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Faculty: School of Economics.
Section: Accounting, Audit & Control

Name: Shaun A. Balvers
(307621sb)
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Instructor: E. A. de Knecht RA
Co-Reader: Dr. sc. ind. A. H. v.d. Boom

[EARNINGS MANAGEMENT AND THE COST OF CAPITAL]

The economic scientific literature contains much attention focusing on the incentives of the use of earnings management. This research will investigate whether firms manage earnings to profit from a lower cost of capital. Firms face two forms of cost for capital and two different parties, based on different assumptions, demand the rewards for capital. The cost of debt is the paid interest by the firm to the lenders. The payment for the cost of equity is the dividend payout of the firm. It is reasonable to understand that if a firm presents positive earnings, debt holders are less reluctant to grant a loan. One of the proxies used to determine the interest rate is the risk profile of the firm. The lower the risk profile the lower the interest rate. Concerning the cost of equity, investors qualify firms that produce steady earnings as less risky. Consequently based on this assumption, do investors require a lower payout, in reply to this lower risk? Is the cost of capital another incentive for managers to manage earnings?

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1. Introduction

Earnings management for decades has been a subject of discussion, modern definitions of earning management going back to 1987[1]. Since then studies have been carried out to explain incentives for the use of earnings management. It is clear; earnings management is a complicated subject that is not caused by one or two incentives.

It is clearly noted that account manipulation is frowned upon; however detecting it is not easy. The following citation presents a good explanation for earnings management.

> *"Accounts manipulation is defined at the use of management's discretion to make accounting choices or design transactions so as to affect the possibilities of wealth transfer..."(Stolowy & Breton, 2004, p. 6)*

The focus on the definition of earnings management is irrelevant at this stage. Unlike most definitions of earnings management, this quote states the possibilities of wealth transfer. Stolowy and Breton continue to signal three forms of wealth transfer (Appendix, Figure 1).

> *"...wealth transfer between company and society (political costs), funds providers (cost of capital) and managers (compensation plans)."(Stolowy & Breton, 2004, p. 6)*

Studies that have been performed concerning earnings management often focus on either the political cost or the cost of the managers, i.e. compensation costs. This research will investigate whether or not firms manage earnings to profit from a lower cost of capital. Stakeholders use accounting numbers in debt covenants; therefore, managers have an incentive to manage these numbers (Beneish, 2001, p. 8). However, debt issuers are not the only parties that expect a return on their invested capital. Besides an increased market value, investors also expect a cash return from firms, in the form of a dividend.

1.1.1 Research Question

The purpose of this research is to provide better insight into the incentives that drive earnings management. As explained before, earnings management is a complex term that has no clear existence. Although most researchers agree that debt contracts are one of these incentives, they focus their attention on the violation of debt covenants. This ex-post view of the issue assumes that distributors of capital (i.e. equity or liabilities) have already assessed the firm's risk, and calculated the risk profile into their expected/ required payout. Debt covenant violations are based on existing information. With expected earnings only being based on presumption, passed earnings presents an indication for future profits.

[1] Davidson, Stickney and Weil, cited by Beneish 2001

This research will investigate whether a lower cost of capital has any influence on the managers' incentives to manage earnings. Therefore, the research question is as follows:

Do managers of firms use earnings management to benefit from a lower cost of capital for the firm?

The research question is supported by two sub questions:

1. What is the content of term earnings management?
2. What is the content of the term cost of capital?
3. What is the relation between earnings management and the cost of capital?

With the explanation of these sub questions, the research question will be supported. The term earnings management is a complex term. A scientific view on this subject will present greater insights into the possible incentives that surround earnings management.

1.1.2 Literature

When researching the topic of the cost of capital, it is relevant to indicate that the cost of capital exist in two forms, i.e. cost of equity and the cost of debt. Literature that researches the cost of debt concerning earnings management is often ex-post. Dichev and Skinner (2000) investigate the likelihood that manager's choice accounting standards that best reduce the likelihood that their firm will violate debt covenants.

The issue on the cost of capital is also well documented. Yet, authors seem to either look at accounting choice, more often seem to investigate the quality or the quantity of disclosures (Francis, Nanda, & Olsson, 2008). It is assumed that earnings announcements are a form of disclosure. This is not far from the truth, as earnings are part of a very important aspect of the firm's disclosure to stakeholders. Concerning the use of earnings management, accounting choice is perceived as one of the tools managers employ to manage earnings. However, conventional models used for exploring the possibility of earnings management are discretionary accrual models.

1.1.3 Contributions

This topic is interesting for a number of reasons. Firstly, within the accounting and audit profession this subject also reflects the usefulness of reported information. If firms report information that can be manipulated, then how useful is the information. Misleading financial reports negatively affect allocation resources (Healy & Wahlen, A Review of the earnings management literature, 1999). Audit reports are designed to add value to the publicized information. However audit technology is imperfect (Ronen, Tzur, & Yaari, 2006) and managers can move within the boundaries set by

regulators. Nonetheless, auditors should be aware of the incentive by mangers. It is apparent that stakeholders regard the information as useful and reliable.

Furthermore, from an academic point of view, both subjects (the use of earnings management and the cost of capital) have been well researched. Papers investigating the use of earnings management, assume that earnings management only harms the interest of the firm. However, mangers that manipulate accounts to achieve a better (lower) cost of capital benefit the firm. According to Watts and Zimmerman (1978), this is one of the two cases[2] in which the firm benefits by managers manipulating earnings(Stolowy & Breton, 2004). Most researchers agree that debt covenant violations are an incentive for managers to manipulate earnings. However, they assume that the debt has been granted. Is it not plausible that lenders assess the risk of lending capital, and process this risk in the desired interest rate?

1.1.4 Sample and Method

This research will use Dutch stock exchange quoted firms on the EuroNext Amsterdam. The top 50 firms of the Amsterdam EuroNext are noted in the Amsterdam Exchange Index (AEX) and in the Amsterdam Midcap Index (AMX). Preceding researches focus their research on the firms in the United States. The dependant variable will be the use of earnings management. To detect a possibility of earnings management the Modified Jones model (Dechow, Sloan, & Sweeney, 1995) will be used. For the independent variable, the focus will be on the cost of capital. Two costs aspects will be considered, i.e. the cost of equity and the cost of debt.

1.1.5 Limitations

The data selected comes from the Dutch stock exchange. Therefore, they represent the situation in the Netherlands. Due to the difference in law, the outcome may not be applicable for global application. However, cross-country analysis could take place to evaluate differences. Further limitations include the data availability. As dividend is need as a variable to calculate the cost of equity, firms that do not structurally release dividend will be excluded. However, firms that periodically neglect to pay dividend sporadically, will remain included.

1.1.6 Structure

The structure of this paper will continue as follows. Chapters two and three will give a literature review on the subject earnings management and the cost of capital, respectively. In chapter four the relationship between the two main elements will be discussed. Prior research and the hypothesis development will be addressed in chapter five. In chapter six the complete research design will be

[2] Stolowy and Berton (2004) use the three aspects that were created by Watts and Zimmerman (1978) in stating their definition of account manipulation (Appendix, figure 1). Therefore, the other case in which earnings manage benefits the firm is when it affects society (Political costs). According to Watts and Zimmerman (1978) only compensation plans to managers, act against the best will of the firm.

given, paying attention to the type of research, the method for testing, variables, control variables and data sampling. In chapter seven the result from the research will be presented. The limitations and recommendation will be laid out in chapter eight, ending with the conclusion.

2 Earnings Management

This chapter contains, background information concerning the use of earnings management. Paragraph 2.1 elaborates on the content of the term earnings management and describes what earnings management implies. Paragraph 2.2 comments in which way earnings are managed. Firms have different ways of managing earnings. Activity manipulation as a form of earnings management will also briefly be commented on. The last paragraph will investigate why firms engage in earnings management and what incentives exist for the use of earnings management.

Inefficient Market

Throughout this paper, the asymmetric information gap between the principal and the agent is noted. This supports the notion that markets are not efficient in the strong form[3]. According to the Efficient Market Theory (EMT), the strong form states that all information (public and private) are included in the market price. This entails that insider information (e.g. information known to management) is reflected in the share price. If this were true, reported information would not affect the stock price, as the stock price would already reflect this information. The incentive for management to manipulate earnings would be void. If managers reported manipulated earnings and the market was efficient in the strong form, investors would not be deceived. Managers would therefore not be able to manipulate the capital markets. (Levy & Post, 2004)

Earnings management

In the light of past accounting scandals and the current world economics, the credit crunch, the subject of the use of earnings management has been receiving great attention. In 2001, the investment world was shocked when *the smartest guys in the room*[4] were caught manipulating accounts. The Enron affair bought to daylight the significant effects of earnings manipulation. Unfortunately, the Enron affair does not stand on its own. Since 2002 there has been a number of accounting scandal were earnings have been overstated (e.g. Royal Ahold, Parmalat and more recently Satyam Computer Services).

It is not always clear when firms operate outside the boundaries set by regulators. However, a fine line exists between earnings management and fraud. The definition of fraud is “one or more intentional acts designed to deceive other persons and cause them financial loss” (National Association of Certified Fraud Examiners, 1993, p. 6). Within the economic scientific literature, fraud

[3] The three forms of the Efficient Market Theory (EMT) are, the weak form, the semi-strong form and the strong form. In the weak form, only historical data reflects the price of a share. In the semi-strong form, all relevant public information is reflected in the share price. The strong form states that all information (public and private) is reflected in the stock prices (Levy & Post, 2004).

[4] A documentary about the Enron corporation, its faulty and corrupt business practices

is considered as moving outside the boundaries that have been set by standard setters. Earnings management on the other hand, is misleading users based on an optimistic or a pessimistic bias by managers (Vander Bauwhede, 2003, p. 197). Managers that operate outside the boundaries set by regulators, reveal a corrupt view on the issue. However, earnings management operates more often than not within the guidelines set by the reporting authorities. Standard setters have granted managers a certain degree of discretion in reporting financial information. This is granted to allow managers to reflect information only know within the firm, which is of value to outsiders (Palepu, Healy, Bernard, & Peek, 2007, p. 7). It is this form of earnings management that will be considered throughout this paper.

2.1 What is earnings management?

Healy and Wahlen (1999) state earnings management as follows:

> *"Earnings management occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers."* (Healy & Wahlen, A Review of the earnings management literature, 1999, p. 368)

In this definition, Healy and Wahlen state a judgement criterion, as well as the goal of the use of earnings management.

The judgement criterion implies that earnings management is an activity that is purposely undertaken by the management. This judgement criterion is cited in a number of articles as moving within the boundaries set by regulators (e.g. (Daniel, Denis, & Narveen, 2008, p. 4) and (Beneish, 2001, p. 3)). This criterion implies that the management does not intentionally manipulate accounts. However, it implies the use of professional discernment used by management and granted by authorities. This discernment addresses the main challenge researches face (Beneish, 2001, p. 3). Graham et al. (2005, p. 5) notes however, that in the "post-Enron environment", managers are reluctant to utilize the liberty presented to them to create adjustments within accounting standards[5]. According to Bergstresser and Philoppon (2006, p. 514), earnings management arises, when reported income includes cash flows and changes in the firm value. Since cash flows are not difficult to establish and trace, changes in the firm value requires a greater deal of management discernment.

[5] Since the Enron case, the U.S. government past the Sarbanes-Oxley Act. Violation of this act can result in 20-year imprisonment and a monetary fine.

Healy and Wahlen also state the goal for the use of earnings management. On the one hand misleading stakeholders, and on the other hand influencing contractual outcomes. In general, earnings management is aimed at wealth transfer (Stolowy & Breton, 2004).

2.2 In which way are earnings managed?

Financial reports convey earnings that have occurred throughout the past period. These earnings are based on cash flow plus changes in the firm value (Bergstresser & Philippon, 2006, p. 514). Whilst cash flows are easily determined, changes in the firm value are more challenging. It is in determining this change in the firm value that managers are granted some slack by standard setters. Cash flows (cash accounting) are easily measured and defined. However, they fail to reflect the complete value change needed in periodic reports. To reflect the true change in the firm value, accrual accounting is implemented. Common accounts used to manipulate earnings are the accrual accounts. The accrual account is a product, designed by standard setters, to express valuation changes that have not yet resulted in cash flows(Gao & Shrieves, 2002, pp. 3-4). It is in these accounts, where earnings management is likely to be used (Beneish, 2001, p. 3). However, the aim of the standard setters was not to provide managers with a possibility for using earnings management, but to express a professional judgement.

Not all accruals are inferior and superfluous, as they were created for specific purpose. This poses the problem that not all the accruals are related to earnings management. Non-discretionary accruals are based on expectations from management and are determined based on subjective assumptions. An unwarranted bias when determining accruals, leads to the use of earnings management. The last form of accruals is considered the discretionary component and relevant to earnings management (Beneish, Earnings Management: A Perspective, 2001, p. 3).

All firms, based on their sales and assets, are expected to have a certain level of accruals (Vander Bauwhede, 2003). However when these accruals exceed non-discretionary levels, they could indicate an inclination to manage earnings.

Methods

Over the years, to detect the use of earnings management, a number of methods have been developed. Healy (1985) and DeAngelo (1986)[6] developed methods that were very dependent on years where no earnings management was suspected. That was the biggest weakness in these models. They would expect discretionary accruals to be revealed in the difference between accruals in a year where earnings had been managed and a year where no earnings management had been suspected(Vander Bauwhede, 2003, pp. 198-199).

[6] Cited from Vander Bauwhede (2003, p. 199)

The Jones model (Jones, 1991) and the modified Jones model (Dechow, Sloan, & Sweeney, 1995) were created to try eliminate the discretionary element of the accruals, by taking into consideration changes in the economic environment (Beneish, 2001). However, like most models these models have various limitations. Further elaboration will be noted in chapter five, prior research. Studies have also shown that changes in inventory and in accounts receivables can resemble earnings manipulation(Roychowdhury, 2006; Stolowy & Breton, 2004).

Rational minds would suggest that investors, being able to detect the use of earnings management, would punish firms that violate the freedom granted to them by the standard setters. Studies performed by Teoh Welch and Wong (1998b) and Teoh and Wong(2002) suggest that investors are "naïve" in detecting earnings manipulations, due to the asymmetric information gap. Although models exist that can predict the possibilities of the use of earnings management, an accurate forecast remains difficult.

It should be noted, that most of the performed researches assume that the market is not aware of the tendency by managers to alter the earnings. However according to a study by Stein (1989) investors rationally expect managers to manage the earnings. Consequently in pricing stocks, analysts expect managers to inflate earnings. The market knowingly cannot prevent this from happening so anticipates this behaviour and expects earnings that have been managed (Cheng & Warfield, 2005). This would be consistent with the efficient market assumption. The share price reflexes all information, i.e. public and private. The share price therefore portrays a true view of the firm, where managed earnings are processed in the market price.

Coles et al. (2006) suggest that investors are well informed and sophisticated in their awareness of earnings deception. Nevertheless, the transparency into incentives and account manipulation is limited. Even though models might be available, these models face limitations and can only indicate the possible use of earnings management.

2.2.1 Account choice

Earnings management by means of accruals, seem to invoke a thought that last minute accruals are only used once the result is known. When figures disappoint income inflating accruals are formed, and when figures over satisfy expectation, income deflating accruals are used. However, research exists suggesting that managers do not only use the slack presented to them by the standard setters to create accruals. To evaluate the firm value, the standard setters require mangers to choose appropriate accounting policies to valuate firm value. Research by Skinner (1993, p. 408) concludes that highly levered firms have a bigger chance in choosing favourable accounting policies that increased income. This could also be concluded when considering accounting-based bonus plans. Initial studies focussing on account policies suggest that, firms systematically choose favourable

accounting policies[7](Vander Bauwhede, 2003, p. 198). The standard setters try to reduce the effect policy changes incur in accounting figures. Auditors should also be aware of the inclination of management to change accounting policies. Although firms have the possibility to alter policies, one might suggest that investors would punish firms that too frequently change their accounting policies.

