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Master Thesis

Goodwill Impairment as a Tool for Earnings Management in Western and Middle European Union member states

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Foreword

This thesis has been written as a part of the master's program of the study accounting, auditing and control at the Erasmus University Rotterdam. The subject of this thesis has been brought under my attention by one of my fellow students, Jamilla Lemans, who I would like to thank for this. During the seminar advanced financial accounting we have worked together on a paper that has formed the basis for this thesis. I would also like to thank our supervisor of the seminar, mister C. Knoops, for the advice given and guidance throughout the seminar.

In special I would like to thank Professor dr. M.A. van Hoepen for giving guidance throughout the writing of this thesis. The advices and feedback received have been used and have certainly led to an improvement of the presented thesis. Finally I would like to thank my parents for always supporting and encouraging me throughout my study.

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Chapter 1: Introduction

Since the introduction of the International Financial Reporting Standards (IFRS), there has been a big change in the treatment of goodwill in the financial statements. This change has been set in motion by the introduction of a new standard, IFRS 3 Business Combinations. In the standard, that is active since 2004, the mandatory impairment test is a primary subject (IFRS 3.55). The implication of introducing IFRS 3 is that on an annual basis the value of assets has to be determined, in order to examine whether the value of the asset has changed during the period. Recently the standard has been revised. This revised standard has been issued on the tenth of January 2008, but the mandatory effective date of the standard is the first of July 2009. Firms are allowed to apply the standard earlier then this date, but not for periods beginning before the first of July 2007.

IFRS 3 (2008) has resulted from a joint project between the United States Financial Accounting Standards Board (FASB) and the International Accounting Standards Board (IASB). The goal of this project is to improve accounting standards and to reach a higher degree of convergence between IFRSs and US GAAP in specific areas. Despite the increase in convergence some potentially significant differences still remain. One of these differences is that under FASB standards usage of the full-goodwill method is required, rather than permitted as under IFRS. This indicates an important change to IFRS 3 (2008), by adding an option to recognize one hundred percent of goodwill of an acquired interest. Previously only the goodwill paid for the acquired interest was recognized.

The increase in goodwill, when the full-goodwill method is applied, will lead to an increase in non-controlling interests that is reported as a part of equity. Determining the value of these non-controlling interest is however not as easy as it might seem. It is incorrect to extrapolate the goodwill of the controlling interest paid for at the acquisition to determine this value. The value of the non-controlling interest has to be determined considering the value of this interest for the firm. Every non-controlling interest has to be judged to determine this value (Hoogendoorn, 2005, pp.593). This implies that the potential differences of values of goodwill of non-controlling interests are high, although they seem similar at first sight.

An example might explain this. The value of goodwill attributed to a non-controlling interest in a firm with for example important patents and know-how can differ, based solely on the holder of the interest. If the interest is held by a competitor, the value of goodwill is presumably high. Should the competitor not have access to the knowledge a competitive advantage might arise. If the interest is held by several investors who are only interested in the return on their investment, then the value of goodwill will presumably be lower. The difference is caused by the holder of the shares.

It should be noted that the option to use the full-goodwill method under IFRS 3 is available on a transaction basis. This means that for every acquisition that leads to a non-controlling interest it can be determined whether or not the full-goodwill approach will be used. This difference in the application of the full-goodwill method is one of the differences between IFRSs and US GAAP. Differences regarding scope, the definition of when a firm is in control, and the correct way to measure contingen-

cies and employee benefits and how to disclose information in a correct manner still exist as well. These differences will however not be discussed into further detail in this thesis, since they are not of primary interest. A standard that however is relevant to this research is IAS 36. IAS 36 deals with the impairment of assets. This standard requires a firm to annually perform an impairment test. If necessary the value of goodwill should be impaired to its fair value.

As can be concluded from amongst others the full-goodwill method, the introduction of IFRS has led to an increase of professional judgement in the financial statements. This means that the valuation of goodwill in the financial statements has a higher degree of subjectivity. This subjectivity enables management to manage earnings. The goal of this thesis is therefore to investigate the significance of management's influence on the value of goodwill that is being accounted for when applying a goodwill impairment test. The focus in this research is on when a firm recognizes a goodwill impairment loss and for what reasons. The transaction and its design that led to the recognition of goodwill, for example the acquisition of an interest using the full-goodwill method, are of no importance to the research in this thesis.

