]
Adj% FCF	-			-0.004 [-0.40]
Year, industry and country dummies		Yes	Yes	Yes
Adj. R^2		38.9 %	40.9 %	48.4 %
Model F-value		5.875	6.204	7.802
Significance of F-value		0.000	0.000	0.000

Models control for year, industry and country fixed effects. T-statistics are reported in parentheses below the coefficient estimates. ***. **. *, $^+$ denote significance at the 0.1%, 1%, 5% and 10% level, respectively. The sample consists of 842 firm-year observations. All variables are defined in Table 3.

As seen in Table 9, Model 0 has an R^2 of 38.9%. That is, the control variables account for 38.9% of the variance in LnINTEREST. When accounting quality variables are added to the model, its explanatory power increases: Model 1 has an R^2 of 40.9% and Model 2 an R^2 of 48.4%. All three models are statistically significant (significance of F-value < 0.001).

As expected, control variables RATING and LnASSETS are negatively associated with LnINTEREST: the bigger the firm and the higher its rating, the lower its interest cost. Interestingly, the significance of RATING increases and the significance of LnASSETS decreases when accounting quality variables are added to the model. ACCRUALS has very low t-values in both models 1 and 2, and is thus not even close of being statistically significant. The other accruals measure, BSBLOAT, is statistically significant. Contrary to expectations, however, it has a positive sign.

Of the four adjustment variables used in Model 2, three are statistically significant. These three variables also have the expected signs: when PROFITABILITY and LIQUIDITY are adjusted downward, and LEVERAGE upward, interest rate increases (and vice versa). That is, when financial statements are adjusted so that firms appear more risky, they have to pay higher interest rates. The t-value of Adj%FCF is very low, indicating that adjustment made on free cash flow do not affect debt pricing.

6.3.2 SECDEBT as dependent variable

As seen in Table 10, Model 0 has an R^2 of 40.7%. That is, the control variables account for 40.7% of the variance in SECDEBT. Adding accounting quality variables to the model has very little effect on its explanatory power: Model 1 has an R^2 of 40.6% and Model 2 an R^2 of 40.9%. All three models are statistically significant (significance of F-value < 0.001).

As expected, both RATING and LnASSETS are negatively associated with SECDEBT. That is, bigger firms with higher ratings have less secured debt than smaller firms with lower ratings. RATING seems to be especially important in determining the amount of SECDEBT ($p < 0.001$).

The accounting quality variables ACCRUALS and BSBLOAT are not statistically significantly associated with SECDEBT. Due to their low t-values ($|t| < 1$), the R^2 actually

drops slightly when these variables are added to the model. Also the impact of the financial statement adjustments on the amount of SECDEBT is relatively small. Of the four adjustment variables added to the Model 2, two are statistically significant at the 10% level. Adjustments made to the FCF have the expected sign: the more free cash flow is adjusted upwards, the less the firms have SECDEBT. Contrary to the expectations, however, the coefficient of Adj%LIQUIDITY is positive, indicating that firms whose liquidity is adjusted upward have more SECDEBT that those whose liquidity is adjusted downward.

TABLE 10: REGRESSION RESULTS – SECDEBT AS DEPENDENT VARIABLE

	Pred. sign	**Model 0**		**Model 1**		**Model 2**	
(Constant)		0.503	***	0.487	***	0.472	***
		[6.60]		[6.28]		[6.04]	
RATING	-	-0.019	***	-0.019	***	-0.019	***
		[-4.92]		[-4.82]		[-4.79]	
LnASSETS	-	-0.016	+	-0.016	+	-0.015	+
		[-1.85]		[-1.78]		[-1.64]	
ACCRUALS	+			-0.116		-0.132	
				[-0.95]		[-1.07]	
BSBLOAT	+			0.016		0.008	
				[0.63]		[0.30]	
Adj% PROFITABILITY	-					0.003	
						[0.21]	
Adj% LEVERAGE	+					-0.016	
						[-1.49]	
Adj% LIQUIDITY	-					0.052	+
						[1.66]	
Adj% FCF	-					-0.008	+
						[-1.71]	
Year, industry and country dummies		Yes		Yes		Yes	
Adj. R^2		40.7 %		40.6 %		40.9 %	
Model F-value		6.248		6.141		6.011	
Significance of F-value		0.000		0.000		0.000	

Models control for year, industry and country fixed effects. T-statistics are reported in parentheses below the coefficient estimates. ***. **. *, + denote significance at the 0.1%, 1%, 5% and 10% level, respectively. The sample consists of 842 firm-year observations. All variables are defined in Table 3.