2.2.2 Activity manipulation

The most performed studies focus on account manipulation, however Roychowdhury (2006) suggest that in comparison to activity manipulation, the effects of direct account manipulation are relatively lower. The former is characterized by a deviation from the normal operation with the primary objective to meet certain earnings thresholds (Roychowdhury, 2006). One might argue that activities that increase earnings are only good for the firm. Roychowdhury notes an increase in sales by means of temporary discounts. This certainly cannot harm the interest of the firm. Investors might appreciate a certain degree of entrepreneurship to meet earnings targets, given that long-term objectives are not jeopardized. However, earnings manipulation is notorious for its short-term interests. Managers manipulate earnings to mislead investors and benefit from the wealth transfer between investors and management (Stolowy & Breton, 2004). Activity manipulation does not support this notion, because it does not mislead investors. Reported earnings by management are correctly stated, and do not present an untrue view of the value of the company. In the core, earnings management through account manipulation does not always materialize and produce cash flows, therefore not benefiting investors. Cash flows alter the capacity of firms to pay out dividend. DeAngelo and DeAngelo (2006a) research suggests that dividend payouts are important to investors. Further research has shown that dividend cuts are unforgiving punished at the stock market (Pettit, 1972; Aharony & Swary, 1980; Grullon, Michaely, & Swaminathan, 2002). Therefore earnings that do not materialise into cash flow, damage the cash position of the firm.

2.3 Why do firms engage in earnings management?

Although throughout the economic significant literature, different incentives have been presented regarding the existence of earnings management, Stolowy and Berton (2004) state that the use of earnings management exists to profit from the possibilities of wealth transfer. Beneish (2001) distinguished between four possible motives for earnings management.

1. Debt contracts;
2. Compensation Agreements;
3. Equity Offerings;
4. Insider trading.

[7] Examples of favourable accounting policies are activating expense and depreciating them in year to come.

Debt covenants often use accounting information to regulate firms' performance and incorporated dividend restrictions in them(Bradley & Roberts, 2004)[8]. Cash flows that exit the firm in a form of dividend, weaken the position of the debt providers. When earnings fall short of dividend levels (i.e. income is greater than the proposed dividend), constraints within debt contracts restrict payout (Daniel, Denis, & Narveen, 2008, p. 3). Beneish (2001, p. 8) summarizes studies that reveal mixed results for the use of earnings management to avoid defaults on loans. The main objection of using earnings management to influence debt covenants' is that it is not clear if these actions postpone the inevitable. Do firms that apply earning management to avoid defaults, eventually default? Although some firms may not default on their loans, they profit from a relatively cheap form of capital (Stolowy & Breton, 2004, p. 6). Due to higher earnings, companies could seem more profitable than in reality. This subject will be addressed more in depth in the next chapter.

Compensation contracts seem to provide more evidence for the existence of earnings management than debt contract. Extensive studies (e.g. (Bergstresser & Philippon, 2006; Bauman & Shaw, 2006; Ronen, Tzur, & Yaari, 2006; Healy, 1985)) have shown that in general the self-interest motivation of management is a great incentive using earnings management, than that of the debt covenants. Managers receive compensation based on their performance. The compensation theory is based on the agency theory. The principal (stakeholders) and the agent (management) both want to increase their wealth. The principal can align the two incentives by increasing the wealth of the agent, when his own wealth increases. However, not all performance indicators are financial and quantitative. Creating uncomplicated, unbiased and clear performance indicators is not easy. Consequently, most performance indicators are financial figures. In a Towers Perrin survey, 65 of the 68 sample companies using single performance measurement used accounting indicators as performance measurement. 62% of the selected companies using multiple performance measurements used accounting indicators. Performance can be measured in a number of ways from total earnings to growth rates[9].

Equity offerings offer a great opportunity to manage earnings. Due to the information asymmetry, managers are known to inflate earnings to receive a better price for new equity (Beneish, 2001). This is consistent with the notion that management aspire to receive a relatively low cost of capital.[10] Rangan(1998); Teoh, Wong and Rao(1998); and Teoh et al.(1998a; 1998b) have performed extensive

[8] In a research performed by Bradley and Robert (2004), they found that a great majority (84%) of all private debt contracts have dividend restrictions

[9] Cited from (van Winsen, 2008)

[10] If the cost of equity (CoE) is measured by $CoE = \frac{Dividend}{Equtiy}$. A larger denominator will reduce CoE, ceteris paribus.

studies into earnings management and equity offerings. Their evidence suggests that earnings are managed before equity offerings subsequently disappoint expectations.

Insider trading has also been documented (Beneish, Earnings Management: A Perspective, 2001), (Ronen, Tzur, & Yaari, 2006), however the evidence supplied is less persuasive. Insider trading could be regarded as a form of management compensation. Management receives equity compensation throughout the years. However, knowing the true state of the firm, managers have more incentive to cash in holdings when they know the firm is overstated (Beneish, 1999). Beneish(2001, p. 10) even argues: “If managers act as informed traders, I expect them to use their information about earnings overstatement to trade for their own benefit...”. (Ronen, Tzur, & Yaari, 2006, p. 362) study supports recommendation to ban insider trading.

2.4 Summary

In this chapter, the term earnings management was discussed. From the definition presented, it is clear that the use of earnings management differs from fraud. The former being considered over optimism instead of outright disregard for accounting standards. Furthermore, the difference forms of earnings management were noted. This paper will focus on the accrual method. However, activity manipulation and account manipulation were also stated as possibilities for earnings management. The last paragraph in this chapter, states the reasons why firms or managers engage in earnings management. Four distinctive reasons were noted, i.e. debt contracts, compensation agreements, Equity offerings and insider trading.

The next chapter will focus on an issue that derives from debt contract. Although the cost of capital is not only limited to debt contracts, it is certainly a term that is related to capital agreements. The content of the cost of capital is outlined in the next chapter.

3 Cost of Capital

In the previous chapter, the content of the term earnings management has been examined. This term derives its existence from accounting principles. The cost of capital, however, is more often used within finance related subjects. Every firm faces some sort of capital cost. In this chapter, a literature overview will be presented of the cost of capital. In the first section, a definition will be supplied about the content of this term. In the second section, an overview will be presented concerning the issues that influence the cost of capital. A quick examination will be provided concerning the issues relevant to this study. In the final section of the paragraph, the cost of capital will be further explained in a more direct approach. The two elements that create the total cost of capital will be addressed. The chapter will end with a summary of the commented issues.

3.1 What is the content of the term the cost of capital?

Essentially, the cost of capital is the price a firm pays for the use of capital. However, this is not the only purpose the cost of capital has for a firm. Modern corporate decisions are based on the rate at which a firm is able to attract capital from the capital markets. Investment decisions are made and cash flows discounted based on the weight average cost of capital(Easley & O'Hara, 2004, p. 1553). Capital that firms hold are debt or shareholders equity, the costs are respectively interest and dividend. However the price of these forms of capital differs in that, generally the costs of debt are lower than that of equity. The greatest primary reason for this difference is that, the risk debt distributors are exposed to are inferior to that of equity distributors. In other words, the amount of risk an investor is willing to take depicts the return he expects to make. Modern finance theories associate return with the risk profile of an investment product. The Capital Assets Pricing Model (CAPM)[11] calculates the expected return rate of a portfolio based on the risk profile in relation to the market risk. This model is a classic portrayal of the relationship between the risk of an investment product and the expected return.

Investors have a different return on investment than the firms cost of capital, subsequently investors can also achieve a change in the market value whilst a firm only pays its dividend or interest. However, a clear relation exists between the risk of doing business and the returns it presents. Risk is influenced by numerous factors. For this research, the focus will mainly be on the information risk.

Information risk.

The agency theory is the foundation behind the information risk. An information gap exists between the agent and principle. The principal requires the agent, being well informed, to reduce this gap.

[11] The CAPM states that the sum of the market risk premium $(r_m - r_f)$, sensitive to market movements (β_i) and the risk free premium (r) can estimate the expected return on a well-diversified investment portfolio. (Brealey, Myers, & Allen, 2006, p. 189)

However, the principal cannot judge the quality of the conveyed information. Francis et al. (2005, p. 296) defines the information risk as follows:

> *"... the likelihood that firm specific information that is pertinent to investor pricing decisions is of poor quality."*

Within the finance theory, risk has two components, i.e. systematic risk and specific risk. The former is non-diversifiable and is inherent to investments in general. The latter is diversifiable and can be eliminated by a well-diversified portfolio[12](Brealey, Myers, & Allen, 2006, pp. 147-181). A number of researches that have shown that information risk is a part of the non-diversifiable risk factor(Easley & O'Hara, 2004; Francis, LaFond, Olsson, & Schipper, 2005). As a result, diversification will not eliminate the information risk, and classifying the information risk as a price risk factor(Francis, LaFond, Olsson, & Schipper, 2005, p. 296). Therefore when engaging in investments, the information risk is firm specific and not a general risk taken. Being a firm specific risk, the information risk differs per firm. Investors have great advantages in identifying this risk. According to the definition provided by Francis et al. (2005), the information risk exists when information (disclosure) is of poor quality. Arther Levitt, chairman of the Security and Exchange Commission, stated that:

> *"Quality information is the lifeblood of strong vibrant markets. Without it, ... Fair and efficient markets cease to exist."(Levitt, 2000)*[13]

The quality of the disclosure is dependent on many aspects. Yet modern pricing models do not take the information issue into account(Easley & O'Hara, 2004).

3.2 What influences the cost of capital?

The cost of capital is a reflection of the risk that is taken by the investor. As stated before, a part of this risk is the information risk. Francis et al. (2005) has provided empirical support that information risk is associated with the cost of capital. Furthermore, Easley and O'Hara (2004) investigate the role of the private and the public information in determining the cost of capital. Two aspects are mainly associated with the information risk. Francis et al. (2008) investigates the influence of voluntary disclosure and the earnings quality, the latter being prodominantly driven by the accural quality[14]. Two different predictions are noted with regards to the earning quality and the disclosure published by a firm, i.e. a substitutive and a complementary connection (Francis, Nanda, & Olsson, 2008).

[12] H. Markowitz was one of pioneers of the portfolio. His work proved that portfolio selection could reduce the standard deviation (risk) of an investment. His work has proved to be the cornerstone of modern risk-return relationships.

[13] Cited from: (Easley & O'Hara, 2004), speech: (Levitt, 2000)

[14] Francis et al. (2008) mentions three measures in establishing earnings quality, i.e. accrual quality, earnings variability and the absolute value of abnormal accruals.

However, it is not certain which one of these aspects are th emost essential in determining the cost of capital. On the one hand, research performed by Diamond and Verrecchia(1991) suggests that greater disclosure results in lower information risk and therefore in a lower payoff. On the other hand, Kim and Verrecchia(1995) researched that greater disclosure results in even greater information assymetry, leading to an increase in the expeceted payoff. This owing to an increase in the assymetric information gap that new information can create. These two effects counterbalance each other and lead to an aggregated payoff. Likewise, accruals produce both a possitive (true performance measures) as well as a negative signal (over optimism). These effects both existing simultaneously and producing an average cost of capital(Francis, LaFond, Olsson, & Schipper, 2005, p. 296).

3.3 The cost of capital structure

The capital structure of the firm has become an important issue, since the publication of the theorem develop by F. Modigliani and M. Miller (M&M)[15]. As indicated before, generally debt is relatively less expensive than equity. Before the notion on M&M, debt was regarded as unavoidable. The cost of debt, interest, was regarded as a cost. Yet, under the proposals published by M&M, no sense existed in managing a firm's capital structure. This notion is however, based on a world without taxes and transaction costs. Once these elements are added to the equation, the capital structure is an important issue, creating possibilities for firms to benefit from their capital structure. Firms are however restricted in their capital ratio. Debt holders are sceptical towards excessive unfavourable debt-equity ratios.

Although equity holders and debt holders both receive returns from the firms, between the two groups a shareholder-bondholder conflict exists (Wald, 1999, p. 194). Bradley and Roberts (2004) researched debt contracts, and found that a great majority stated dividend restrictions. These restrictions are intended to eliminate possible wealth transfers between debt holders and equity holders. In a research performed by Wald(1999), dividend restrictions are intended to maximize firm value, and not the value of equity. Without these restrictions, possible debt holders would not grant firms debt, as firms would prefer dividend payout to investing decisions (Wald, 1999, p. 195).

3.3.1 Cost of Equity

A firms cost of equity consists of a dividend payout. A study by Brav et al. (2005) showed that CFO's are willing to make great internal changes, from laying off personal to avoiding profitable projects, just to avoid dividend cuts. DeAngelo and DeAngelo (2006a) concluded that dividends are vital to investors, based upon negative share price reactions found around dividend cut announcements.

[15] Modigliani and Miller, The Cost of Capital, Corporation Finance and the Theory of Investment, American Economic Review, 48 (June), pp.261-297

The fact that equity holders do not always expect to receive a dividend, is shown in the fact that some shares do not pay dividend. The share price accounts for a zero dividend payout. This is however corporate strategy that is taken by the management. It is when investors expect a dividend payout and are disappointed, that markets react with discontent. Dividend cuts alter expected returns from investors. This last being one of the reasons the expected return on equity, thus the cost of equity, is higher than that of debt. Equity holders risk the uncertainty that future profits will not add (expected) value to holder's investments. Moreover, cash flows from return on equity are less certain. Debt holders also have a payout advantage, over equity holders. Interest is always expensed, whereas dividend is reliant on positive (average) results. These two factors increase the systematic risk (non-diversifiable risk) equity holders have above debt holders. Moreover, in the event of discontinuity debt holders have a payment priority over equity holders. It is relevant to state though, that in a case of discontinuity, debt holders are often deprived of any payback as well. They run the same risks as equity holders, risking their initial participation. Why then would investors want to hold firms equity? According to the CAPM, diversifiable portfolios are negatively correlated to risks. The better the diversification the closer the correlation coefficient (ρ) approaches -1.

3.3.2 Cost of Debt

The realised cost of debt consists of interest payment. Studies have been carried out using the marginal cost of debt(Prevost, Skousen, & Rao, 2008). Prevost et al. focus on corporate bonds, and compare the yield spread on a corporate bond with that of a Treasury yield spread. This however does not focus on the *real* interest expense of a firm. Prevost et al. (2008) does however contribute to debt issued through bonds, reflecting accrual quality in the bond market. Bond market see through manager's intentions to inflate earnings, as higher marginal costs of debt are associated with higher accruals (Prevost, Skousen, & Rao, 2008). Thus, the market expects a premium for disclosure quality and for the information risk(Francis, LaFond, Olsson, & Schipper, 2005; Prevost, Skousen, & Rao, 2008).

Although, equity holders are faced with specific risks that are inherent to their investment, debt holders bear other risks. If debt being cheaper than equity, rational minds would suggest that firms would, in a world with no restrictions, dump all equity and only take on debt. However, legislation prohibits this and recently corporate statutes prevent this from happening(Wald, 1999, p. 195). Moreover, if a firm only has equity, all risks are borne by the equity holders. Among these risks are the risk of discontinuity and the risk of failing profits. When the firm take on debt, the first risk is proportionally shared by all capital holders. The more debt a firm has the greater the proportion of risk is shifted onto the debt holders. Considering the risk-return theory, debt holders would expect a higher return. Nevertheless, firms aim for an optimal ratio between debt and equity. The optimal

debt ratio in a firm is dependent on its production function[16](Wald, 1999, p. 194). An optimal debt-to-equity ratio would not only decrease capital costs, they would also achieve a lower weighted average cost of capital (WACC[17]). Debt holders are also aware of the possibility of wealth transfer to the equity holders, and impose restrictions on firms through debt covenants. In contradiction to equity holders, once a covenant has been agreed upon, debt holder will have great difficulty influencing firms operations.