It is important to conduct research in this specific area because of the potentially big impact the recognition of an impairment can have on both the book value of assets and the accounting earnings of a firm. This statement is supported by research by Alciatore et al. (1998). The findings of this research were amongst others that the mean amount of impairments of the firms in their research ranged from four to more than nineteen percent of the assets. The maximum impairment found represented ninety percent of the firm's assets. It can therefore be concluded that the possible economic significance of an impairment decision stresses the importance of analyzing the impairment decisions of firms.

The goal of this thesis is to investigate the significance of managements influence on the goodwill impairment decisions of a firm, to address this subject two research questions will be developed. The first research question that has been developed is:

Is the impairment of goodwill decision influenced by a firm's management?

Important research in this area has recently been performed by Van de Poel, Maijoor and Vanstraelen (2008, p.4). In using a sample of listed companies in 15 European Union countries preparing financial statements under IFRS over the period 2005-2006, the outcomes of their research showed that goodwill impairment decisions are highly associated with incentives regarding the firm's financial reporting. More specifically, they found that impairment losses are typically recognized when earnings can be described as unexpectedly high (firms smooth their income) or when they can be describes as unexpectedly low (firms take a bath). Because the focus of this research is particularly broad, in this thesis the research will be focussed on a more narrow sample. Next to the more narrow sample, a longer time period will be investigated. Also another dimension will be added by splitting the sample up into different industries. In this way it is possible to distinguish differences between groups of firms that share certain characteristics. This makes it possible to make assertions on a lower level than the entire sample and prevents the mitigating effects a big sample can have on these outcomes.

The sample used in this thesis will consist of all listed companies in western and middle European states that are members of the European Union during the period 2005-2008. Regarding the data of 2008 the remark has to be made that this can be incomplete at the time of writing of this thesis. This can be due to the fact that the annual reports have not been published, or because the databases used have not yet been fully updated. By choosing western and middle European Union member states as a sample it will be possible to make assertions on a lower level than by the research of Van de Poel et al. (2008), since their research is directed at 15 countries. Besides that, the increased time frame may lead to other outcomes as well. The research period of Van de Poel et al. (2008) covered two years, and in this thesis the timeframe will be four years (possibly three). As already stated in the previous paragraph the added dimension of industries makes it possible to make assertions on a lower level. This research is therefore not a simple copy of previous research, but a new step in finding information regarding earnings management.

As can be concluded from the sample selection the research outcomes in this thesis are not solely directed at one specific country. The reason for this is to be found in other research. Similar research regarding the recognition of goodwill impairments is being conducted for one country (the Netherlands) during the writing of this thesis. Next to this, there are several reasons for choosing western and middle European Union member states as the sample. The first reason for choosing these states is to be found in the importance of the member states in this part of the European Union. Not only big economies on an absolute level, expressed in Gross National Product (GNP) (see appendix one), like the United Kingdom, France and Germany are represented, but member states with a high GNP per capita like Luxembourg, Ireland and the Netherlands are represented as well. If a list would be made of the five biggest countries in the European Union expressed in GNP on both an absolute and per capita level it would show western and middle European countries scores are the highest or among the highest. Therefore the sample in this thesis consists of the countries: Belgium, Germany, France, Luxembourg, the Netherlands, Austria and the United Kingdom (including Ireland).

By choosing western and middle European Union member states this research is directed at member states that are economically important to Europe. Perhaps it is even correct to call these countries the economic heart of the European Union. An advantage of a sample that consists of these member states is the economic state these countries are in. Western and middle European countries are economically developed countries where a ‘normal’ pattern of earnings or profits can be distinguished in firms or industries. In still fast developing European countries in for example eastern Europe this pattern is less visible because of the economic changes these countries have gone through and are still going through. The importance of these pattern will be further described in chapter five when the empirical model will be discussed.