6.3.3 LnMATURITY as dependent variable

As seen in Table 11, Model 0 has an R^2 of 18.8%, Model 1 an R^2 of 19.7% and Model 2 an R^2 of 21.4%. That is, adding the accounting quality variables to the model slightly increases its explanatory power. All three models are statistically significant ($F < 0.001$).

RATING has a low t-value ($|t| < 1$) in all three models, indicating that credit rating is not associated with loan maturity. The apparent lack of association between rating and maturity may, however, arise from the model specification that assumes linear relationship between these variables. Diamond's (1991) liquidity risk theory suggests that there is a non-linear relationship between rating and maturity. He argues that firms with highest ratings prefer short-term debt, while those with intermediate ratings prefer long-term debt to avoid the liquidity risk[10]. Firms with the poorest ratings, on the other hand, use short-term debt because they are unable to get long-term financing.

LnASSETS is statistically significant at the 5% level, but its coefficient is, contrary to the expectations, negative. This implies that bigger firms have shorter loan maturities than smaller firms. One possible explanation is that bigger firms tend to have better credit ratings (e.g. Kraft, 2011; Tanthanongsakkun & Treepongkaruna, 2008) and therefore lower liquidity risk (Diamond, 1991), which makes short-term borrowing beneficial to them. Moreover, Barclay and Smith (Barclay & Smith, 1995) found that debt maturity increases with firm size for firms smaller than $1 billion of market value, and that after that point there is a negative relation. Majority of my sample firms have relatively high ratings and market value much bigger than $1 billion[11], which may explain the negative coefficient. ACCRUALS variable is statistically significant at the 1% level in both Model 1 and Model 2, and has the expected negative sign. That is, firms with high accruals (i.e. low cash flows relative to their reported earnings) are likely to obtain shorter loan maturities than firms with low accruals. The other accruals measure, BSBLOAT, is not statistically significant.

Of the four adjustment variables in Model 2, only Adj%LEVERAGE is statistically significant. It has the expected negative coefficient, indicating that when LEVERAGE is

[10] Liquidity risk is the risk that a solvent but illiquid firm is unable to obtain refinancing (Diamond, 1991).
[11] There is market value data available for 618 firm-year observations (73% of the total sample of 842 firm-year observations). Nearly 90% of these observations have a market value bigger than $1 billion, and over 80% market value bigger than $2 billion. The median market value is $8.23 billion.

adjusted upward (which makes a firm appear more risky), loan maturities become shorter. Adjustments made to PROFITABILITY, LIQUIDITY or FCF seem to have no effect on loan maturity.

TABLE 11: REGRESSION RESULTS – LNMATURITY AS DEPENDENT VARIABLE

	Pred. sign	Model 0		Model 1		Model 2	
(Constant)		3.005	***	2.691	***	2.762	***
		[5.58]		[4.94]		[5.08]	
RATING	+	0.008		0.009		0.026	
		[0.28]		[0.31]		[0.93]	
LnASSETS	+	-0.141	*	-0.130	*	-0.144	*
		[-2.28]		[-2.09]		[-2.32]	
ACCRUALS	-			-2.454	**	-2.472	**
				[-2.85]		[-2.90]	
BSBLOAT	-			0.265		0.076	
				[1.48]		[0.42]	
Adj% PROFITABILITY	+					-0.032	
						[-0.38]	
Adj% LEVERAGE	-					-0.278	***
						[-3.77]	
Adj% LIQUIDITY	+					-0.299	
						[-1.37]	
Adj% FCF	+					-0.008	
						[-0.22]	
Year, industry and country dummies		Yes		Yes		Yes	
Adj. R^2		18.8 %		19.7 %		21.4 %	
Model F-value		2.775		2.844		2.974	
Significance of F-value		0.000		0.000		0.000	

Models control for year, industry and country fixed effects. T-statistics are reported in parentheses below the coefficient estimates. ***. **. *, $^+$ denote significance at the 0.1%, 1%, 5% and 10% level, respectively. The sample consists of 842 firm-year observations. All variables are defined in Table 3.