Equity holders on the other hand, seem to appreciate a healthy capital structure and adopt guidelines in corporate statues(Wald, 1999). Equity holders are aware of the payout advantage that debt holders possess. However, debt confers advantages to equity holders. When taxes are included in an M&M theorem, a firm increases it value by attracting debt. Greater firm value increases equity holder's value. Empirical research shows that firms with a lower debt-to-equity ratio are more profitable, and have a respectively greater return on equity. In addition, those firms with a greater credit rating and a lower cost of capital (Francis, LaFond, Olsson, & Schipper, 2005, p. 297).

3.4 What is the relation between the use of earnings management and the cost of capital

Extensive testing exists concerning the use of earnings management. However, the majority of these researches investigates the incentive schemes of manager's as a cause for the use of earnings management (e.g. (Gao & Shrieves, 2002; Ronen, Tzur, & Yaari, 2006; Bergstresser & Philippon, 2006)). This is just one of the explanations regarding the use of earnings management(Stolowy & Breton, 2004, p. 6).

The primary reason concerning the use of earnings management is to influence the reported earnings. A personal incentive for the management to manage earnings is the incentive schemes. However, concerning the firm, the incentive is to reduce *real* expenses and maximize *real* profits (i.e. cash flows). Research has been performed with regards to income increasing accounting policies (e.g. (Skinner, 1993; Gietzmann & Ireland, 2005)).

In this paragraph, the relation between the use of earnings and risk will be described. The cost of capital is derived from the risk related to an investment. Therefore, a negative association between earnings and risk would depict a negative correlation between earnings and the cost of capital.

[16] Production function portrays the optimal output (production) of a firm given its input.

[17] $WACC = r_D \frac{D}{V} + r_e \frac{E}{V}$, where: r_D= return on debt, r_E= return on equity, D=Debt, E=Equity and V= Firm value (Brealey, Myers, & Allen, 2006, p. 461)

3.4.1 Earnings (management) and risk

In the previous paragraph, the relation between the risk of an investment product and the expected return was explained. To calculate the risk[18] (σ) of an investment, the standard deviation is calculated between the expected return ($\tilde{r}$) and the actual return (r). Therefore earnings that fall below the expected amounts, increase the risk. The previous chapter established that the cost of capital, both debt as equity, are related to the risk of that an investment.

Smoothing

An earnings management strategy that has stood the test of time is income smoothing(Ronen & Yaari, 2008, p. 319). Not all earnings management is aimed at achieving a maximum income. Earnings benchmarks are often the cause of smoothed earnings. Graham et al.(2005, p. 20) mentions that 51% of CFO's regard earnings the most essential in reporting performance to stakeholders, and not cash flows (Appendix, Figure 2). When earnings reach a certain level, excess earnings will not return proportional stock movements. Bauman and Shaw(2006) mention that firms have even a greater incentive to beat analysts forecast by small amounts. Cheng and Warfield (2005, p. 21) also notice this event happening. Although they research earnings management towards management incentive schemes, Cheng and Warfield note an important reason for the existence of smoothing income[19]. Increasing income upwards constantly, is nearly impossible. However when income reaches benchmark levels, residual earnings can be *saved* for future periods.

A survey carried out by Graham et al. (2005) asked managers why they preferred smooth earnings[20]. The number one response (88,7%) was because investors perceive smooth earnings as less risky. A great majority found that it reduced the return demanded by investors. Apparently, investors reduce the risk premium built into the cost of equity and demand a low return when earnings are smoothed. Graham et al.(2005, p. 5) further states rigorous stock movement when benchmarks are missed, even slightly. Investors become weary when firms are unable to reach targets. Moreover, investors' associate benchmark misses with firms that are incapable of predicting their own future.

3.5 Summary

The capital position of the firm is essential. Although Modigliani and Miller first stated that, the structure of a firm did not matter, when taxes and other impurities are added, capital structure

[18] $\sigma = \sqrt{\frac{1}{N-1}\sum_{t=1}^{N}(\tilde{r}-r)^2}$, where $\frac{1}{N-1}$ represents the degree of freedom; N is number of observations and t the number of periods. (Brealey, Myers, & Allen, 2006, p. 156)

[19] Cheng and Warfield note two issues. Only one is relevant to this paper. However Cheng and Warfield note that the second issue is that incentive contracts recurring and managers care about stock prices in the future (Cheng & Warfield, 2005, p. 21).

[20] Appendix Table 1 gives an overview of the result to the question: "Rank the three most important measures report to outsiders".

matters. The costs for the different causes of capital are essential for this difference. The cost of capital is driven by the risks that are taken. In diverse finance model, return is related to the risk taken. CAPM states that some risks are diversifiable (specific risk) by means of a well divers portfolio, but that a non-diversifiable (systematic risk) component still exists. Information risk is a systematic risk, and consequently that risk is non-diversifiable. Francis (2005) states that with regards to the information risk both voluntary disclosure and earnings quality are essential.

Furthermore, the cost of capital consists of the cost of debt and the cost of equity. These two forms of cost differ, due to the different risks the holders face. The cost of debt is driven by the amount of risk that the equity holders transfer to the debt holders. In turn, the equity holders also transfer profits (interest expense) to the debt holders.

A firm faces many risks in doing business. However, the performance risk could be considered the biggest of them all. According to modern finance theory, the standard deviation from the expected return and the actual return is the risk. Therefore if a firm deviates from their expected returns, they increase their risks. With a firms risk increasing, capital owners expect high returns. Earnings that fluctuate too much are complicated in predicting future earnings. For research, it is possible to state that smoothed earnings are considered less risky than high fluctuating earnings. To avoid a firm's risk profile increasing, mangers have the incentive to manger their earnings. This would not only decrease the risk profile, but also improve net profits.

In the next paragraph methods developed of the past decade that detect the possible use of earnings management, will be discussed. Furthermore, a number of hypotheses are derived that will be the tested in following chapters.

4 Prior research and Hypothesis development

In Chapter 2, the definition of earnings management was simplified as the difference between the cash flow from operations (CFO) and the reported income(Bergstresser & Philippon, 2006, p. 514; Vander Bauwhede, 2003, p. 198). Although the definition of Healy and Wahlen (1999, p. 368) is more comprehensive, Bergstresser and Philippon highlight one of the aspects of earnings management, i.e. accrual reporting[21]. Standard setters allow the use of accruals to improve reporting. Static reporting standards hamper real valuation of assets and liabilities. Therefore, the use of accruals allows management to provide vital information that could otherwise be lost in static reporting standards. Accruals that distort reporting quality are known as discretionary accruals. The size of these accruals is a benchmark for the use of earnings management.

In this chapter, prior research that has been developed over the years will be explained. An overview is presented of developments into accruals based models. The chapter will furthermore, present the developed hypotheses that are derived from existing economics scientific literature.

Cash flow versus earnings.

Fundamentally, firm value is based on discounting future cash flows. If a firm can produce a certain output in the past, the output in the future should either be the same or preferably increase. Consequently, the present cash flow is important. However, if cash flows do not contain the true firm performance, can they still reliably be used for valuation purposes for a firm? The income statement is used to portray periodic fluctuations in firm value. Firm value is more than net cash flows, as some firm value is not yet recognized in the current cash flow(Bergstresser & Philippon, 2006, p. 514). They are however, part of the change in firm value. These changes are recorded in accruals. Accruals that represent true value adjustments are non-discretionary (innate) accruals. Determining these accruals is not always easy and require management's expectations(Ronen & Yaari, 2008, p. 320). When these expectations are unrealistic or unfounded, they create false value to the firm. Specifically, value is created without the realistic expectation of future cash flows. These types of accruals are regarded as discretionary accruals. Isolating this form of accruals is the toughest challenge for researches(Beneish, 1999, p. 3)

4.1.1 Accrual models

Models that detect earnings management are continually evolving. The biggest contribution to the accrual approach is the Jones model (Jones, 1991). However, in the first section a brief overview will be presented into the development of the accrual model until Jones. Followed by a description of

[21] Vander Bauwhede refers to two aspects that can be used to manage earnings, i.e. accrual studies and accounting method. The latter has more long lasting effects, as management cannot change accounting method annually. Therefore a preference for the former aspect. (Vander Bauwhede, 2003, p. 197)

the Jones model (Jones, 1991) and the modification made to the model by Dechow et al. (1995), known as the modified Jones model.

If accruals can be divided into two discretionary and non-discretionary components, the following relation exists between these two components:

$$DA_t = TA_t - NDA_t \quad (4\text{-}1)$$

Where:

DA_t	Discretionary Accruals in year *t*
TA_t	Total Accruals in year *t*
NDA_t	Non-Discretionary Accruals in year *t*

Equation 5-1 is the base of the assumptions throughout this paper. Based on the definition that accruals are the difference between cash flow and earnings, the total accruals (TA) are calculated as follows:

$$TA_t = CFO_t - EBXI_t$$

Where:

CFO_t	Cash flow from operations in year *t*
$EBXI_t$	Earnings before extra-ordinary income in year *t*

Pre- Jones models

The greatest difference between all the noted models, are their ability to isolate the discretionary accruals. Only the total accruals are observable in financial statements, determining the discretionary accruals are not straightforward. Accruals are either income increase (managed upwards) or income decreasing (managed downwards). Healy (1985) states that over time accruals are managed upwards and downwards. This creates an average accruals amount, which is equal to the non-discretionary accruals. The Healy model calculates the non-discretionary component as follows:

$$NDA_t = \frac{1}{n}\sum_{i=t}^{n}\frac{TA_i}{A_{i-1}} \quad (4\text{-}2)$$

Where:

A_{i-1}	Lagged Assets in year t-1
n	Total number of years in calculation

In essence, Healy (1985) calculates the long-term average of the TA. Computing the NDA from the average TA in equation 5.2, discretionary accruals were accruals that differ from the long-term average total accruals (Equation 5.1).

Limitations to this method include the value of *n*. How many years in the past would be reasonable to go back? When testing $t-0$, what would be a realistic value of n. Most research assumes that *n*=5(Ronen & Yaari, 2008, p. 397). In addition, Healy's model assumes that in comparison to assets, innate accruals remain unchanged. Firm are expected to grow, over the years the composition of a company could have changed. As innate accruals are a firm's value outside of the present cash flow, they are expected to grow with the firm. Moreover, accruals are controlled by the total assets. Knowledge based firms use in general less assets. This causes the control variable of assets to become less accurate(Stolowy & Breton, 2004, p. 22).

DeAngelo (1986) tried to simplify the Healy model. If accruals contain the firm value that have not yet been realized in the CFO (Cash Flow from Operations) in the current period (t), future cash flows should flow from the accruals in the future periods $(t=1)$. Based on this, DeAngelo (1986) assumes that NDA of $t=0$ is equal to the total accruals with $t=-1$.

4-3

$$NDA_{t+1}=\frac{TA_{t-1}}{A_{t-1}}$$

This did indeed eliminate the problem of trying to find a year were discretionary accruals did not exist. However, as DeAngelo(1986) assumes that the total accruals for $t=-1$ are free of discretional accruals, the accuracy is lost.

The Jones Model (1991)

Healy (1985) and DeAngelo (1986) assume that NDA are constant. Therefore, any changes in the TA will result t changes (larger and smaller) in DA. Jones (1991) ignores this assumption slightly. According to Jones (1991), when calculating accruals, changes in economic environment should be taken into consideration. All accruals may be open to the discretional component(Stolowy & Breton, 2004, p. 22). However, the firms level of activity, controlled by the total assets, determines the non-discretionary component in the accruals. The following calculation is used to determine the level of non-discretionary accruals (NDA):

4-4

$$NDA_t=\alpha_1\left[\frac{1}{A_{t-1}}\right]+\alpha_2\left[\frac{\Delta REV_t}{A_t}\right]+\alpha_3\left[\frac{PPE_t}{A_t}\right]$$

Where:

ΔREV_t	Revenue in year *t* minus revenues in year *t*-1
PPE_t	Gross Plant, Property, and Equipment in year *t*

$\alpha_1, \alpha_2, \alpha_3$ Industry-specific parameters

The Jones model is preformed in two stages. In the first stage, the estimation stage, Jones assumes that the total accruals are equal to the nondiscretionary accruals in the control year. This presumes that in the control year no discretionary accruals exist. Stating that for the estimation period the following relation exists:

4-5

$$NDA_t = \frac{TA_t}{A_{t-1}}$$

One of the objections to Healy (1985) and DeAngelo (1986) was that assets do not influence all firms in the same way and to the same extent. Therefore, if all firms were calculated with the same parameters, industry differences would exist. To offset these differences and to indicate in which way firm's assets influence a firm, Jones (1991) uses industry parameters $(\alpha_1, \alpha_2, \alpha_3)$. These should hold for the entire industry and are estimated in the estimation period.

During the second period, the test period, the estimated value of $\alpha_1, \alpha_2, \alpha_3$ is entered into the model (equation 5-4) and the NDA is calculated.

As with the Healy (1985)and DeAngelo (1986) model, in the reference period no discretionary accruals are expected. However, with the Jones (1991) model it is unclear if the TA in the reference period is *earnings management free* (i.e. free of discretionary accruals)(Ronen & Yaari, 2008, p. 408).

The modified Jones model(Dechow, Sloan, & Sweeney, 1995)

Jones (1991) assumes that in the estimation period no earnings management has taken place. Furthermore, that the elements PPE and revenues do not account towards earnings management, as both elements are added to nondiscretionary accruals (NDA). However, earnings management is easily achieved by using discretion over revenue recognition(Dechow, Sloan, & Sweeney, Detecting earnings management, 1995, p. 199). Based on this assumption, Dechow et al. (1995) adds the changes in credit sales to the changes in revenue. The follow formula exists, with regards to the Modified Jones model(Dechow, Sloan, & Sweeney, 1995):

4-6

$$NDA_t = \alpha_1 \left[\frac{1}{A_{t-1}}\right] + \alpha_2 \left[\frac{\Delta REV_t - \Delta AR_t}{A_t}\right] + \alpha_3 \left[\frac{PPE_t}{A_t}\right]$$

Where:

ΔAR_t Changes in Account Receivables in year t

Like the Jones model (Jones, 1991) the modified Jones model (Dechow, Sloan, & Sweeney, Detecting earnings management, 1995) uses a two stage approach. The main comment however, is that the modified Jones model (Dechow, Sloan, & Sweeney, Detecting earnings management, 1995) uses two differences approaches in the different stages. In the first stage (the estimation stage), the original

Jones model is employed (equation 5-4). However in stage two (the test stage), the modified version is applied (equation 5-6). As a result, in the estimation stage Dechow et al. (1995) do not keep into account the credit sales (AR).

Limitations of the Jones and of the Modified Jones model.

The greatest limitation to the Jones and the Modified Jones model is that of the firm or industry specific parameters ($\alpha_1, \alpha_2, \alpha_3$). Although the use of these parameters is not without purpose, the estimation of these parameters is assumed constant over the years. This conveys a sense that firms are taut and unable to adapt their business policies over time(Ronen & Yaari, 2008, p. 412). Research by Dechow et al. (1995, p. 199) shows that firms exceed an average of 20 years. Adapting the same parameters for all business years would undermine business' ability to adapt over years.

4.1.2 Industry model

The industry model was initiated by Dechow and Sloan (1991). Unlike the models described before the industry model does not directly try model the accruals, however they model the variation of accruals across firms in the same industry. Like the Jones model (Jones, 1991) and the Modified Jones model(Dechow, Sloan, & Sweeney, 1995), the industry model does not assume that nondiscretionary accruals are static over time(Dechow, Sloan, & Sweeney, 1995).

4.1.3 Income smoothing

Another proxy for the use of earnings management is the measure of income smoothing. As income smoothing is the variation between reported earnings and true earnings. The greater this variation, the greater the smoothed income.

4.2 Hypothesis Development

In this paragraph, the development of the hypothesis will be introduced. These hypotheses will be the foundation for the rest of the research that will follow. Based on the hypotheses, the research question will be addressed and answered.