Another advantage of choosing the stock listed firms of western and middle European Union member states as a sample is that the sample will be big enough to conduct more detailed research, like on the industrial section level, than done by Van de Poel et al. (2008). With smaller samples it would be possible that this more detailed research could not be performed because there are not enough observations to perform a regression analysis. This will be explained in more detail in chapter five, when the model used in this thesis will be presented. Because of the size of the sample in this thesis the question whether management of a firm influences the impairment of goodwill decision will be conducted on industry sector level as well. To perform this test the total sample will be divided into several industrial sectors. Therefore the second research question is:

Does managerial influence on the goodwill impairment decision differ between industrial sectors?

This research question is interesting to investigate, because it might show that in certain industries more management of earnings occurs than in others. If the distinction between industries would not have been made, it would be possible to conclude that no earnings management occurred, whereas this actually occurred on industry level. By looking at the characteristics of these sectors and by comparing them to the characteristics of other industries, preconditions for earnings management may be found. This would increase the possibilities of predicting and finding earnings management.

A somewhat similar and even further going test could be performed by dividing the sample up in different countries and investigating whether differences exist on country level. These outcomes could then be tested against expectations due to the presence and weight of certain industrial sectors and cultural differences. This kind of research is however beyond the range of this research. Not only is it almost impossible to distinguish all cultural differences, interpreting them correct is evenly or even more problematic. With the increase of the number of countries in the sample the chance of conducting the research correctly decreases significantly. Therefore this will not be a part of the empirical research of this thesis.

This research contributes to the existing literature in several ways. At first it contains new research, research that differs between industries regarding the usage of goodwill impairments as a tool for earnings management has not been performed according to the knowledge of the author. This can lead to new insights and conclusions regarding the topic of earnings management. Secondly the research will be performed in an economically interesting time, that is somewhat ideal for this topic, as well. After years of prosperity the world is going through a recession and many firms publicate financial statements that are worse than previous years, and than investors and analysts expected. This difference in economic conditions may be of influence as well on the goodwill impairments. The model developed by Van de Poel et al. (2008) will be used as basis for the empirical research of this thesis, but it will be adjusted to the new institutional setting. This will be done based on different published studies and will be discussed into further detail later on.

The remainder of this thesis is organized as follows. In the next chapter earnings management will be defined. The focus of this chapter will be on different conditions, incentives and forms of earnings management. In chapter 3 the definition of goodwill will be discussed, as well as the application of an impairment test. Also implications of the impairment test will be discussed based on a short summary of insights from prior research examining this subject. Chapter 4 will then discuss the link between managing earnings and the impairment of goodwill based on evidence found in prior empirical research. In chapter five the research design will be discussed. Chapter six will discuss the empirical research that will be performed and its outcomes. In chapter seven a summary of this thesis and the answers to the research question are presented.

Chapter 2: Earnings Management

2.1 Introduction

In this chapter the topic of earnings management will be addressed. The second section will provide a definition of earnings management and an explanation of the difference with fraud. In the third section the conditions necessary for earnings management to be applied with success will be discussed. The fourth section will describe managerial incentives to engage in earnings management and the two forms of earnings management of importance for the empirical research of this thesis are discussed in the fifth section. The chapter ends with a short summary and conclusion.

2.2 Definition earnings management

A definition of earnings management is given by Healey and Wahlen (1999, pp. 368): "*Earnings management occurs when managers use judgement 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*".

Schipper (1989, pp. 92) defines earnings management as: "*Disclosure management, in the sense of a purposeful intervention in the external financial reporting process, with the intent of obtaining some private gains (as opposed to, say, merely facilitating the neutral operation of the process)*".

According to Mohanram (2003, pp. 1) earnings management is: "*The intentional misstatement of earnings leading to bottom line numbers that would have been different in the absence of any manipulation. When managers make decisions not for strategic reasons, but solely to change earnings, one can consider that to be earnings management*".

In this thesis the definition of earnings management as given by Schipper (1989) will be used. The first reason to choose this definition is that it covers the load of earnings management best according to the author. As will be described in the remaining of this chapter, the purpose of engaging in earnings management is to obtain gains in one form or the other. Possible gains include the receiving of bonuses by management and maintaining or receiving better credit agreements by the firm. In order to achieve these gains the law is not broken however, therefore it is questionable whether the financial statements under earnings management can be called misleading as Healey and Wahlen (1999, pp. 368) state. A second reason for choosing this definition is that it is a very widely known and used definition. Although the usage of this definition might lead to some discussions, because other people consider another definition of earnings management better, it should be known to others.