6.4 Supplementary analysis

Supplementary analysis is performed in order to provide additional insight into the association between accounting quality and terms of debt.

6.4.1 Difference between investment grade and speculative grade firms

Model 2 (i.e. the model with all accounting quality variables) is run separately for investment grade and speculative grade firms in order to examine whether the impact of accounting quality differs between these two categories. The results are reported in Table 12.

The difference is prominent especially in the case of LnINTEREST. The interest rate paid by investment grade firms is influenced by RATING, BSBLOAT and adjustments made to PROFITABILITY, LEVERAGE and LIQUIDITY. The interest charged from speculative grade firms, on the other hand, is only affected by adjustments made to LEVERAGE and marginally by firm size. Results suggest that when lending to firms with lower credit quality, lenders are mainly concerned about the amount of existing debt. When the credit quality of the borrower is higher, lenders consider a wider variety of factors.

Also the amount of SECDEBT is more affected by accounting quality variables in the investment grade sample than in the speculative grade sample. In the investment grade sample, the amount of SECDEBT is influenced by ACCRUALS and adjustments made to LEVERAGE and LIQUIDITY. The adjustment variables, however, have unexpected signs: the results suggest that investment grade firms whose leverage is adjusted downward and liquidity upward have more secured debt than others. In the speculative grade sample, the amount of SECDEBT is influenced only by RATING and marginally by ACCRUALS.

LnMATURITY seems to be determined by factors other than accounting quality in both samples. Also Adj%LEVERAGE – a variable that was statistically very significant ($p<0.001$) in the main analysis – becomes insignificant when investment grade and speculative grade firms are examined separately. RATING, on the other hand, becomes statistically significant in both subsamples.

TABLE 12: DIFFERENCE BETWEEN INVESTMENT GRADE AND SPECULATIVE GRADE FIRMS

	LnINTEREST			SECDEBT			LnMATURITY		
	Pred. sign	**Inv. grade**	**Spec. Grade**	*Pred. sign*	**Inv. grade**	**Spec. Grade**	*Pred. sign*	**Inv. grade**	**Spec. Grade**
(Constant)		-2.183 *** [-9.07]	-1.699 *** [-5.82]		0.300 ** [3.09]	0.218 [0.94]		124.182 + [1.66]	55.352 [0.74]
RATING	-	-0.031 ** [-2.72]	-0.013 [-0.62]	-	-0.001 [-0.28]	-0.034 * [-2.06]	+	10.160 ** [2.85]	11.632 * [2.19]
LnASSETS	-	0.021 [0.99]	-0.064 + [-1.78]	-	-0.023 ** [-2.68]	0.037 [1.30]	+	-25.425 *** [-3.79]	-15.909 + [-1.72]
ACCRUALS	+	-0.217 [-0.74]	0.013 [0.04]	+	0.245 * [2.06]	-0.514 + [-1.84]	-	-71.664 [-0.78]	-117.000 [-1.29]
BSBLOAT	+	-0.237 *** [-3.69]	0.001 [0.02]	+	-0.031 [-1.20]	0.036 [0.58]	-	21.712 [1.09]	-3.671 [-0.18]
Adj% PROFITABILITY	-	-0.117 *** [-4.17]	0.022 [0.58]	-	0.004 [0.40]	-0.022 [-0.73]	+	-0.255 [-0.03]	-1.842 [-0.19]
Adj% LEVERAGE	+	0.201 *** [8.91]	0.218 *** [5.18]	+	-0.021 ** [-2.26]	-0.050 [-1.49]	-	-5.918 [-0.84]	0.103 [0.01]
Adj% LIQUIDITY	-	-0.153 * [-2.31]	-0.155 [-0.68]	-	0.054 ** [2.02]	-0.005 [-0.03]	+	-27.378 [-1.33]	-29.898 [-0.51]
Adj% FCF	-	-0.002 [-0.16]	-0.007 [-0.45]	-	-0.002 [-0.37]	-0.017 [-1.29]	+	1.797 [0.56]	0.003 [0.00]
Year, industry and country dummies		Yes	Yes		Yes	Yes		Yes	Yes
Adj. R square		50.3 %	60.2 %		45.5 %	33.4 %		24.2 %	52.6 %
Model F-value		6.852	5.933		5.823	2.637		2.376	2.925
Significance of F-value		0.000	0.000		0.000	0.000		0.000	0.000
N		567	275		567	275		567	275