Earnings management has been researched for decades. Throughout literature (e.g. (Stolowy & Breton, 2004; Beneish, 2001) signals exist of debt covenants as a possible cause regarding the use earnings management. Studies complied by Francis et al. (2005) and Easley and O'Hara(2004) note that the cost of capital is positively related to the information risk. Easley and O'Hara suggest that firms that decrease their accounting information towards investors can achieve a reduced cost of capital. Based on risk-return theory in finance, investors will expect a higher return if the firm risks increases.

Capital exists in two categories. The greatest difference between debt and equity is the payment preference towards the former. Furthermore, debt investors contractually arrange payment conditions, e.g. interest rate and payment period. An additional advantage towards debt is that interest expenses are tax deductible.

4.2.1 Equity Capital

Due to the inferior payment preference of equity investors, they risk receiving no payout. A long-term lack of profits jeopardises equity payout. Risk being calculated by variance between expected return and actual returns, cuts in dividends poses a risk for investors. Although investors can achieve market gains, these costs are not paid by the firm. Moreover, in an efficient market, share price represents average expected returns. Sudden cuts in dividend have in an impact on the markets expected returns. Firms realise that dividend cuts and earnings drop influence the firms risk. Therefore, firms have an incentive to ensure that long-term earnings are positive. Earnings contain cash flows less accruals. As the cash flow component is reasonably fixed, the accrual component is subject to judgment and estimation. Therefore, firms are more likely to influence the accrual component, as cash flows are realized. Within the accrual component, a distinction made between the discretionary element and that which is innate to true business. The former regarded as a proxy for over-eager management intervention. Based on discretionary accruals being a proxy for earnings management, and high earnings seen as a sign of low risk, the following hypothesis is derived:

H_1: Firms manage their earnings through discretionary accruals to profit from a relatively low cost of equity

The null hypothesis for H_1 therefore stating that firms with low discretionary accruals have a low cost of equity.

4.2.2 Debt Capital

In comparison with equity holders, debt holders also face the risk that failing profits could jeopardize payouts. Debt holders, however, profit from a payout preference over those of the equity holders. Moreover, debt holders have contractually fixed terms and conditions to which debt is granted to firms. This contractual agreement arranges fixed payout, eliminating the risk of cuts in return. Due to these risk-mitigating actions, in general, returns on debt are lower than those of equity. Debt holders however do face the risk of premature foreclosure. Investments are made to profit from the rewards offered to them, by taking risks involved with investments. Premature foreclosure limits future expected cash flows. Moreover, invested funds are not guaranteed to be paid back. Consequently, debt holders risk their initial investment as well as their expected profits.

Assumed contractual agreements are created prior to fund transfer. Debt holders calculate the risk taken and returns required based on the current information. If firms manage earnings to provide positively biased information, debt holders are mislead. Returns are based on information that is biased towards firms. Bases on discretionary accruals being a proxy for earnings management, and high earning seen as a sign of low risk, the following hypothesis is derived:

H_2: Firms manage their earnings through discretionary accruals to profit from a relatively low cost of debt

The null hypothesis for H_2 therefore stating that firms with low discretionary accruals have a low cost of debt.

Debt and equity have been consciously separated in measuring. The primary reason is that debt holders have contractually fixed their conditions and return rates, contrary to equity holders that rely on a firm's policy for dividend payout.

4.2.3 Income smoothing

Risks are uncertainties in future events, the greater the uncertainty the greater the risk. When certain procedures are periodically stable, they are considered less troublesome. However, volatile proceedings are more challenging. The greater the predictability factor, the less risky the prediction. As stated earlier in this chapter, equity holders risk dividend payout cuts. Long-term profits that fail to reach expectations can jeopardize dividend payments. Firms that report a stable earnings growth project a healthy image of the firm's performance. Stable earnings are considered less risky due to a relatively large predictability factor. When earnings are stable, expectation are timely lined up with predictions. This reduces the gap between expectations and predictions, mitigating risk.

Firms that have a stable earnings pattern could be considered predictable, and therefore expectations can better fit predictions. Stable earnings being considered less risky, the following hypotheses have been created:

H_3: Firms smooth income to profit from a relatively low cost of equity

H_4: Firms smooth income to profit from a relatively low cost of debt

4.3 Summery

Detecting earnings management is not an exact science. However, models are created to measure vital figures that contribute to detecting the use of earnings management. Models by Healy(1985) and DeAngelo (1986) create a relatively straightforward view on detecting earnings management. These models further refined by Jones (1991) and Dechow et al. (1995) create a more direct method in detecting earnings management. Healy and DeAngelo measure the size of the accrual and the

maturity of time. However due to insufficient information, assumptions are used that do not reflect business reality.

Jones (1991) and Dechow et al.(1995) adopt a more direct method, i.e. the factors that influence the accruals are modelled. These models will be used in measuring earnings management in the developed hypothesis. In the next chapter, an overview is presented of the research design. The method of testing, sampling, as well as the needed variables that will be needed to continue the research, will be examined.

5 Research Design

In this chapter the research presented in this paper will be further explained. In the first paragraphs the sample taken will be explained, and where the sample was retrieved from. This will be followed by the introduction of the outcome variable and predictor variable[22]. The method used to measure these two proxies will be explained. Furthermore, the control variables will be introduced and discussed.

5.1 Research approach

Social sciences know two main types of research, i.e. quantitative research and qualitative research. Almost all researches have a qualitative element. This ensures that researchers can evaluate the outcomes of non-numerical data. Quantitative research is done to "make observations more explicit"(Babbie, 2007, p. 23). The main advantage of quantitative research is that complex models can be analysed. Qualitative research requires the researcher to investigate and interpret the information, lacking a certain degree of objectivity.

This does not qualify qualitative research as insignificant. Qualitative research interprets numeric data into concepts, and definitions, giving definition to numeric outcomes(Babbie, 2007, p. 23). Where quantitative research uses numeric data to evaluate be means of statistical analysis, qualitative research reads these results are forms concepts.

The research will take archived numeric data and use a predictor variable (the forms of the cost of capital) to explain an outcome variable (earnings management). For this type of research the quantitative research is best used (Hopkins, 2000). Data is acquired through annual financial reports, and exposed to statistical analysis (experiments). As this data is relatively easy to come by, this form of research is not as time consuming as a qualitative approach. However, the main reason for a quantitative approach is the characteristic of the predictor outcome. Earnings management is somewhat frown upon. A qualitative approach would require interviews to taken (surveys). However, a reasoning mind would guess that managers would be reluctant to admit managing earnings. Furthermore, they would not willingly state their motivations for the use of earnings management.

Another motivation for the use of a quantitative approach is that our predictor variable is the cost of capital. This is often given as a percentage of the capital form, making data analysis useful.

[22] The outcome and the predictor variable are often noted as the dependant and the independent variable, respectively. Within the social sciences, the dependant variable is almost never totally dependent on the independent variable. Therefore, in this study the terms outcome variable and predictor variable will be used (Field, 2005, p. 144).

The majority of the researches carried out on earnings management make use of a quantitative research approach(Easley & O'Hara, 2004; Prevost, Skousen, & Rao, 2008; Francis, Nanda, & Olsson, 2008; Gray, Koh, & Tong, 2009).

5.2 Sample size

A sample will be used to test the hypotheses. The sample needed for testing will be taken from firms listed on the EuroNext Amsterdam Stock Exchange (ASE). From the ASE the top 50 firms existing in two indices, Amsterdam Exchange Index (AEX) and Amsterdam Midkap Index (AMX). Data will be collected between 2001-2007, creating 7 years that will be tested. All data is retrieved from the Compustat database, accessed from the Erasmus University Rotterdam's Library. Table 5-1 gives an overview of the sample size.

Table 5-1 : Overview of sample size

	AEX	***AMX***	***Frim Years*** [1]	
Total Firms	25	25	350	
Financial institutions. (7000 - Financials) [2]	-5	-5		
	20	20	280	
Firms removed due to insufficient / inappropriate data	-2	0		
Firms removed due to insufficent firm years.	-2	-1		
	16	***19***	***245***	Sample Size

[1] Total of 7 years
[2] ISB Classification

5.3 Method

In this paragraph, the variables will be presented. A detailed overview will be taken into how the variables are measured. This research will measure earnings management through an accrual approach, entailing that earnings management is shown in the value of the absolute discretionary accruals $|DA_{i,t}|$ (Jones, 1991; Francis, LaFond, Olsson, & Schipper, 2005, p. 302). As earnings can be managed up and down, deviations from the expected accrual amount (either positive or negative) are signs of earnings management. The primary concept is that earnings are transferred from one period to another. Therefore, earnings can be positive in one period, and negative in another period, based on management discretion(Bergstresser & Philippon, 2006, p. 517).

5.3.1 Outcome variable

This research wishes to explain earnings management. Given the incentives supplied by literature, the aim of this research is to clarify the existence of earnings management. Therefore, the outcome variable (dependent variable) is the proxy for earnings management. Throughout the literature, there is no fixed approved measure for calculating abnormal accruals. In the research, a model will be used from Dechow et al. (1995), which is derived from the Jones model (Jones, 1991). A similar approach was adopted by Bergstresser and Philippon (2006); Francis et al. (2005) and Francis et al. (2008). The wide use of the Modified Jones model (Dechow, Sloan, & Sweeney, 1995) is an advantage for the use of the model. However, the main reason for the use of this model is that the Modified Jones model (Dechow, Sloan, & Sweeney, 1995) has correctly identified the firms selected by the Security and Exchange Commission (SEC) that have managed earnings.

The fundamental accrual relation is as follows:

$$DA_{i,t} = TA_{i,t} - NDA_{i,t} \quad \text{5-1}$$

Where:

$DA_{i,t}$	Discretionary Accruals for firm *i* in year *t*
$TA_{i,t}$	Total Accruals for firm *i* in year *t*
$DA_{i,t}$	Non-discretionary Accruals for firm *i* in year *t*

The difference in operating cash flows and earnings is calculated, to determine the value of the total accruals (TA). Resulting in the following relation:

$$TA_{i,t} = \frac{\mathrm{EXBI_{i,t}} - \mathrm{CFO_{i,t}}}{A_{i,t-1}} \quad \text{5-2}$$

Where:

$\mathrm{EXIB_{i,t}}$	Earning before Extra Ordinary Items. for firm *i* in year *t*
$CFO_{\mathrm{i,t}}$	Operating Cash flows for firm *i* in year *t*
$\mathrm{A_{i,t-1}}$	Total Assets for firm *i* in year *t*

In accordance with the Modified Jones model (Dechow, Sloan, & Sweeney, 1995), the TA must be rid of the nondiscretionary components as the discretionary component is of interest only for this research. The TA will be calculated in the initial estimation stage and is used as a benchmark. As the original Jones model (Jones, 1991) assumes that DA is zero in the estimation period(Ronen & Yaari, 2008, p. 404). The Modified Jones model (Dechow, Sloan, & Sweeney, 1995) does imply that changes in revenue (ΔREV) should be corrected with changes in accounts receivables (ΔAR). The NDA component is measure by the following formula:

5-3

$$NDA_{i,t} = \alpha_0 + \alpha_1 \frac{1}{A_{i,t-1}} + \alpha_2 \left(\frac{\Delta REV_{\mathrm{i,t}} - \Delta AR_{\mathrm{i,t}}}{A_{i,t-1}} \right) + \alpha_3 \left(\frac{PPE_{i,t}}{A_{i,t-1}} \right)$$

Where:

$REV_{i,t}$	Revenue for firm *i* in year *t*
$AR_{i,t}$	Accounts Receivables for firm *i* in year *t*
$PPE_{i,t}$	Plant, Property & Equipment for firm *i* in year *t*
$\alpha_0,\ \alpha_1, \alpha_2\ \&\ \alpha_3$	Industry specific indicators

The Delta (Δ) indicates a one year change in the variable. The estimated coefficients (α) are used to calculate the nondiscretionary component in TA. These coefficients are the level at which the associated variable influences the NDA. It is reasonable to say that these coefficients differ per industry. To estimate these coefficients the following formula exists:

5-4

$$E(TA)_{i,t} = \alpha_0 + \alpha_1 \frac{1}{A_{i,t-1}} + \alpha_2 \left(\frac{\Delta REV_{\mathrm{i,t}}}{A_{i,t-1}} \right) + \alpha_3 \left(\frac{PPE_{i,t}}{A_{i,t-1}} \right)$$

Where:

$E(TA)_{i,t}$	Estimate for the total accruals for firm *i* in year *t*

As the coefficients are estimated, the NDA reflects an estimated figure. This estimated figure presumes that the DA is therefore also estimated.

Smoothing

For H_4 and H_5 the outcome variable is income smoothing a proxy for the use of earnings management. To measure this proxy the following calculation is made:

5-5

$$Smoothing_{i,t} = \frac{\sqrt{\left(IB_{i,t} - \overline{IB_i}\right)^2}}{\sqrt{\left(CFO_{i,t} - \overline{CFO_i}\right)^2}}$$

Where:

$Smoothing$	The degree of smoothing for firm *i* in year *t*
$IB_{i,t}$	Earnings before taxes for firm *i* in year *t*
$\overline{IB_i}$	Average earnings before taxes for firm *i*
$CFO_{i,t}$	Cash flow from operations for firm *i* in year *t*
$\overline{CFO_i}$	Average cash flow from operations for firm *i*

The average is taken from the data for 2000-2007. Measuring the variance of the earnings against the cash flow has been adopted in a number of studies(Ronen & Yaari, 2008, p. 318).

5.3.2 Predictor variable

The predictor variable will be the cost of capital. The cost of capital will be noted in a percentage. As mentioned throughout this research, the cost of capital is divided into two proxies. The cost of debt (CostDebt) is the price a firms pays for their debt, formulated as follows:

5-6

$$CostDebt_{i,t} = \frac{IntExp_{i,t}}{(IBD_{i,t} - IBD_{i,t-1})/2}$$

Where:

$CostDebt_{i,t}$	Cost of Debt for firm *i* in year *t*
$IntExp_{i,t}$	Interest expense for firm *i* in year *t*
$IBD_{i,t}$	Interest Bearing Debt for firm *i* in year *t*

For the cost of equity (CostEquity) the dividend payments are essential. The financial result created at the end of the year is theoretically the reward of the equity holders, and equity holders can dispose of the whole profit. The dividends paid out to the investors are the real income to the investors. Firms often require some profit to remain in the firm to finance new investments, and to keep dividend levels consistent. The optimal firm leverage is a corporate decision(Brealey, Myers, & Allen, 2006, pp. 415-435). Furthermore, firms that are growing require extra capital to accompany growth. It is a costly activity to pay out dividends to investors, and then return to the capital market to attract more capital. Therefore, dividend payout is weighed up against the firms internal investment needs.

The cost of Equity is calculated as follows:

5-7

$$CostEquity_{i,t} = \frac{Div_{i,t}}{(OE_{i,t} - OE_{i,t-1})/2}$$

Where:

$CostEquity_{i,t}$	Cost of Equity for firm *i* in year *t*
$Div_{i,t}$	Dividends for firm *i* in year *t*
$OE_{i,t}$	Owners Equity for firm *i* in year *t*

5.3.3 Control Variables

Natural explanation exists that could determine the size of the discretionary accrual (|DA|). These could influence the size of the accruals. In the next section, the control variables will be explained.