As already has been mentioned shortly in the previous paragraph, the definitions of earnings management given might suggest that using earnings management is actually fraud and a breach of law, in fact it is not. Earnings management can best be described as management's use of its discretion in presenting financial statements. A distinction between earnings management and fraud has been made by Dechow and Skinner (2000, pp. 238-239). They have divided managerial accounting choices into four different groups in order to make a distinction between fraudulent managerial decisions and decisions that are legal. It should be noted that the examples presented by Dechow and Skinner (2000) in

the four accounting decision group are not limitative. The main purpose is to provide an indication of transactions that are included in the groups distinguished. The following four groups have been recognised by Dechow and Skinner (2000, pp. 238-239):

- *Conservative accounting includes: an overly aggressive recognition of reserves or provisions, the delaying of sales, the overstatement of write-offs or the acceleration of research and development or advertisement costs.*
- *Neutral earnings: earnings that result from a neutral operation of the process.*
- *Aggressive accounting includes: the postponement of research and development expenditures or the understatement of the provisions for bad debt.*
- *Fraudulent accounting includes: the recording of sales before they are realizable, the recording of fictitious transactions or overstating inventory by recording fictitious inventories.*

The first three groups Dechow and Skinner (2000) distinguish, represent accounting choices that are permitted or legal within Generally Accepted Accounting Principles (GAAP). Although the accounting methods in these groups can be described as aggressive, they are acceptable within the law. The best way to describe them is a mere form in which management can exercise its discretion in accounting. It is possible that these accounting methods are used for earnings management, but this is not necessarily done however. The intention management has when using the accounting principles is most important. The fourth group Dechow and Skinner (2000) described includes violations of GAAP. The accounting methods described there cannot be labelled as the usage of managerial discretion anymore. The methods are, and if recognized, treated as fraud. Although the distinction in groups made by Dechow and Skinner (2000) may imply otherwise, in practice it is difficult, if not impossible, to actually distinguish earnings management, and sometimes even fraud, from a firm's 'normal' accounting decisions.

2.3 Conditions for earnings management

The basis for earnings management is formed by the presence of two conditions. The first condition is accrual accounting and the second the existence of imperfect markets. The principle goal of accrual accounting is described by Dechow and Skinner (2000, pp. 237) as: "*to help investors assess the entity's economic performance during a period through the use of basic accounting principles such as revenue recognition and matching*". The purpose of accrual accounting can therefore be described as to enclose, in the financial results, the economic consequences of actions the firm has undertaken that have led or will lead to cash-flow effects in other periods. A firm's accruals are therefore the difference between the financial results and the cash-flows.

According to Schipper (1989, pp. 98-99) two different kind of accruals can be distinguished, discretionary accruals and non-discretionary accruals. A distinction between these two kinds of accruals is made based on the assumption that not all a firm's accruals can be influenced by management. Not only have laws and regulations to be obliged, but the financial statements of a firm are also controlled by for example regulators and auditors. According to Schipper (1989, pp. 98-99) these circumstances lead to a group of accruals that cannot be influenced by management, the non-discretionary accruals.

A firms discretionary accruals on the other hand are susceptible to management. According to the author these statements have to be interpreted in a somewhat less strict than exact manner. It is not per definition the accrual that is non-discretionary, but it entails the height of the amount as well. In principle are all accruals susceptible to management, since it is their responsibility to present the financial statements. The discretionary part of accruals should be seen as the part of accruals management can influence within laws and regulations. In order to prevent confusion the terms discretionary and non-discretionary will not be changed in the reminder of this thesis.