Models control for year, industry and country fixed effects. T-statistics are reported in parentheses below the coefficient estimates. ***. **. *, + denote significance at the 0.1%, 1%, 5% and 10% level, respectively. All variables are defined in Table 3.

6.4.2 Logistic regression on secured debt

Majority (nearly 65%) of sample firms in this thesis do not have any secured debt. Consequently, OLS regression may not be ideal tool for the analysis. The association between accounting quality and secured debt is therefore examined also using logistic regression model. In logistic regression, the dependent variable is binary, that is, it takes value 0 or 1. The dependent variable SECDEBT_DUMMY is therefore coded so that it takes value 1 if the firm has secured debt and 0 otherwise.

The results of the logistic regression model are reported in Table 13. They are broadly consistent with the results of the main analysis (see Table 10): RATING seems to be the most important factor in determining the amount of secured debt. Of the six accounting quality variables analyzed, only Adj%LIQUIDITY is statistically significant, and BSBLOAT nearly significant. Both, however, have unexpected signs. The results suggest that the more the balance sheet is bloated, and the more liquidity is adjusted downward, the less the firm has secured debt.

TABLE 13: LOGISTIC REGRESSION ON SECURED DEBT

	Predicted sign	**Coefficient**	**Wald χ^2**	**p**
CONSTANT		-0.693	0.369	0,544
RATING	-	-0.369 ***	26.370	0,000
LnASSETS_USDMILLION	-	0.352 *	5.957	0,015
ACCRUALS	+	-2.505	1.663	0,197
BSBLOAT	+	-0.796 +	3.751	0,053
Adj% PROFITABILITY	-	0.048	0.055	0,814
Adj% LEVERAGE	+	-0.132	0.786	0,375
Adj% LIQUIDITY	-	1.620 **	6.726	0,010
Adj% FCF	-	-0.048	0.418	0,518
Year, industry and country dummies		Yes		

Nagelkerke R^2	0.668
Likehood ratio χ^2	560.253 ($p < 0.001$)

Model controls for year, industry and country fixed effects. ***. **. *, + denote significance at the 0.1%, 1%, 5% and 10% level, respectively. The sample consists of 842 firm-year observations. The dependent variable SECDEBT_DUMMY takes value 1 if the firm has secured debt and 0 otherwise. All other variables are defined in Table 3.

6.4.3 The amount of balance sheet bloat (BSBLOAT)

As discussed in section 5.2, BSBLOAT is a cumulative accruals measure. Since earnings performance of firms with high accruals is unlikely to be sustainable, I expected that firms with bloated balance sheets would get debt at poorer conditions than those with less bloated balance sheets. Yet, the regression results indicate that BSBLOAT is not statistically significantly associated with either SECDEBT or MATURITY. The association between BSBLOAT and LnINTEREST, on the other hand, appears to be negative: the higher the BSBLOAT value, the lower the interest rate. Interestingly, however, when the speculative grade firms are examined separately, no connection between BSBLOAT and LnINTEREST is found – in fact, the t-value of BSBLOAT becomes very close to zero (0.02). These results warrant further investigation.