Leverage

According the M&M theorem, the capital structure of a firm does not produce any advantages to the firm. However, this theorem was in a perfect world with no taxes. In a world with taxes, the capital

structure of a firm is an important corporate decision. Francis et al. (2005, p. 308) states that leverage has an effect on the cost of capital. Furthermore, the capital structure also has an effect on the business risk. In general, the greater the relative risk, the high the business risk is. Leverage compares interest bearings debt with total assets. The expected direction of the leverage is considered positive (+). A high leverage indicates a higher relative debt portion, and high cost of capital. (Francis, LaFond, Olsson, & Schipper, 2005, p. 310)

Size

Francis et al. (2005, p. 308) also uses size as control variable. Prior research has noted a negative correlation between systematic risk and firm size, i.e. a low systematic risk to a higher firm size(Palepu, Healy, Bernard, & Peek, 2007). (Watts & Zimmerman, 1978, p. 132). Furthermore, firm size is one of the most commonly used control variables in earning management studies(Bergstresser & Philippon, 2006; Cheng & Warfield, 2005; Francis, LaFond, Olsson, & Schipper, 2005; Francis, Nanda, & Olsson, 2008; Gray, Koh, & Tong, 2009). The expected direction for the size of a firm is considered negative (-). (Francis, LaFond, Olsson, & Schipper, 2005, p. 316)

Return on assets

The return on Assets (ROA), measures the performance of a firm (Francis, Nanda, & Olsson, 2008, p. 70). Firms that meet or perform above expectation reduce their investment risk(Palepu, Healy, Bernard, & Peek, 2007). Studies that incorporate ROA as a control variable are (Gray, Koh, & Tong, 2009; Francis, Nanda, & Olsson, 2008). The expected direction of the ROA is considered negative (-). Reasoning that the a firm that performs better, will receive a better (lower) cost of capital.

Interest Coverage

Interest coverage is the relation between the earnings generated before interest and taxes (EBIT), and the interest expenses. An outcome of 1 suggests that interest payments are equal to the EBIT. An outcome greater than 1 would suggest that a firm is well capable of fulfilling its interest payments. Firms with low interest coverage will endure higher costs of capital than firms with high interest coverage, as issues of capital are aware of a heighted risk of foreclosure. This reasoning ensures interest coverage as a useful control variable in this study. Studies that use the interest coverage as a control variable are (Francis, Nanda, & Olsson, 2008). The expected direction for the control variable interest coverage is considered negative (-).

Industry

Financial reports differ per firm, even across industries. However, in general, a firm within the same industry faces the same incentives, and report on the same information. Earnings management works differently throughout different industries.

Growth

Firms with high profits can use these superfluous cash flows to increase future profits. However, from these profits, dividend payouts are also made, decreasing the available cash flows for management. A key element is the amount of dividend paid to the expected return on future investments. Equity holders will want to see higher return on investments from the firm than they (investors) can reproduce, resulting in a growth in the firm's equity. Firms that fail to meet investors' growth expectations will be expected to return profits to investors, in a form of dividend. Growth as a control variable is used in the following studies: (Francis, LaFond, Olsson, & Schipper, 2005). The expected direction for the control variable growth is considered negative (-). Firms that have a healthily growth are expected to be rewarded with a lower cost of capital.

To ensure that the predictor variables remain a good predictor for the outcome variable, the control variables create the following formula exists:

$$|DA| = \beta_0 + \beta_1 CostDebt_{i,t} + \beta_2 CostEqutiy_{i,t} + \beta_3 Leverage_{i,t} + \beta_4 Size_{i.t} + \beta_5 ROA_{i,t} + \beta_6 IntCov_{i,t} + \beta_7 Growth_{i,t} + \beta_8 Industry_{i,t} \quad \text{5-8}$$

Equation 5-8 is used to measure the first two hypotheses. These hypotheses use the absolute value of the discretionary accruals to measure earnings management. For the third and fourth hypotheses this outcome variable is replaced by a proxy for smoothing. The following formula exists:

$$Smoothing = \beta_0 + \beta_1 CostDebt_{i,t} + \beta_2 CostEqutiy_{i,t} + \beta_3 Leverage_{i,t} + \beta_4 Size_{i.t} + \beta_5 ROA_{i,t} + \beta_6 IntCov_{i,t} + \beta_7 Growth_{i,t} + \beta_8 Industry_{i,t} \quad \text{5-9}$$

However prior to testing equation 5-8 and 5-9, a model will be tested without the control variable $Industy$. This suggesting the following model:

$$Outcome = \beta_0 + \beta_1 CostDebt_{i,t} + \beta_2 CostEqutiy_{i,t} + \beta_3 Leverage_{i,t} + \beta_4 Size_{i.t} + \beta_5 ROA_{i,t} + \beta_6 IntCov_{i,t} + \beta_7 Growth_{i,t} \quad \text{5-10}$$

6 Empirical Research

In this chapter, the empirical research for this paper will be carried out and presented. The first paragraph explores the industry specific parameters. The data will be explored using statistical analysis. Once the industry specific parameters have been determined, the outcome and predictor variables will be explored.

6.1 Industry specific parameters

To determine the proxy for earnings management, the modified Jones model (Dechow, Sloan, & Sweeney, 1995) is adopted. This model (Equation 5-4) contains four industry specific parameters. Determining the value of these parameters will be the subject of this paragraph.

Outliers are first removed from the sample. Outliers can cause a model to be biased due to their effect on the estimated parameters(Field, 2005, p. 162). As the sample is not normally distributed, using z-scores to extract outliers is not advised. No direct measure is used to determine whether a distribution is normal[23]. A conclusion that the variables are not normally distributed is based on a deviation in the skewness and kurtosis[24] measures (Table 6-1). Furthermore data is plotted and an informed decision is adopted (Appendix Figure 3-6)(Field, 2005, p. 93). Outliers based on z–scores total

Table 6-1: Descriptive Statistics for the variables $\frac{1}{AT_{t-1}}$, $\frac{\Delta REV}{AT_{t-1}}$, $\frac{PPE}{AT_{t-1}}$ & TA

Statistics

		1 / AT t-1	?REV / AT t-1	PPE / AT t-1	TA
N	Valid	238	238	238	238
	Missing	0	0	0	0
Std. Error of Mean		.0000715	.0233299	.0144380	.0041238
Std. Deviation		.0011029	.3599155	.2227384	.0636196
Variance		.000	.130	.050	.004
Skewness		2.881	2.556	2.153	-1.565
Std. Error of Skewness		.158	.158	.158	.158
Kurtosis		11.066	19.303	9.308	8.979
Std. Error of Kurtosis		.314	.314	.314	.314
Range		.0075	4.0902	1.7372	.5543
Minimum		.0000	-1.1166	.0248	-.4212
Maximum		.0075	2.9736	1.7620	.1331

[23] The Kolmotorov-Smirnov and Shapiro-Wilk tests are designed to measure whether data is normally distributed. However, they seem less significant when sample size is great (N>200). (Field, 2005, p. 93)

[24] A distribution that is not normal is either not symmetric (skewness) or too pointy (kurtosis). Statistical tests can be performed to measure the degree of kurtosis or skewness. Values that deviate from 1 indicate a deviation from a normal distribution (Field, 2005, pp. 8-10).

Table 6-2: Parameter values for the variables used in the Modified Jones model(Dechow, Sloan, & Sweeney, Detecting earnings management, 1995)

Industry	Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficient β	t	
0001 - Oil & Gas	(Constant)	α_0	0.281	0.115		2.443	***
	1 / AT t-1	α_1	-159.133	45.034	-1.140	-3.534	**
R^2 = .583	ΔREV / AT t-1	α_2	0.089	0.162	0.143	0.550	
	PPE / AT t-1	α_3	-0.639	0.253	-0.921	-2.526	***
1000 - Basic Materials	(Constant)	α_0	-0.008	0.023		-0.326	
	1 / AT t-1	α_1	85.527	134.718	0.136	0.635	
R^2 = .256	ΔREV / AT t-1	α_2	0.033	0.015	0.677	2.133	***
	PPE / AT t-1	α_3	-0.085	0.042	-0.630	-2.011	
2000 - Industrials	(Constant)	α_0	-0.013	0.013		-0.992	
	1 / AT t-1	α_1	-7.952	6.374	-0.129	-1.248	
R^2 = .078	ΔREV / AT t-1	α_2	-0.010	0.019	-0.054	-0.512	
	PPE / AT t-1	α_3	-0.068	0.029	-0.244	-2.326	***
3000 - Consumer Goods	(Constant)	α_0	-0.028	0.018		-1.518	
	1 / AT t-1	α_1	34.285	22.662	0.234	1.513	
R^2 = .129	ΔREV / AT t-1	α_2	0.023	0.035	0.113	0.671	
	PPE / AT t-1	α_3	-0.098	0.056	-0.289	-1.749	
5000 - Consumer Services	(Constant)	α_0	-0.067	0.011		-6.298	*
	1 / AT t-1	α_1	34.467	10.943	0.587	3.150	**
R^2 = .437	ΔREV / AT t-1	α_2	-0.032	0.017	-0.309	-1.828	
	PPE / AT t-1	α_3	-0.022	0.022	-0.176	-1.005	
6000 - Telecommunications	(Constant)	α_0	-0.879	0.198		-4.445	***
	1 / AT t-1	α_1	-2575.217	8212.831	-0.294	-0.314	
R^2 = .887	ΔREV / AT t-1	α_2	7.959	3.361	0.764	2.368	
	PPE / AT t-1	α_3	2.403	1.343	1.717	1.789	
9000 - Technology	(Constant)	α_0	-0.122	0.031		-3.878	*
	1 / AT t-1	α_1	3.254	5.363	0.093	0.607	
R^2 = .315	ΔREV / AT t-1	α_2	0.207	0.056	0.591	3.692	*
	PPE / AT t-1	α_3	0.197	0.176	0.183	1.119	

The significance of 0.001; 0,01 and 0,05 are respectively denoted by *; ** and ***

In accordance with Bergstresser and Philippon (2006) and Francis et al. (2005, p. 303), 98% Winsorizing will be applied to determine outliers. This entails that 2% of the data is considered an outlier. All the data lower than the 1 percentile and above the 99 percentile will be transformed. (Field, 2005, p. 78). Outliers are not deleted, as this would distort the data. Nevertheless, they are transformed. Data that is greater than the 99 percentile is transformed to the highest value within the 99 percentile. Data lower than the 1 percentile is transformed to the lowest value above the 1 percentile.

The sample of firms has been categorized according to the ICB classification[25]. A model has been created from the first stage of the Jones model (Jones, 1991), where the estimated accruals $(E(TA))$ are calculated. Table 6-2 presents the value (β) for the industry relevant parameters that will be used in the modified Jones model (Dechow, Sloan, & Sweeney, 1995). At this stage it must be noted that slitting the sample into industry, reduces the reliability. Field (2005, p. 172) notes that the stronger the correlation between predictor variables and the outcome variables, the bigger the sample.

Table 6-3: Sample size per industry

Industry	Firm years
0001 - Oil & Gas	14
1000 - Basic Materials	21
2000 - Industrials	91
3000 - Consumer Goods	42
5000 - Consumer Services	27
6000 - Telecommunications	7
9000 - Technology	35
Total	237

Unfortunately there is no exact calculation that determines the sample size. Field (2005, pp. 172-173)[26] states that two common benchmarks are used, i.e. 10 or 15 cases per predictor variable. Using the former, this would entail a sample size per industry of 30 cases (10×3). As seen in table 6-3, four industries fail to meet the 30 cases needed for a reliable outcome. This should be noted as a possible limitation to the results.

6.2 Descriptive statistics

Based on the previous paragraph's outcome, the industry parameters are entered into equation 5-3. This determines the $|DA|$ variable, and completes the necessary variables for further study. In coherence to the previous paragraph, outliers are detected and transformed by means of Winsorizing. In table 6-3, an overview is provided of the variables used throughout this research. The average cost of debt is 4.96%, and the average cost of equity is 6.11%.

[25] ICB classification uses four levels of classification. For this research, only the first level will be used, due to sample size. Dividing companies into further sub-sections would reduce the sample size per section.

[26] According to Field, there is no real calculation in determining sample size. Among the two measures used in this research, Field notes a number of other calculations that can be made. However this "oversimplifies the problem", leaving the determination of the sample size up to the researcher. (Field, 2005, pp. 172-174)

Table 6-4: Overview of variables.

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
CostDebt	237	.0000	.0940	.048681	.0169613
CostEq	237	.0000	.2118	.059322	.0503865
Leverage	237	.0826	.7789	.351753	.1442159
Size	237	2.2612	5.2851	3.507124	.6748901
ROA	237	-.1904	.2048	.083203	.0541895
InterestCoverage	237	-1.2577	11.0421	1.231508	2.4719168
Growth	237	-.6176	1.6622	.157915	.3652397
Valid N (listwise)	237				

The central equation in this research, equation 5-8 and equation 5-9 will be calculated. Prior to calculating these equations, the effect of the predictor variables have on the outcome variable $|DA|$ and $Smoothing$ must be measured. Therefore, the control variables are initially ignored.

6.2.1 Results from an uncontrolled model

Discretionary model ($|DA|$)

Concluded from the model summary (Table 2, Appendix), $CostDebt$ and $CostEquity$ only account for 1.6% of the change in $|DA|$.R^2 for model $|DA| = \beta_0 + \beta_1 \times CostDebt + \beta_2 \times CostEquity$ is .016. The values of the parameters $\beta_0, \beta_1, \beta_2$ are respectively .051, .109, .106 (Table 6-5).

Table 6-5: Coefficients for uncontrolled model

Model		Unstandardized Coefficients		Standardized Coefficient	
		B	Std. Error	β	
(Constant)	β0	0.051	0.010		*
CostDebt	β1	-0.109	0.165	-0.043	
CostEquity	β2	-0.106	0.056	-0.125	

The significance of 0.001; 0,01 and 0,05 are respectively denoted by *; ** and ***

R^2 = .016

The information above concludes that, the predictor variables in themselves do not explain the changes in outcome variable. Only 1.6% of the change in $|DA|$ can be allocated to the predictor variables $CostDebt$ and $CostEquity$. The F-ratio for the model without control variables is greater than one (F change =3.622), indicating that the model does predict $|DA|$ better than the mean. Moreover, the F-change ratios is greater than .05 significant (p = .058), rendering the value as unsuitable to model on $|DA|$.

Coefficients of the model also indicate that there is no strong relation between the predicator variable and the outcome variable. $CostDebt$ and $CostEquity$ only influence $|DA|$ by -.109 and -.106, respectively. However, it must be said that the coefficients are not significant.

It is also worth noticing the direction of the coefficients used in the model (Table 6-4). Although the predictors are not significant, the operator gives an indication of the relation between the predictor variables and the outcome variables. The (-) indicates that the negative relation between the variables. This would suggest that the greater the cost of debt or the greater the cost of equity, the less earnings management would be suspected.

$Smoothing$

In Table 3 (Appendix), an overview is given of a model using the smoothing proxy as an outcome variable. The model has must less predictor power on $Smoothing$ than $|DA|$. R^2 is .008, indicating that the model explains 0.8% of the variation in $Smoothing$. The predictor variables are not a better variable than the mean. The F-ratio is smaller than one, suggesting that the mean explains the variation in $Smoothing$ better than the two predictor variables used in this model.

Table 6-6: Coefficients for uncontrolled model, with $Smoothing$ as outcome

Model		Unstandardized Coefficients		Standardized Coefficient
		B	Std. Error	β
(Constant)	β0	2.554	1.582	
CostDebt	β1	21.907	27.459	0.052
CostEquity	β2	-8.803	9.243	-0.063

The significance of 0.001; 0,01 and 0,05 are respectively denoted by *; ** and ***

R^2 = .008

Unlike the previous model, the influences of the two variables differ a great deal. $CostDebt$ and $CostEquity$ respectively have coefficients of 21.907 and-8.803. Although both $CostDebt$ and $CostEquity$ have a great influence on the model, the results are not significant. Moreover, they influence a model that in itself fails to explain $Smoothing$

Besides the influence the models have on the regression, the direction of the predictor variables differ. The variable direction of $CostEquity$ is unchanged compared to the previous model (equation 5-8). However, $CostDebt$ has changed. The previous model indicated a negative correlation between the predictor and outcome variable. When the outcome variable changed to $Smoothing$, the correlation is positive.

6.2.2 Results from controlled model

Discretionary model ($|DA|$)

The results that were given from the uncontrolled model were not significant to conclude any reasonable conclusion. The negative correlation between the predictor variables and the outcome variables was as expected. In the next model all the controlled variable are added, except for industry (equation 5-10). The reason for this is that, first a general impression will be given of the model. Further in this research the model will be presented per industry and differences analyzed[27].