Although it is possible for management to use discretionary accruals for earnings management, this is not necessarily done. As Healey and Wahlen (1999, pp. 366) point out: "*If financial reports are to convey managers' information on their firm's performance, standards must permit managers to exercise judgement in financial reporting. Managers can then use their knowledge about the business and its opportunities to select reporting methods, estimates, and disclosures that match the firms' business economics, potentially increasing the value of accounting as a form of communication…*". This quote implies that the goal of discretionary accruals is to give a firm's management a tool to be able to reflect a firm's true economic performance in the financial statements. However, Healey and Wahlen (1999, pp. 366) point out as well that the discretionary accruals can be used for earnings management: "*…However because auditing is imperfect, management's use of judgement also creates opportunities for "earnings management", in which managers choose reporting methods and estimates that do not accurately reflect their firms' underlying economics*". This can only lead to the conclusion that managements intentions are the main factor to know whether discretionary accruals are used for earnings management or not.

The second condition for earnings management, the existence of imperfect markets, is provided by Stolowy and Breton (2004, pp. 9). They state that in a perfect market information circulates very fast, and will be interpreted by recipients in a correct manner. Under these conditions the users of financial statements would know whether earnings management has been used to alter the statements. This knowledge would then be used to change the statements to their correct outcomes, therefore mitigating the effect of earnings management to zero. The only way to escape the attention of the market would be to time transactions according to Stolowy and Breton (2004). In an imperfect market the conditions as described previously are not met, therefore earnings management can bear effect.

2.4 Incentives for earnings management

Two economic theories, the positive accounting theory and the agency theory, can be used to explain several incentives managers can have for using earnings management. The positive accounting theory (Watts and Zimmerman 1986, pp. 7.) "*is concerned with explaining accounting practice. It is designed to explain and predict which firms will and which firms will not use a particular method but it says nothing as to which method a firm should use*". In relation to earnings management, the accounting choices made by management can be explained by using the positive accounting theory. The agency theory should be included as well however.

The relationship that exists between an organization's management and its stakeholders, for example the stockholders, is called an agency relationship. The managers of the organization are called agents and the stockholders are called principals. An underlying assumption of the agency theory is that an agent will only act in its own interest. The agent will attempt to maximize his own wealth, even if this means that the wealth of the principal is lowered because of these actions. This leads to a certain amount of tension between the agents and principals, because their goals are not aligned. By closing a contract between the agent and the principal this tension can be reduced, since their goals will be more aligned. The agent will however still attempt to maximize his own wealth, but only within the boundaries of his contract, therefore not all tension can be removed. With the conditions of the agency theory as described here, Watts and Zimmerman (1986) have used the positive accounting theory to distinguish three hypotheses. These hypotheses distinguish the accounting actions that will be undertaken by management under certain conditions

- The *bonus plan hypothesis* implies that management that is granted a bonus plan, for example based on the profits or the returns of the organization, will adopt accounting methods that increase earnings. By adopting these methods management will be able to maximize its bonus and own wealth.
- The *debt hypothesis* implies that accounting methods that increase income will be chosen by managers of firms with a bad, or low, solvability as well. By adopting the income increasing methods management tries to avoid the violation of loaning agreements. The consequences of such circumstances can prove very expensive for the firm.
- The *political cost hypothesis* implies that income decreasing methods are adopted by management in times the firm attracts a lot of political attention. By lowering the firm's income management attempts to reduce the political attention, since this might lead to lower profits in the future that outweigh the lower current income.

In more recent research earnings management is not related to the positive accounting theory anymore, but to capital market incentives (Xiong, 2006, pp. 315) (Mohanram, 2003, pp. 2) (Dechow and Skinner, 2000, pp. 242). A firm's performance opposed to certain benchmarks for that firm form the basis for earnings management. According to Mohanram (2003, pp. 2) the benchmarks vary from the firm's financial results in previous years to an analyst's forecast of these results. Missing a benchmark can prove costly for the firm, because markets can react very strong on such news. Exceeding a benchmark can have an undesirable effect as well however, this will be discussed in the next section.

According to the author the benchmark incentives can be related to the positive accounting theory as well however. The actions undertaken by management to meet benchmarks can all be derived back the hypotheses distinguished by this theory, since there are many possible consequences of missing a benchmark for a firm and its management. At first a manager's bonus might be affected, because the firm did not reach a certain level of profit. The manager's bonus might be reduced, or he might not receive it at all. Secondly, missing a benchmark could also lead to a change in debt and credit conditions. Banks or suppliers might lower their judgements about creditworthiness and the financial stability of the firm. Finally, exceeding a benchmark (by far) can have unwanted consequences as well.