In their study, Hirshleifer et al. (2004) rank their sample firms by the amount of balance sheet bloat and sort them into ten portfolios. They note that the extreme (both high and low) bloat firms have the highest betas and are therefore riskier than other firms. In order to examine whether different levels of balance sheet bloat have a different effect on the interest rate, I sort my sample firms in ten groups based on their BSBLOAT values and then test 3 alternative specifications of Model 2.

In model 2.1 BSBLOAT is replaced with two new dummy variables: HighBLOAT_dummy equals 1 if the value of BSBLOAT belongs to decile 10, and zero otherwise; and LowBLOAT_dummy equals 1 if the value of BSBLOAT belongs to decile 1, and zero otherwise. In model 2.2 BSBLOAT is accompanied by these two new dummy variables. In Model 2.3 BSBLOAT is replaced with three new variables: HighBLOAT_value equals BSBLOAT if the value of BSBLOAT belongs to decile 10, and zero otherwise; MedBLOAT_value equals BSBLOAT if the value of BSBLOAT belongs to deciles 2 through 9, and zero otherwise; and LowBLOAT_value equals BSBLOAT if the value of BSBLOAT belongs to decile 1, and zero otherwise.

The results presented in Table 14 are consistent with the main analysis: the higher the value of BSBLOAT, the lower the interest rate. Interestingly, firms with low BSBLOAT values pay significantly higher interest rates than other firms. Models 2.1 – 2.3 were also run separately on investment grade and speculative grade firms, and the results (not tabulated) were, again, similar to those in previous analysis: high BSBLOAT values

lower the interest rate in the investment grade sample but not in the speculative grade sample. There is, however, weak evidence that low values of BSBLOAT increase the interest rate also in the speculative grade sample.

TABLE 14: ADDITIONAL ANALYSIS ON BSBLOAT

		Dependent variable: LnINTEREST		
	Predicted sign	**Model 2.1**	**Model 2.2**	**Model 2.3**
(Constant)		-1,920 *** [-13,31]	-1,872 *** [-12,55]	-1,779 *** [-12,02]
RATING	-	-0,021 ** [-2,79]	-0,022 ** [-2,91]	-0,022 ** [-2,92]
LnASSETS	-	-0,042 ** [-2,62]	-0,041 * [-2,5]	-0,042 ** [-2,58]
ACCRUALS	+	-0,085 [-0,38]	-0,076 [-0,34]	-0,051 [-0,23]
BSBLOAT	+		-0,090 [-1,25]	
HighBLOAT_dummy	+	-0,039 [-0,78]	0,023 [0,32]	
LowBLOAT_dummy	?	0,259 *** [4,67]	0,226 *** [3,65]	
HighBLOAT_value	+			-0,118 * [-2,26]
MedBLOAT_value	+			-0,231 ** [-2,69]
LowBLOAT_value	?			0,638 * [2,03]
Adj_PROFITABILITY	-	-0,068 ** [-2,98]	-0,068 ** [-2,95]	-0,068 ** [-2,98]
Adj_LEVERAGE	+	0,175 *** [8,52]	0,172 *** [8,32]	0,173 *** [8,54]
Adj_LIQUIDITY	-	-0,131 * [-2,07]	-0,128 * [-2,01]	-0,111 + [-1,75]
Adj_FCF	+	-0,003 [-0,32]	-0,004 [-0,40]	-0,004 [-0,49]
Adj. R square		49,3 %	49,3 %	49,6 %
Model F-value		7,978	7,930	8,025
Significance of F-value		0,000	0,000	0,000

Models control for year, industry and country fixed effects. T-statistics are reported in parentheses below the coefficient estimates. ***. **. *, + denote significance at the 0.1%, 1%, 5% and 10% level, respectively. The sample consists of 842 firm-year observations. HighBLOAT_dummy equals 1 if the value of BSBLOAT belongs to decile 10, and zero otherwise; LowBLOAT_dummy equals 1 if the value of BSBLOAT belongs to decile 1, and zero otherwise. HighBLOAT_value equals BSBLOAT if the value of BSBLOAT belongs to decile 10, and zero otherwise; MedBLOAT_value equals BSBLOAT if the value of BSBLOAT belongs to deciles 2 through 9, and zero otherwise; and LowBLOAT_value equals BSBLOAT if the value of BSBLOAT belongs to decile 1, and zero otherwise. All other variables are defined in Table 3.