Table 6-7: Model summary of model with control variables, $|DA|$

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.026[a]	.001	-.004	.0428804	.001	.158	1	235	.691
2	.126[b]	.016	.007	.0426432	.015	3.622	1	234	.058
3	.172[c]	.030	.017	.0424339	.014	3.314	1	233	.070
4	.173[d]	.030	.013	.0425204	.000	.053	1	232	.818
5	.234[e]	.055	.034	.0420604	.025	6.102	1	231	.014
6	.242[f]	.058	.034	.0420723	.004	.870	1	230	.352
7	.295[g]	.087	.059	.0415156	.029	7.210	1	229	.008

a. Predictors: (Constant), CostDebt

b. Predictors: (Constant), CostDebt, CostEq

c. Predictors: (Constant), CostDebt, CostEq, Leverage

d. Predictors: (Constant), CostDebt, CostEq, Leverage, Size

e. Predictors: (Constant), CostDebt, CostEq, Leverage, Size, ROA

f. Predictors: (Constant), CostDebt, CostEq, Leverage, Size, ROA, InterestCoverage

g. Predictors: (Constant), CostDebt, CostEq, Leverage, Size, ROA, InterestCoverage, Growth

Table 6-7 gives an overview of the model as difference control variables are added. The model has improved, compared to the model where no control variables were used. However, the improvement is not radically enhanced. R^2 has improved from .016 to .087. This suggests that the model explains 8.7% of the change in $|DA|$. Although the model explains a small portion of the changes in $|DA|$, the F-ratio shows a significant improvement to the mean (Sig. F-Change < .05). The model models $|DA|$ more than seven times better that the mean.

[27] Another reason for excluding industry for the time being is the type of variable industry is. Whereas the control variables $Leverage$, $Size$, ROA, $InterestCoverage$ and $Growth$ are numeric ration measures, $Industry$ is a nominal measure. This implies that the latter level of measurement is used for categorizing information. The former level of measurement has structural characteristics, i.e. mathematical attributes. (Babbie, 2007, pp. 137-139)

Table 6-8: Coefficients for model with control variables, $|DA|$

Model	Unstandardized Coefficients		Standardized Coefficient	
	B	Std. Error	β	
(Constant)	0.066	0.019		*
CostDebt	-0.079	0.169	-0.031	
CostEquity	-0.075	0.060	-0.088	
Leverage	-0.037	0.020	-0.124	
Size	0.001	0.004	0.016	
ROA	-0.164	0.054	-0.207	**
InterestCoverage	0.001	0.001	0.072	
Growth	0.021	0.008	0.175	**

The significance of 0.001; 0,01 and 0,05 are respectively denoted by *; ** and ***

R^2 = .087

In accordance to the previous model (without control variables), the relation between the predictor variable and the outcome variable is the same. However, the values have no significant impact on the model. The only significant coefficients are the control variables ROA and $Growth$.

Notable is table 6-8 is the direction of the coefficient B. In accordance to the model with no control variables, the variables $CostDebt$ and $CostEquity$ are both negatively correlated to $|DA|$. Furthermore the control variables $Leverage$ and ROA are also negatively correlated.

Smoothing

Table 6-9: Model summary of model with control variables, $Smoothing$

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.061[a]	.004	.000	7.0842593	.004	.882	1	235	.349
2	.087[b]	.008	.000	7.0856621	.004	.907	1	234	.342
3	.099[c]	.010	-.003	7.0928576	.002	.525	1	233	.469
4	.103[d]	.011	-.006	7.1049401	.001	.208	1	232	.649
5	.105[e]	.011	-.010	7.1189443	.000	.088	1	231	.767
6	.107[f]	.011	-.014	7.1333185	.000	.070	1	230	.792
7	.173[g]	.030	.000	7.0816718	.019	4.367	1	229	.038

a. Predictors: (Constant), CostDebt

b. Predictors: (Constant), CostDebt, CostEq

c. Predictors: (Constant), CostDebt, CostEq, Leverage

d. Predictors: (Constant), CostDebt, CostEq, Leverage, Size

e. Predictors: (Constant), CostDebt, CostEq, Leverage, Size, ROA

f. Predictors: (Constant), CostDebt, CostEq, Leverage, Size, ROA, InterestCoverage

g. Predictors: (Constant), CostDebt, CostEq, Leverage, Size, ROA, InterestCoverage, Growth

The model considerably improves once the control variables have been added to the equation. The model improved to explain 3% of the variation in $Smoothing$. However, the improvement of the model is derived from the significance of the model (p < .05). The previous model predicted next to

nothing and was not significant. A model with control variables shows a significant influence on the outcome variable. Furthermore, the model is a better fit to $Smoothing$ than the mean.
In accordance to the uncontrolled model, the difference between the variables $CostDebt$ and $CostEquity$ remain relatively high. $CostDebt$ has a relatively large influence on the outcome variable $Smoothing$. Apparent is that in contradiction to the previous models, $CostDebt$ has a positive effect on the outcome. Prior models show a negative correlation between the outcome variable and the two predictors.

Table 6-10: Coefficients for model with control variables, $Smoothing$

Model	Unstandardized Coefficients		Standardized Coefficient	
	B	Std. Error	β	
(Constant)	0.783	3.312		
CostDebt	28.004	28.752	0.067	
CostEquity	-8.046	10.194	-0.057	
Leverage	0.763	3.471	0.016	
Size	0.452	0.762	0.043	
ROA	1.150	9.266	0.009	
InterestCoverage	-0.073	0.198	-0.026	
Growth	-2.729	1.306	-0.141	***

The significance of 0.001; 0,01 and 0,05 are respectively denoted by *; ** and ***
R^2 = .030

6.2.3 Industrial influence

Discretionary model $|DA|$

The outcome for the industry control variable is presented in Table 3 of the Appendix. In all industries, R^2 has improved, exceeding .087. Though, it does not result in a significant improvement for all industries. Only two industries profit from a significant result, i.e. 2000 and 3000. However looking at table 6-11, it is notable that the value for industry 6000 – Telecommunications, i.e. $R^2 = 1$. This would entail a perfect correlation (multicollinearity)[28] between the model and $|DA|$, generating an undesirable effect (Field, 2005, p. 174). An explanation for the high residual variant is the small sample used in this industry sample (Table6-3), rendering the value as not significant. Examining table 6-8 further, R^2 differs between the industries, generally improving the model stated in equation 5-8. However, the model is not always a better fit than the mean. Suggesting that

[28] Multicollinearity occurs when there is a strong correlation between predictor variables and outcome variable. This occurrence poses a number of threats to a regression analysis: (1) limits R^2, (2) difficult to determine the measure of important of independent variables and (3) creates unstable variables. (Field, 2005, p. 174)

deviation from the average $|DA|$ could be a better signal for the use earnings management. Only industries *1000*, *2000* and *3000* produce an improved model, however is must be noted that only in industry *2000 – Industrials* is this improvement significant.

Table 6-11: R^2 F-ratio and Mean per industry, $|DA|$

Industry	R^2	F Change	Sig. F Change	Mean	
				CostDebt	CostEquity
0001 - Oil & Gas	.628	.129	.731	.044	.081
1000 - Basic Materials	.515	4.015	.066	.038	.075
2000 - Industrials	.197	16.152	.000	.049	.058
3000 - Consumer Goods	.433	4.935	.033	.049	.056
5000 - Consumer Services	.323	.153	.700	.050	.041
6000 - Telecommunications	1.000	N/A	N/A	.050	.098
9000 - Technology	.254	.761	.391	.051	.053

It is worth noticing the direction of the two predictor variables. In a model were no concern was taken for the different industries, a negative correlation was found between the predictors and the outcome. However, when controlling for industries, not one industry finds both predictors negatively correlated to the outcome. Industries 0001 and 3000 perceive $CostDebt$ as positively related to $|DA|$. Industry 9000, considers $CostEquity$ as positively correlated. The remaining three industries 1000; 2000 and 5000, regard both $CostDebt$ and $CostEquity$ as positively correlated to $|DA|$. The influence on the model differs per industry (Table 4, Appendix). However, in general the mean $CostEquity$ is higher than the mean $CostDebt$ (Table 6-11).

Smoothing

Consistent with the previous model, adding $Industry$ as control variable improves the predictive power of most industries. However none of the industries report significant results. Table 5 (Appendix) gives a good overview of the results per industry. A remarkable result is the change in the F-ratio. Before the model was controlled by industry, the F-ratio was 4.367. This indicates that the model was a better fit than the mean. Once Industry was introduced as control variable, this ratio has declined in all industries. In table 6-12 it is apparent that three of the six valid values is below one.

Consistent with the previous model with the outcome variable of $|DA|$, the industry 6000 returns invalid results. Further research into the reason for the void results, predicts limitations with the sample. Adapted models have been applied to the current sample, but return non significant results.

Table 6-12: R^2 F-ratio and Mean per industry, $Smoothing$

Industry	R^2	F Change	Sig. F Change	Mean	
				CostDebt	CostEquity
0001 - Oil & Gas	.786	1.023	.351	.044	.081
1000 - Basic Materials	.283	.828	.379	.038	.075
2000 - Industrials	.048	2.449	.121	.049	.058
3000 - Consumer Goods	.231	1.840	.184	.049	.056
5000 - Consumer Services	.401	.333	.570	.050	.041
6000 - Telecommunications	1.000	N/A	N/A	.050	.098
9000 - Technology	.084	.139	.712	.051	.053

6.3 Results accrual approach

In this paragraph, the result will be presented that were achieved through statistical analysis. First the preliminary results will be presented. Consequently, some insight will be provided into whether the results hold for the population and can be generalized. Based on the outcome of the generalization, the final results for the model are noted.

6.3.1 Preliminary results

The models containing only the predictor and outcome variables do not provide a good explanation for $|DA|$ or $Smoothing$. The cost of debt and the cost of equity seem to have better predicting power over $|DA|$ than $Smoothing$. However, none of these models seem significant. The first model was only able to support 1.6% of the variation in $|DA|$, i.e. accrual based earnings management. Although the model was does not explain $|DA|$ that well, it seems to be a better fit of a model than the mean. The second model was only able predict 0.08% of the outcome, $Smoothing$. However, the F-ratio[29] was below zero ensuring that the model was not a better fit than the mean. $CostDebt$ has the most influence on the model relating to $Smoothing$, compared with $CostEquity$. However, in contradiction to the $|DA|$ model, $CostDebt$ is positively correlated to $Smoothing$. Unlike the $Smoothing$ model, the cost of debt and the cost of equity have an equal influence on $|DA|$. Despite all these results, both models reveal no significant answers.

Controlled Model

An improvement was noted when the initial five control variables were introduced. The controlled model was able to predict the outcome variable better. In the model with the outcome variable |DA|, the explanatory power improved to 8.7%. Furthermore, the F-ratio increased to over seven. More specifically, this model explains |DA| seven times better than the mean. An uncontrolled

[29] The F-ratio measures improved outcome of the model compared to the inaccuracy. A value greater than 1 suggests an improved outcome greater than the inaccuracy. (Field, 2005, p. 150)

model only 3.6 times the mean. Moreover, the predictability powers of the model are significant. $(p = .008 < .05)$.

An improvement on the model with the outcome variable $Smoothing$ was also noted. The explanatory power was not as great as in other model (outcome variable = $|DA|$). However compared to the uncontrolled model, the predictability powers increase to 3%. Furthermore, the model became a better fit (F-ratio = 4.367). The results about this model are also significant $(p = .038 < .05)$. It should be noted though that, the coefficient for $CostDebt$ increased, and remained positive. Although an increase would suggest a better model for the predictor variables, $CostEquity$ remained relatively unchanged.

Industry influence

The control variable $Industy$ allows the model to be view per industry. As stated above, different industries have different instruments and incentives to apply the use of earnings management. From the statistical research, it is evident that different industries are affected by different variables. Furthermore, it is evident that industries react differently to different models. Although not all variables are significant, there are vast differences in how the control variables affect the outcome. Using industries to control our model, has drastically improved the explanatory power of the model. Table 4 and Table 5 (Appendix) provide an overview of R^2 per industry. Nevertheless, the increase in R^2 is not significant. The influence of the proxy $CostDebt$ and $CostEquity$ seem to vary over the industries. The direction of the variables differ enormously though the different industries. Not controlling for $Industry$, $CostDebt$ and $CostEquity$ were both negatively correlated to $|DA|$. However with the introduction of industries, not one industry had the same correlation direction as the uncontrolled model. With regards to $Smoothing$, only three of the six industries portrayed the same correlation.

6.3.2 Generalization

It is important that the results acquired from our sample are relevant to the whole population. This ensures that the statements made based on the sample used, can be valid for the population. When performing a statistical test, certain assumptions are made. Field (2005, pp. 169-175) explains a number of aspects that should be addressed to improve the quality of the results. This sub-paragraph will address these relevant issues that will address these assumptions.

Cross-validation

In assessing the cross-validation, the value of the adjusted R^2 will be considered. The adjusted R^2 indicates whether R^2 will change if the results were valid to the population. Therefore the adjusted R^2 indicates a modification in the predictive power or the shrinkage in the population (Field, 2005,

p. 171)[30]. The uncontrolled model was neither highly explanatory of our outcome, nor significant and will not be considered. Our first model with control variables presents a very small predictive power, indicating that the model had low predicting power in the sample. However, when modeling the $|DA|$ variable, the adjusted R^2 decreased. The value of the adjusted R^2 is .059, indicating that a predictability factor of 5.9% on the population. Although this value is still significant, the adjusted R^2 decreases by 32% compared to the original R^2.

With regards to $Smoothing$, the model has a significant R^2 value. However, the adjusted value descends to .000, losing all predictability in the population.

When industry is introduced as control variable, the adjusted R^2 was generally lower than R^2. Nevertheless, none of the industry models significantly predict the outcome variable. As the models cannot predict the sample significantly, a robustness test on the fit in the population seems insignificant.

Multicollinearity

It is important that the variables used to explain the outcome variable do not have a perfect correlation. However in industry 6000 – Telecommunications, R^2 is 1. This would suggest that the model perfectly correlates to $|DA|$ and $Smoothing$. It might sound appeasing to know that the perfect model is found to predict the outcome, however is comes with some statistical short fall. Although the model might suit the sample well, it limits any conclusion about effects on the population. Furthermore, high collinearity limits the explanatory value R^2 and increases the standard error (Field, 2005, p. 174). According to Field there is not much that can be done about a perfect correlation. However, increasing the size of the sample in this industry could help the problem.

6.4 Hypotheses results and Summary

In chapter four, four hypotheses were presented. These hypotheses will be reevaluated, based on the empirical evidence presented in above. This presents a summary for the chapter

Discretionary accruals

A model with no control variables does little to predict the use of earnings management. Within the boundaries of the discretionary accrual model, the cost of equity does not prove to have a great influence on the outcome. The effects of cost of equity and the cost of debt are not significant for detecting the use of earnings management by itself. Based on the initial statistical research, *H-0$_1$* and H-0$_2$ cannot be rejected.

[30] When assessing the adjusted R^2, the difference between the *original* R^2 and the adjusted value must be evaluated.

A better view is presented using control variables. However the predictor power of these models decreased when controlled for industries. With regards to the discretionary accruals, the effects of the cost of equity are relatively similar to those of the cost of debt. Therefore, the influence on the cost of equity and the cost of debt are comparable. Although the variables could only predict a small relation, it is was highly significant (p=.038). The association between the cost of debt and the discretionary accruals did decline when controlling for other aspects. Performance measures have a greater association with discretionary accruals. As expected the cost of equity is negatively correlated with discretionary accruals. Based on the above, it is possible to reject the H-0_1 and H-0_2, and accept H_1 and H_2. Therefore, once controlled for leverage; size; ROA; interest coverage and growth, the cost of equity and the cost of debt are negatively correlated to the discretionary accruals.