High performance might attract attention from political groups. Since the firm is performing much better than expected, these groups might expect the firm to for example increase wages of its labour force, or use less polluting production methods.

2.5 Forms of earnings management

As has been discussed shortly in the previous section, income can be both increased and decreased by using earnings management. It is therefore possible to make a distinction between multiple types of earnings management. In this thesis only big bath accounting and income smoothing will be discussed. These two forms of earnings management will be used in the research of this thesis, as will be described into more detail in the fifth chapter.

Big bath accounting is a form of earnings management that is used to decrease a firm's income. The principle goal of big bath accounting is to incur, in one year, as many as possible losses and write-offs. According to Mohanram (2003, pp. 2) firms that cannot achieve their targets use big bath accounting. If a firm is unable to reach its targets accounting methods will be used to worsen the financial results of the firm even more. According to (2003, pp. 2) there are two reasons for this behaviour. The first reason is that the targets set for the year will not be reached, because of this the year can be described as 'lost'. The second reason is that the costs the firm will incur for not achieving its targets will not change a lot. The foundation for these costs is to be found in the fact that the targets are not achieved, performing worse will only make these costs rise minimally. An advantage of big bath accounting is that the extra losses the firm recognises during the year can be used in future years to increase or smooth income.

The second form of earnings management to be discussed here is income smoothing. The purpose of income smoothing is to report a consecutive line of increasing earnings over the years. This goal is achieved by using earnings management to both increase and decrease income. If the firm's income is higher than its target, income can be decreased by earnings management, also called cookie jar accounting. According to Mohanram (2003, pp. 3) this type of accounting has two purposes. The first purpose is to 'save' some income periods. It is possible that in future periods the firm is unable to meet it's targets. The saved income from previous periods can then be used to boost income. Earnings management can therefore be considered *"as an "inter-temporal" transfer of income between periods"*, as Mohanram (2003, pp. 6) states. Not the total level of profits and losses a firm incurs during its lifetime is altered, but the distribution of that income over the different years is. The second purpose of cookie jar accounting is to prevent expectations about the firm's financial results to rise. If these expectations increase it will be harder to reach future targets. The consequence of this can be that the consecutive line of increased earnings is ended, because of one exceptional good result.

2.6 Summary and conclusion

This chapter has discussed the topic of earnings management. Earnings management will from hereon be described as defined by Schipper (1989, pp. 92): "*Disclosure management, in the sense of a purposeful intervention in the external financial reporting process, with the intent of obtaining some private gains (as opposed to, say, merely facilitating the neutral operation of the process)*". For earnings management to be effective two conditions will have to be met, the existence of accrual accounting and imperfect markets. The basis of earnings management can be explained by two economic theories, the positive accounting theory and the agency theory. Three hypotheses regarding earnings management can be distinguished based on the theories: the bonus plan hypothesis, the debt hypothesis and the political cost hypothesis. In recent research incentives for earnings management are related to the achievement of benchmarks for the firm. These incentives can however be related to the three hypotheses as distinguished by the positive accounting theory and the agency theory. Two forms of earnings management are big bath accounting and income smoothing.

Chapter 3: The impairment of goodwill

3.1 Introduction

As mentioned in the introduction of this thesis, the issuance of the new standard IFRS 3 has had the implication that the annual depreciation of goodwill has been replaced. Goodwill will now undergo an annual impairment test, which is based on the estimates regarding the fair value of the acquired business (Van de Poel et al., 2008). In this chapter both goodwill and the impairment of goodwill will be addressed. In the next section, a definition of goodwill will be discussed as well as the distinction that can be made between purchased goodwill and goodwill that has been generated internally. In the third section a four step process will be used to discuss the impairment test into more detail. Some implications of the impairment will be discussed in the fourth section. The chapter will end with a short summary and conclusion.