Overall, results suggest that lenders view low BSBLOAT values (but not high BSBLOAT values) as a risk factor that increases the interest rate charged from the borrowers. Hirshleifer et al. (2004, 305) note that while high BSBLOAT values may indicate lingering problems in converting accruals into cash flows, they may also reflect strong investment opportunities, growth and cash to come. This may explain why investment grade firms with high BSBLOAT values pay lower interest rates: when the credit risk of a borrower is low, lenders may see high BSBLOAT value as a sign of good business conditions, and therefore charge a lower risk premium. Further analysis on BSBLOAT is out of the scope of this thesis. It would be, however, interesting to examine how high level of BSBLOAT affects the debt terms in the long run.

6.5 Summary of the empirical results

As expected, the control variables RATING and LnASSETS are negatively associated with LnINTEREST and SECDEBT: Big firms with high ratings pay lower interest rates and have less secured debt than small firms with low ratings. The association between RATING, LnASSETS and LnMATURITY is more complex because of possible non-monotonic relationship between these variables.

As regards to accruals variables, ACCRUALS is, consistent with expectations, negatively associated with MATURITY. In other words, firms that have low cash flows relative to their earnings are likely to borrow short-term. This indicates that lenders perceive high accruals as a risk factor, and are therefore reluctant to provide long-term financing to firms with high accruals. No statistically significant association between ACCRUALS and LnINTEREST or SECDEBT is found.

BSBLOAT is statistically significantly associated with LnINTEREST but not with SECDEBT or LnMATURITY. Contrary to the expectations, however, the relation is negative: the higher the BSBLOAT, the lower the interest rate. Interestingly, firms with the lowest BSBLOAT (that is, those belonging to the lowest decile) pay significantly higher interest rates than other firms.

As regards to adjustment variables, I find that most adjustments lead to an increase in LEVERAGE and decrease in PROFITABILITY and LIQUIDITY. That is, the adjusted financial statements, in general, make the sample firms look more risky than the

reported financial statements. The adjustments have strong impact especially on LEVERAGE (18.3% increase for a median firm) and PROFITABILITY (6.2% decrease for a median firm). Their impact on LIQUIDITY is smaller (1.0% decrease for a median firm). The adjustments made on FCF are relatively large (median absolute magnitude is 12.7%), but distributed quite evenly between positive ("up") and negative ("down") adjustments.

As expected, regression results show that adjustments made to LEVERAGE are positively associated with LnINTEREST and negatively associated with LnMATURITY: the more leverage is adjusted upward, the higher the interest rate and the shorter the maturity. Also consistent with the expectations, results suggest that adjustments made to PROFITABILITY and LIQUIDITY are negatively associated with LnINTEREST. That is, the more profitability and liquidity are adjusted downward, the higher the interest rate. Adj%FCF is not statistically significantly associated with any of the dependent variables, although its negative relation with SECDEBT is almost significant (p=0.087).

Interestingly, the impact of accounting quality on terms of debt is more prominent in the investment grade firms than in the speculative grade firms, especially when interest rate is considered. Of the four adjustment variables examined, only the adjustments made to leverage are statistically significantly associated with interest rate in the speculative grade sample. In the investment grade sample, the interest rate is also related to the adjustments made to profitability and liquidity. This indicates that when lending to firms with lower credit quality, lenders are mainly concerned about their level of indebtedness. When the credit quality of a borrower is higher (and thus the default risk smaller), lenders consider a wider variety of accounting quality factors.

Overall, the evidence suggests that lenders take borrowers' accounting quality into account when designing debt contracts. The impact of accounting quality is, however, mainly reflected in the interest rate: firms with high accounting quality pay lower interest rates than firms with low accounting quality. The evidence on the link between accounting quality and secured debt and loan maturity is weaker and somewhat mixed.