Smoothing

With regards to smoothing, a relatively smaller correlation was noted. Although the 3% correlation is smaller than on discretionary accruals, it is found significant. Unlike the discretionary accrual model, the cost of equity has less common properties with the cost of debt. The cost of debt is noted to be positively correlated, compared to the negative correlation observed by the cost of equity. Furthermore, the cost of debt has a far greater influence on smoothing than the cost of equity. The coefficients for the cost of debt are 28.004 compared to the -8.046 coefficient by the cost of equity. A disadvantage of the discretionary accrual model is the drop in coefficient values once control variables are added. The smoothing models either increase their coefficients or remain the same. This indicates the strength of the variables. Based upon the above the H-0_2 and H-0_4 can be rejected. Once controlled for leverage; size; ROA; interest coverage and growth, the cost of equity is negatively correlated to smoothed earnings and the cost of debt positively correlated to smoothed earnings.

The next chapter will present the conclusion for this research. The main research question will be answered. Furthermore, limitations to the research will be presented, with suggestions for further research.

7 Conclusion

In the previous chapter the results related to the hypotheses were noted. In this chapter, the main research question that was stated in the first chapter will be answered. Throughout this paper, different aspects of the research question have been addressed. Firstly, a literature study was done to support a framework for in which further study was made possible. Within the literature research two main subjects were addressed i.e. the use of earnings management and the cost of capital. In general the cost of capital addressed as one category; thereafter two separate forms were distinguished. Based on the literature framework, four hypotheses were developed. These were followed by the research design and the empirical research. In contrast to prior research, this research focused on Dutch stock listed companies.

In addition to answering the main research question, limitation that this research faced will be noted and explained. During this study the focus was on explaining incentives for the use of earnings management. For this reason, the outcome (dependant) variable was the use of earnings management, with proxies $|DA|$ and $Smoothing$. Previous studies conducted by Francis et al. (2005); Francis et al. (2008); and Prevost et al.(2008) are related to the subject that concerns this paper.

7.1 Conclusions and Limitations

7.1.1 Earnings management and the cost of equity

Francis et al. (2005) suggests that investors are aware of the management's incentive to manage earnings through accruals. However, Francis et al. (2005) only associated inflated discretionary accruals with a greater equity beta. This insinuates that high beta's are associated with high returns. According to financial theory, this relation is apparent.

In this research no evidence was found to substantiate that the cost of capital was not associated with earnings management (null-hypothesis). Only in a controlled environment was a connection found between the cost of capital and earnings management. A strong factor in the research of Francis et al. (2005) is the sample size used to investigate earnings management. Francis et al. (2005) took a sample of US firms between 1970 and 2001, totaling 76,195 firm years. This highlights one of the reasons this study fail to make any significant statement about the relation between earnings management and the cost of equity. Although in a controlled environment a significant relation was found, the model was only able to capture 8.7% of discretional earnings management and 3% of smoothed income. Firms that are controlled by industry codes seem to loss their predictability for the use of earnings management. The relation is greater; however the results are not significant. Gray et al. (2009) performed a similar study with Australian firms. A conclusion that derived from that study was that the cost of equity is not necessarily driven by the discretionary component of the

accrual. Gray et al. states that due to constitutional differences, Australian firms are more likely to associate the cost of capital to the innate element of the accruals.

7.1.2 Earnings management and the cost of debt

An extensive study on the cost of debt was performed by Prevost et al. (2008). They concluded that investors see though the intentions of optimistic managers. Prevost et al. further states that, there is evidence to support the notion that earnings management increases the cost of debt. Although this is measure using marginal debt obtained in the bonds market, these conclusions are supported by other researches (Francis, LaFond, Olsson, & Schipper, 2005).

This study however presents a less apparent view on the issue. Investors seem to be unaware of earnings management through discretionary accruals. Greater accruals result in lower return rates on debt. If investors were aware of the possibilities of inflated earnings, they would incorporate this in their expected return. However, there is a great difference on the form of earnings management. Accrual inflation is indeed associated with a lower cost of debt. On the other hand, smoothing is positively associated with high cost of capital. Therefore, investors are aware of a firm's intention to smoothing earnings over time. A rational reason would be that detecting smoothed earnings is less complicated. There are numerous ways in which discretional accruals can be measured. It must be stated though, that these conclusion are only valid in a controlled environment.

The relation between the cost of capital and earnings management is significant. However as stated in chapter 2, there are numerous incentive for managers to manage earnings. The cost of capital is one of these, however not the most important. Studies carried out prove that a much stronger relation can be found between earnings management and incentive packages offered to mangers. Nonetheless, investors should be aware of intentions of firms. The influence between the cost of equity (dividend payout) and the cost of debt (interest expenses) differs. In general, equity has a lower influence on the earnings management proxies. This could be a result of the initiators of the dividend payout. Returns from debt are contractually fixed and agreed upon. Formally the dividend payout is determined by the equity holders, however in reality the firm decides the amount it is willing to pay.

7.2 Further research

The majority of researches performed on earnings management are held in the US. Gray et al. (2009)performed a study in Australia, highlighting the institutional differences between the two countries. Although this study demonstrates the situation in the Netherlands, institutional difference could be thought for further studies.

A great limitation of this study is the limited sample size. Francis et al. (2005)used a sample of 76,195 firm years, spread over 30 years. This sample size might be too ambitious for the Netherlands; however a greater sample over time would improve the results. This accompanied by a greater understanding of the institutional settings, could shed more light in the incentives firms have to manage earnings.

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Appendix

Figure 1: Principles of Accounts Manipulation (Stolowy & Breton, 2004)

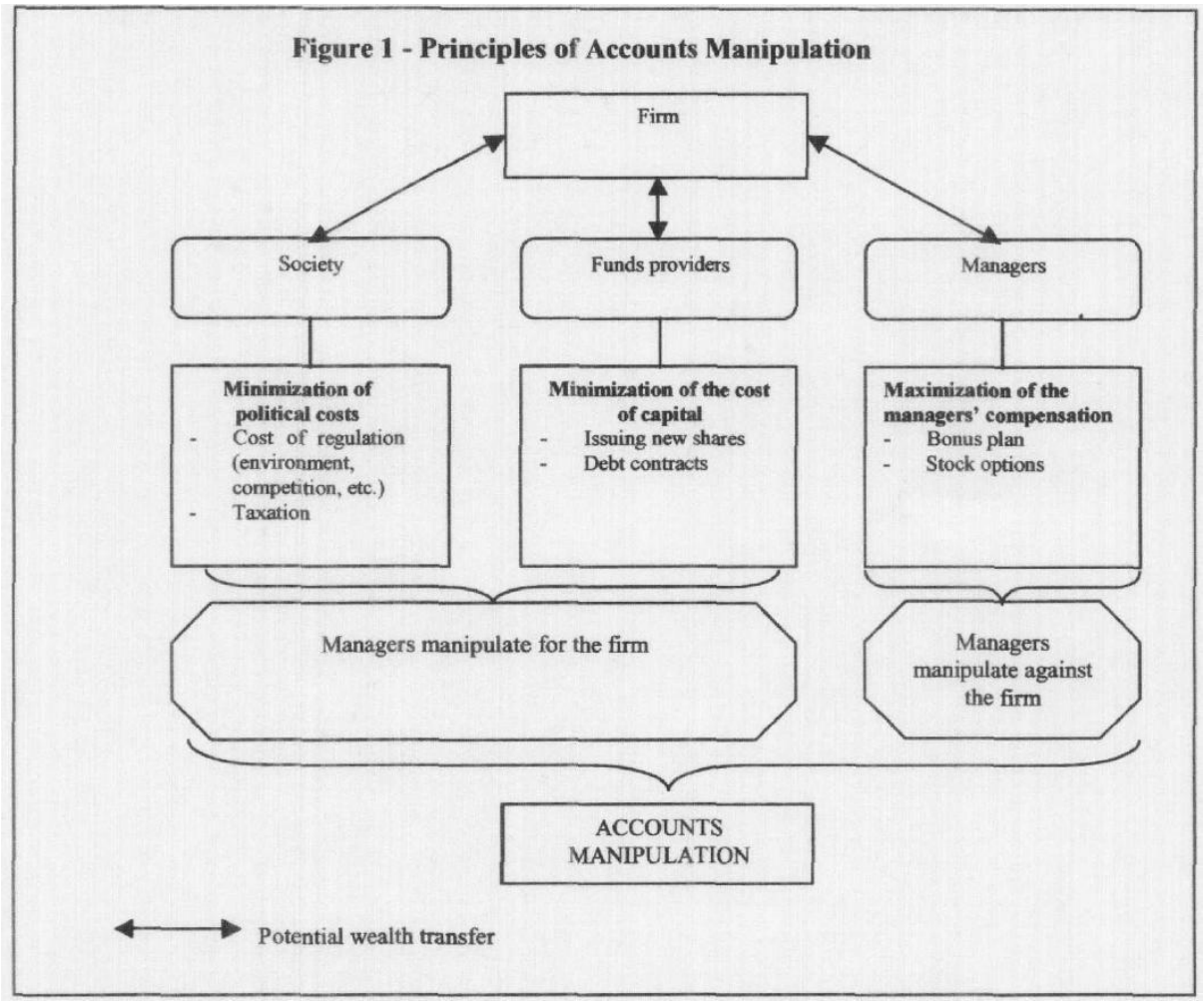

Table 1: Survey responses to the question: Do the following factors contribute to your company preferring a smooth earnings path? (Graham, Harvey, & Rajgopal, 2005, p. 45)

	Question: A smooth earnings path is preferred because it…	Agree or strongly agree (%)
1	is perceived as less risky by investors	88.70
2	Makes it easier for analysts/investors to predict future	79.70
3	Assures customers/suppliers that business is stable	66.20
4	Reduces the return that investors demand (i.e. smaller risk premium)	57.10
5	Promotes a reputation for transparent and accurate	46.50
6	Conveys higher future growth prospects	46.30
7	Achieves or preserves a desired credit rating	42.20
8	Clarifies true economic performance	24.30
9	Increases bonus payments	15.60

Figure 2: Responses to the question: "Rank the three most important measures report to outsiders" (Graham, Harvey, & Rajgopal, 2005, p. 20)