7 CONCLUSIONS

Financial reporting can be viewed as a mechanism that enables the monitoring of the performance and financial situation of a firm, thereby mitigating the information asymmetry problems between firm insiders and outsiders. In debt markets, lenders use accounting information to evaluate the creditworthiness of borrowers. When borrower's accounting quality is high, there is less uncertainty regarding its future, and it is easier to assess its credit quality. High quality accounting should therefore reduce information risks related to borrower.

In this thesis, I examine the association between accounting quality and terms of debt. More specifically, I examine whether firms with high accounting quality are able to obtain debt financing at better terms (i.e. with lower interest rates, less securitization and longer maturities) than firms with low accounting quality. I use two types of variables to measure accounting quality: (1) accruals variables that measure the difference between reported earnings and cash flows and (2) adjustment variables that measure the difference between original (reported by firms) and adjusted (modified by the rating agency) financial statement figures.

My main findings are as follows. First, I find that the financial statement adjustments made by the credit rating agency, in general, make the sample firms appear more risky. The adjustments have a strong impact especially on LEVERAGE, which is adjusted upward for 93.7% of the sample and experiences a median increase of 18.3%. Second, I find evidence supporting the hypothesis that accounting quality is indeed incorporated into debt contracts. The information risk from lower accounting quality is, however, mainly reflected in the interest rate: the lower the accounting quality, the higher the interest rate. The evidence on the association between accounting quality and securitization and maturity is weaker and somewhat mixed. Finally, my results indicate that the impact of accounting quality differs between investment grade and speculative grade firms. The difference is prominent especially in the case of interest rate. It seems that when lending to firms with lower credit quality, lenders are mainly concerned about the amount of existing debt. When the credit quality of the borrower is higher, lenders consider a wider variety of factors.

When interpreting the results, it is important to note that the sample firms are big (median firm has total assets of USD 8.3 billion), have debt ratings and that majority of them are public. Prior studies (e.g. Cantillo & Wright, 2000; D. S. Dhaliwal et al., 2011; Faulkender & Petersen, 2006) have shown that the correspondence between these factors and issuance of public debt is quite high. Bharath et al. (2008) note that there are significant institutional differences between the private and public debt markets. Private lenders typically have great flexibility in negotiating and resetting the terms of debt contract, which allows them to modify both price and non-price terms of debt. Public debt, on the other hand, is usually held by dispersed arm's length investors who lack this flexibility. Consequently, in the case of public debt, the price term is the primary contractual feature used in response to accounting quality. Given that my sample firms are more likely to use public than private debt, it is not surprising that accounting quality seemed to have little effect on the loan maturity and securitization. This also means that the results may not be generalizable to smaller, unrated firms.

Another concern is that since there was no detailed information available on the debt contracts, the calculation of the dependent variables ("terms of debt") is based on fairly crude estimates, especially in the case of debt maturity. Moreover, the dependent variables are all based on reported accounting numbers. That is, the accounting quality is likely to affect their reliability. There are also some problems related to using the financial statement adjustments as a measure of accounting quality. If the reported financial statement is of poor quality, it may not provide enough information for making accurate adjustments. Consequently, the financial statements that are adjusted most are not necessarily those with the lowest quality. All sample firms, however, report under IFRS standards and also face the scrutiny of the rating agency, which means that they are subject to quite stringent reporting requirements. I therefore expect that the sample does not include firms whose accounting quality is so poor that it would cause any major bias to the results.

To sum up, the key implications arising from this thesis are: (1) lenders consider borrowers' accounting quality when they determine the terms of debt contract and (2) the financial statement adjustment made by the rating agency provide information that is useful to lenders. A potential avenue for future research would be to examine whether the impact of accounting quality on terms of debt differs between firms using

different reporting standards (IFRS, US GAAP, Local GAAP). It would also be interesting to analyze the interplay between financial statement adjustments and various measures of accounting quality.