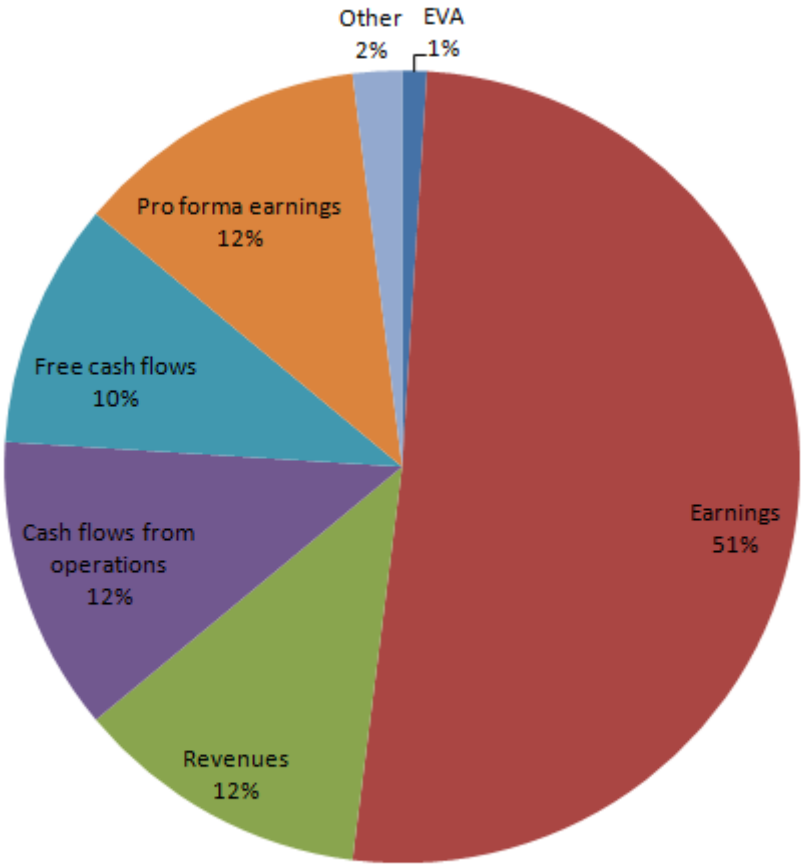

Figure 3: Distribution of variable $\frac{1}{AT_{t-1}}$

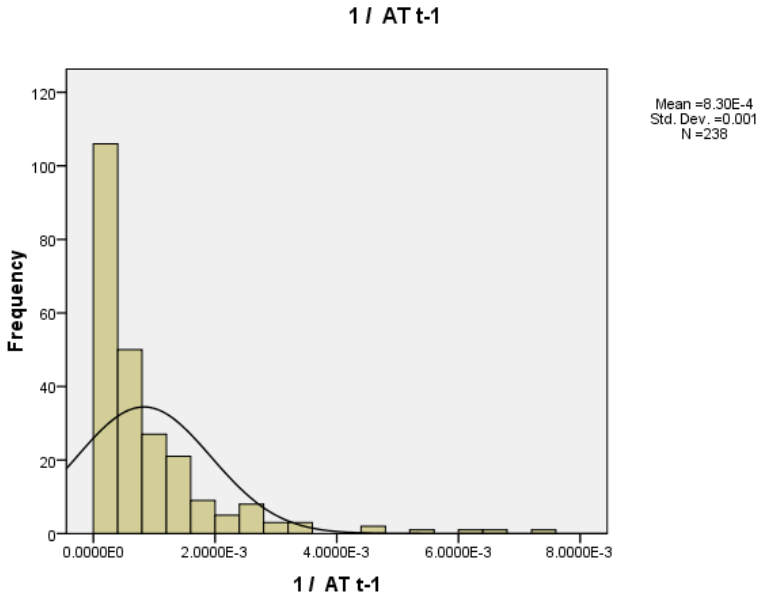

Figure 4: Distribution of variable $\frac{\Delta REV}{AT_{t-1}}$

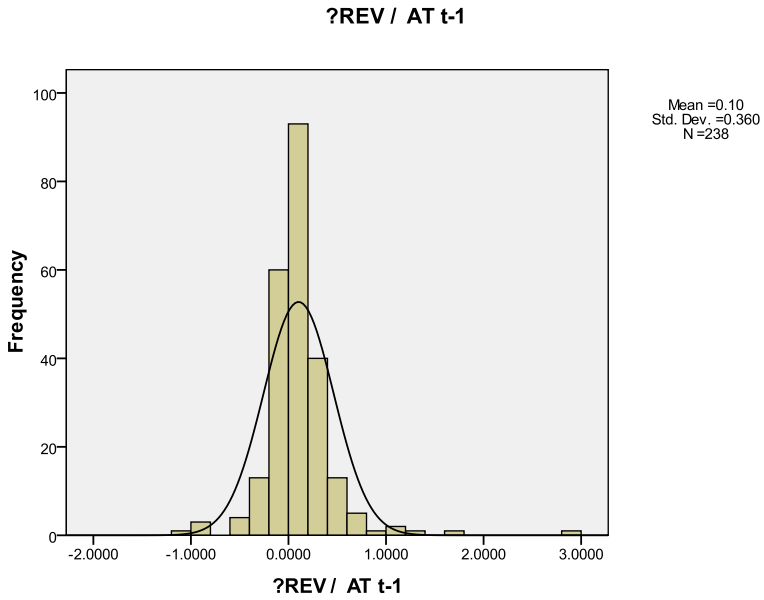

Figure 5: Distribution of variable $\frac{PPE}{AT_{t-1}}$

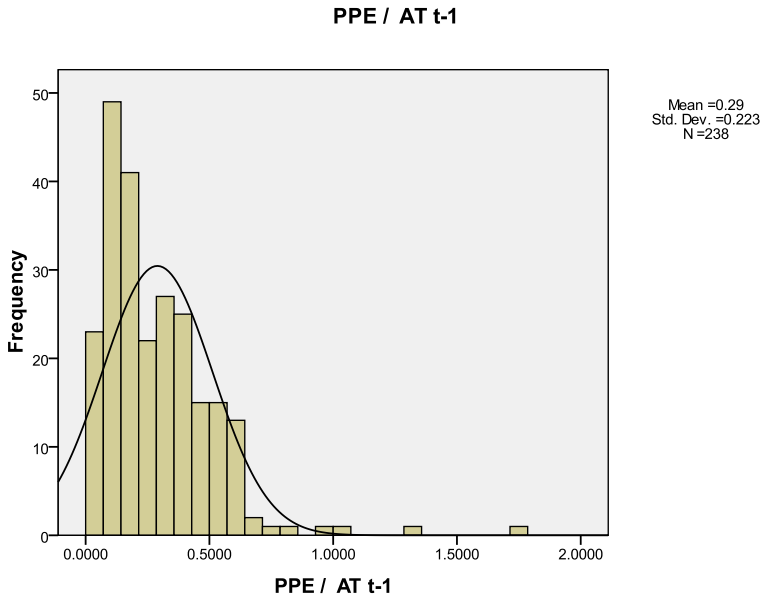

Figure 6: Distribution of variable TA

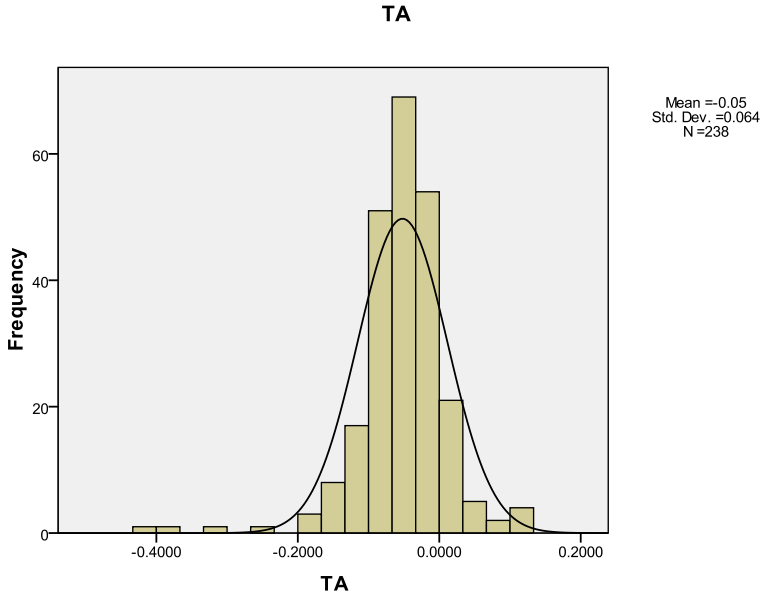

Table 2: Model summary without control variables, outcome variable $|DA|$

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.026[a]	.001	-.004	.0428804	.001	.158	1	235	.691
2	.126[b]	.016	.007	.0426432	.015	3.622	1	234	.058

a. Predictors: (Constant), CostDebt

b. Predictors: (Constant), CostDebt, CostEq

Table 3: Model summary without control variables, outcome variable Smoothing

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.061[a]	.004	.000	7.0842593	.004	.882	1	235	.349
2	.087[b]	.008	.000	7.0856621	.004	.907	1	234	.342

a. Predictors: (Constant), CostDebt

b. Predictors: (Constant), CostDebt, CostEq

Table 4: Coefficients with industry as control variable, $|DA|$

Industry	Model	Unstandardized Coefficients		Standardized Coefficient	
		B	Std. Error	β	
0001 - Oil & Gas	(Constant)	0.408	0.576		
	CostDebt	6.225	3.463	1.202	
R^2 = .628	CostEquity	-0.570	1.023	-0.387	
	Leverage	-0.714	0.665	-1.142	
	Size	-0.006	0.073	-0.114	
	ROA	-2.075	1.142	-1.086	
	InterestCoverage	-0.513	0.776	-0.695	
	Growth	-0.023	0.065	-0.161	
1000 - Basic Materials	(Constant)	-0.040	0.054		
	CostDebt	0.287	0.465	0.169	
R^2 = .515	CostEquity	0.079	0.123	0.330	
	Leverage	0.000	0.026	-0.003	
	Size	0.013	0.013	0.282	
	ROA	-0.161	0.177	-0.494	
	InterestCoverage	0.001	0.002	0.258	
	Growth	0.015	0.008	0.594	
2000 - Industrials	(Constant)	0.049	0.037		
	CostDebt	0.085	0.228	0.041	
R^2 = .197	CostEquity	0.014	0.106	0.014	
	Leverage	-0.028	0.032	-0.092	
	Size	0.000	0.011	0.004	
	ROA	-0.174	0.098	-0.179	
	InterestCoverage	-0.001	0.002	-0.048	
	Growth	0.052	0.013	0.410	*
3000 - Consumer Goods	(Constant)	0.013	0.054		
	CostDebt	0.036	0.443	0.013	
R^2 = .433	CostEquity	-0.146	0.090	-0.272	
	Leverage	-0.032	0.047	-0.132	
	Size	0.010	0.012	0.211	
	ROA	-0.090	0.141	-0.121	
	InterestCoverage	0.004	0.002	0.405	
	Growth	-0.043	0.019	-0.320	***
5000 - Consumer Services	(Constant)	-0.012	0.121		
	CostDebt	0.105	0.788	0.037	
R^2 = .323	CostEquity	0.433	0.401	0.411	
	Leverage	-0.156	0.138	-0.559	
	Size	0.036	0.038	0.557	
	ROA	-0.757	0.449	-0.679	
	InterestCoverage	-0.001	0.014	-0.021	
	Growth	0.008	0.022	0.083	
9000 - Technology	(Constant)	-0.083	0.125		
	CostDebt	-0.294	0.594	-0.112	
R^2 = .254	CostEquity	0.346	0.401	0.273	
	Leverage	-0.369	0.146	-0.753	***
	Size	0.089	0.042	0.598	***
	ROA	-0.213	0.142	-0.294	
	InterestCoverage	-0.003	0.006	-0.181	
	Growth	-0.029	0.033	-0.174	

The significance of 0.001; 0,01 and 0,05 are respectively denoted by *; ** and ***

Table 5: Coefficients with industry as control variable, Smoothing

Industry	Model	Unstandardized Coefficients		Standardized Coefficient
		B	Std. Error	β
0001 - Oil & Gas	(Constant)	31.834	17.800	
	CostDebt	-217.176	107.042	-1.028
R^2 = .786	CostEquity	13.025	31.626	0.217
	Leverage	-35.190	20.539	-1.380
	Size	-2.889	2.248	-1.287
	ROA	-23.383	35.290	-0.300
	InterestCoverage	43.549	23.984	1.446
	Growth	-2.037	2.013	-0.344
1000 - Basic Materials	(Constant)	-19.665	38.632	
	CostDebt	633.461	332.617	0.634
R^2 = .283	CostEquity	-19.993	88.179	-0.141
	Leverage	-21.481	18.912	-0.402
	Size	0.626	9.084	0.023
	ROA	52.126	126.437	0.272
	InterestCoverage	1.976	1.087	0.631
	Growth	-5.000	5.495	-0.328
2000 - Industrials	(Constant)	2.085	8.362	
	CostDebt	-12.940	51.004	-0.031
R^2 = .048	CostEquity	-29.051	23.735	-0.144
	Leverage	-0.342	7.181	-0.006
	Size	0.978	2.502	0.047
	ROA	13.642	21.834	0.068
	InterestCoverage	-0.086	0.470	-0.022
	Growth	-4.513	2.884	-0.174
3000 - Consumer Goods	(Constant)	-3.802	12.559	
	CostDebt	188.199	103.298	0.349
R^2 = .231	CostEquity	-13.749	21.083	-0.128
	Leverage	-3.598	11.013	-0.074
	Size	0.508	2.710	0.051
	ROA	-28.112	32.812	-0.189
	InterestCoverage	0.406	0.550	0.193
	Growth	-6.052	4.461	-0.228
5000 - Consumer Services	(Constant)	-9.531	10.994	
	CostDebt	-46.630	71.347	-0.172
R^2 = .401	CostEquity	16.233	36.284	0.160
	Leverage	14.676	12.509	0.547
	Size	1.057	3.408	0.169
	ROA	60.923	40.625	0.568
	InterestCoverage	-0.481	1.237	-0.116
	Growth	-1.126	1.951	-0.115
9000 - Technology	(Constant)	9.865	16.644	
	CostDebt	43.436	79.315	0.137
R^2 = .084	CostEquity	-64.206	53.552	-0.420
	Leverage	8.597	19.461	0.145
	Size	-2.942	5.556	-0.165
	ROA	3.021	19.029	0.035
	InterestCoverage	0.389	0.750	0.172
	Growth	-1.659	4.454	-0.082

The significance of 0.001; 0,01 and 0,05 are respectively denoted by *; ** and ***

	Author(s)	Year	Title paper	Journal	Object of study	Sample (sample size, country, research period)	Methodology	Results
#1	Beneish M.D.	2001	Earnings Management: A perspective	Managerial Finance	Provide a prospective on earnings management.	Not applicable - literature review	Not applicable - literature review	Not applicable - literature review
#2	Lang M., J.S. Raedy, W. Wilson	2006	Earnings management and cross listing: Are reconciled earnings comparable to US earnings?	Journal of Accounting and Economics	To provide evidence whether firms in countries with weaker investor protection show more evidence of earnings management	181 non-US. Firms trading on different US stock markets between 1991 and 2002. In total 689 firm years. Compared against a sample of US firms, matched on year, industry and growth	US firms are cross listed with global firms on industry and growth and controlled with firm characteristics. They do not state the specific firm characteristics, but refer to a paper written by Pagano et al. (2002).	The authors do not make any statement about the quality of the data, they do however find it apparent that there is a difference in informativeness in accounting data. They also conclude that firms in a weaker investor protected environment show more evidence of earnings management.
#3	Skinner D.J.	1994	The investment opportunity set and accounting procedure choice	Journal of Accounting and Economics	Cross-sectional relation between firms' investment opportunities their debt and compensation contracts, their size and financial leverage and their accounting choices.	All unregulated industrial firms between1985 and 1987 within the U.S. Accounting choice variables are taken from the end of 1987.	All financial data is gathered between 1985 and 1987. The average of these figures is used as a variable. A cross section analysis is made of three independent variables, i.e. Investment opportunity, firm size and financial leverage, and accounting ROA. There after the link is laid between the independent variables and managerial compensation contracts and accounting choice.	The main results are that larger firms are more likely to select income-decreasing accounting procedures. Highly levered firms and firms with bonus plans are more likely to choose income-increasing accounting choices. Investment opportunities in general affect the nature of the firms contracts. Firms with more assets are more likely to have accounting based debt covenants and manager bonus' based on accounting earnings.

#4	Gray P., P.S. Koh, Y.H. Tong	2009	Accruals Quality, Information Risk and Cost of Capital: Evidence from Australia	Journal of Business Finance & Accounting	Re-examines the interplay of accruals quality, information risk and cost of capital in Australia	A few samples are taken. However, samples fall between 1992 and 2006. The study focuses it attention to Australian listed companies.	To compute accrual quality the Dechow-Dichev model is used. The relation between accrual quality and cost of capital is examined using a regression models that controls for other factors known to affect the cost of capital.	In Australian debt markets, the innate component of AQ exerts an economically significant influence on cost of debt. There is no association between discretionary AQ and cost of debt. The same can be said for the equity markets.
#5	Daniel N.D., D.J. Denis, L. Naveen	2008	Do firms manage earnings to meet dividend thresholds?	Journal of Accounting and Economics	Whether firms manage earnings to meet dividend thresholds.	The sample consists of 1500 firms listed in the Standard & Poor's ExecuComp database for the period 1992 to 2005.	First, the non-discretionary and discretionary components of total accruals are estimated. Second, regressions are estimated separately for each two-digit SIC industry for each year. Finally, the dollar valuesof discretionary and non-discretionary components are obtained by multiplying the values calculated aboveby the firm's lagged assets.	Dividend-paying firms tend to manage earnings upward when their earnings would otherwise fall short of expected dividend levels. This earnings management behaviour appears to impact significantly the likelihood of a dividend cut. The findings imply that managers treat expected dividend levels as an important earnings threshold.
#6	Francis J., D. Nanda, P. Olsson	2008	Voluntary Disclosure, Earnings Quality, and Cost of Capital	Journal of Accounting Research	Investigates the relations among voluntary disclosure, earnings quality, and cost of capital	The following variables are used: size, book-to-market ratio, analyst following, number of segments the firms operates in and firm performance (ROA). There are 677 firms that meet all these requirements. The firms data is retrieved between 1991 an 2001.	Three variables are calculated based on the information gained, i.e. voluntary disclosure, earnings quality, and cost of capital. These variables are regressed to investigate the hypotheses.	Firms with better earnings quality have more voluntary disclosures. Furthermore, the cost of capital effect for voluntary disclosure is substantially reduced or disappears completely when we condition on earnings quality.

#7	Dichev,I.D., D. J. Skinner	2001	Large-sample evidence on the debt covenant hypothesis	Working paper	Due to the advantages of the available data, the authors want to contract test that support the debt covenant hypothesis, using debt covenant slack.	The authors make use of two databases. Dealscan provides the debt covenant information and Compustat that of the accounting information. From these two G5databases a sample of 8,004 loans are found between the years1989 and 1999.	The authors first want to see if the proxy leverage (which is commonly used as covenant constraint) is valid or as strong as covenant slack. Furthermore, they investigate the nature and the frequency of the debt covenant violations.	The authors find strong evidence that managers take actions to avoid debt covenant violations. The authors also find that a large amount (30%) of debt covenants are violated, however they are not associated with financial distress.
#8	Jaggi B., P.Lee	2002	Earnings management response to debt covenant violations and debt restructuring	Journal of Accounting Auditing & Finance	The study investigates whether the choice of discretionary accruals is related to the severity of financial distress and whether this choice is also influenced by the creditors' waivers of debt covenants violations.	US firms are examined to identify financially distressed firms with debt covenant violations and debt restructuring. The period of research is between 1989 and 1996. In total 216 firms have been found.	The sample is split into to groups, i.e. technical default (135) and debt restructuring (102). Using four different discretionary accrual models to detect earnings management. The outcome of the accrual model is regressed against the debt violation group.	Managers use positive discretionary accruals when financially distressed firms are granted waivers for debt covenants violations, negative discretionary accruals are used when no waiver is granted.

#9	Gietzmann M. and J. Ireland	2005	Cost of Capital, Strategic Disclosures and Accounting Choice	Journal of Business Finance & Accounting	The relationship between timely strategic disclosures and the expected cost of equity capital	Quoted UK firms in the IT industry, a total of 164 firms. Data is collected between 1993 and 2002.	A model will be used that uses a number of variables (Disclosure, Size, Beta, Book-to-Market ratio's, analysis forecasts, leverage, Growth rate, number of analyst forecast and a year modification). This model is run twice, first with all the above-mentioned variables, second with an extra variable, estimated discretionary accrual).	A significant negative relationship is found between timely disclosure and the cost of capital. Companies that disclose more benefit from lower costs of capital. This relationship persists regardless of for choice accounting.
#10	Shivakumar, L.	2000	Do firms mislead investors by overstating earnings before seasoned equity offerings?	Journal of Accounting and Economics	To examine earnings management around seasoned equity offerings	The sample of equity offerings consists of 2995 seasoned underwritten primary and secondary offerings between January 1983 and December 1992. Based on a few criteria firms are eliminated that do not accomplish these criteria's.	Based on whether or not an equity offering has taken place, the authors based on discretionary accrual-based models determine if accruals are normal or unexpected and therefore determined by the discernment of the management.	Net income and accruals are abnormally high around equity offerings and pre-offerings abnormal accruals predict subsequent declines in net income. However, investors appear to infer rationally this earnings management at equity offerings announcements.