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9 APPENDIX: SAMPLE BREAKDOWN BY INDUSTRY AND COUNTRY

Industry	N	%
Electric Utilities	97	11,52 %
Telecommunications	96	11,40 %
Chemical	45	5,34 %
Retail	35	4,16 %
Building Materials	28	3,33 %
Homebuilding	22	2,61 %
Auto Supplier	20	2,38 %
Consumer Packaged Goods	20	2,38 %
Energy, Oil & Gas - Integrated	19	2,26 %
Manufacturing	19	2,26 %
Media, Printing, Publishing & Other	18	2,14 %
Alcoholic Beverage	17	2,02 %
Steel	17	2,02 %
Heavy Manufacturing	16	1,90 %
Pharmaceutical	15	1,78 %
Real Estate / REIT	15	1,78 %
Shipping	15	1,78 %
Toll Roads	15	1,78 %
Media, Broadcast TV & Radio	14	1,66 %
Mining	14	1,66 %
Wholesale Power	14	1,66 %
Consumer Durables	13	1,54 %
Rail Roads	13	1,54 %
Aerospace / Defense	12	1,43 %
Business and Consumer Service	12	1,43 %
Airports	11	1,31 %
Packaging	11	1,31 %
Paper & Forest Products	11	1,31 %
Construction	10	1,19 %
Energy, Gas Distribution - Regulated	10	1,19 %
Lodging	10	1,19 %
Media, Cable Television	10	1,19 %
Protein and Agriculture	9	1,07 %
Air Freight	8	0,95 %
Airlines	8	0,95 %
Energy, Oil & Gas - Independent E & P	8	0,95 %
Media, Newspapers	8	0,95 %
Telecom Equipment	8	0,95 %
Wholesale Distribution	8	0,95 %
Energy, Oil Services	7	0,83 %
Tobacco	7	0,83 %
Water Utilities	7	0,83 %
Energy, Natural Gas Pipelines	6	0,71 %
Energy, Oil & Gas - Midstream [MLP]	6	0,71 %
Apparel	5	0,59 %
Auto Manufacturer	5	0,59 %
Gaming	5	0,59 %
Services - Towers & Satellites	5	0,59 %
Technology Hardware	5	0,59 %
Energy, Electricity - Project Finance	4	0,48 %
Transportation Equipment Leasing	4	0,48 %
Commuter Services	3	0,36 %
Energy, Oil & Gas - Refining & Marketing	3	0,36 %
Equipment & Auto Rental	3	0,36 %
For-Profit Hospital	3	0,36 %
Services - Environmental	3	0,36 %
Soft Beverage	3	0,36 %
Media, Large Diversified	2	0,24 %
Medical Products & Devices	2	0,24 %
Restaurants	2	0,24 %
Leisure & Entertainment	1	0,12 %
Total	842	100,00 %

Country	N	%
United Kingdom	169	20,07 %
Germany	98	11,64 %
France	77	9,14 %
Hong Kong	52	6,18 %
Australia	40	4,75 %
Netherlands	39	4,63 %
Italy	38	4,51 %
Russia	29	3,44 %
Sweden	27	3,21 %
Singapore	23	2,73 %
Finland	22	2,61 %
Luxembourg	22	2,61 %
Norway	17	2,02 %
Spain	15	1,78 %
Denmark	14	1,66 %
Switzerland	14	1,66 %
Cayman Islands	13	1,54 %
South Africa	13	1,54 %
Philippines	12	1,43 %
Austria	10	1,19 %
Poland	9	1,07 %
Portugal	9	1,07 %
Bermuda	7	0,83 %
Belgium	6	0,71 %
Ireland	5	0,59 %
Romania	5	0,59 %
Turkey	5	0,59 %
United Arab Emirates	5	0,59 %
China	4	0,48 %
Greece	4	0,48 %
Kazakhstan	4	0,48 %
British Virgin Islands	3	0,36 %
Chile	3	0,36 %
Croatia	3	0,36 %
Estonia	3	0,36 %
Latvia	3	0,36 %
New Zealand	3	0,36 %
Ukraine	3	0,36 %
Bulgaria	2	0,24 %
Czech Republic	2	0,24 %
Hungary	2	0,24 %
Indonesia	2	0,24 %
Lithuania	2	0,24 %
Brazil	1	0,12 %
Egypt	1	0,12 %
Slovenia	1	0,12 %
United States	1	0,12 %
Total	842	100,00 %