3.2 Definition goodwill

Before the impairment test is discussed and examined into more detail, it is important to determine the definition of the term goodwill. Klaassen and Helleman (2004, pp. 911) have defined goodwill as the value of a firm on top of the value of equity that is visible on the balance sheet. Goodwill is a resultant who's size depends on two pillars. The first pillar is the value of the business and the second the meaning of the term equity. Lander and Reinstein (2003, pp.227-228) argue that the only goodwill that should be recognized is purchased goodwill. Purchased goodwill represents the difference between the value of all assets paid for in the purchase and the price the firm has paid for these assets. Goodwill therefore is the part of the purchase price that has been paid for on top of the market value of the assets. It is very well possible however that a firm does not acquire an entire business, but only a part of it. If this occurs it follows from reason that only the goodwill paid for by the acquiring firm will be represented on the balance sheet. It is however possible from the first of July 2009, to use the full-goodwill approach as discussed earlier. If this approach is applied one hundred percent of the value of goodwill of the acquired business is recognized. This will lead to an increase of the non-controlling interest on the balance sheet. Lander and Reinstein (2003, pp. 228) also point at the possibility that a firm owns internally generated goodwill. The standards do not allow this goodwill to be recognized on the balance sheet however, because there is no objective method to value this goodwill. From hereon goodwill will be used to represent the purchased goodwill of a firm.

3.3 Applying an impairment test

This section will discuss the annual impairment test into further detail. Basically, the purpose of an impairment test can best be described as a verification of the value of goodwill. By performing the test it will be known whether any changes in the value of goodwill have occurred. The focus lies with a possible decrease in value. Should the impairment test point out that the value of goodwill has actually increased, then this increase will not be accounted for in the financial statements, since the standards do not allow this (both in equity and earnings). The underlying reason for this is that the possibility of actually realizing the increase in value is too uncertain. This as also called the principle of realization.

When a decrease in value of goodwill occurs an impairment loss needs to be recognized. An impairment loss is defined as "*the amount by which the carrying amount of an asset or a cash generating unit exceeds its recoverable amount*" (IAS 36). In determining whether the recognition of a goodwill impairment loss is necessary, Dagwell et al. (2007, pp. 866-868) propose the following steps:

Step 1: "*Ascertain the recoverable amount of the relevant cash generating unit*".
A cash generating unit is defined by IAS 36.6 as "*the smallest possible identifiable group of assets that generates cash inflows from continuing use that are largely independent of the cash inflows from other assets or groups of assets"*. It follows from this definition that not the value of the aggregate firm is tested with the impairment test, but the value of its different units. The recoverable amount of a cash generating unit can be determined by comparing its value in use, and its net selling price or fair value less the costs to sell. The highest of these two measures is chosen as the recoverable amount. Regarding the fair value of a cash generating unit it should be mentioned that according to IAS 36 this is the price that would have been determined by knowledgeable and willing parties that engage in an arms-length transaction. Another similar definition for fair value emphasizes more on the willingness of the parties by adding "*who are under no compulsion to act*" (CICBV, 2002, pp. 6). Although some difference between the two definitions exists in essence, both definitions lead to the same 'fair value' being recognized. The value in use of a cash generating unit involves the calculation of the net present value of the estimated future cash flows to be derived from continuing use of the asset. IAS 36.IN6 clarifies that the following elements should therefore be reflected in this calculation:

- An estimation of the future cash flows that are expected to be derived form the assets.
- Expectations regarding any possible variations in the amount or timing of the expected future cash flows.
- The current market risk-free rate of interest in order to express the time value of money.
- A price for the uncertainty inherent in the asset.
- All other factors that would be incorporated in the price of the asset by other market participants when determining the future cash flows of the unit.

The Standard (IAS 36.30) also permits that the second, fourth and fifth element mentioned above are reflected in the future cash flows or the interest rate used to calculate the present value of the cash flows.

Step 2: "*Determine the carrying amount of the net assets (including goodwill) of the relevant cash generating unit. If the carrying amount exceeds the recoverable amount, an impairment loss must be recognised"*.
The carrying amount of a cash generating unit can be calculated by adding together the book value of all individuals assets of the unit, including goodwill, and subtracting the liabilities that belong to that unit. IAS (36.6) describes it as "*the amount at which an asset is recognised after deducting any accumulated depreciation (amortisation) and accumulated impairment losses thereon*".

Step 3: *"If recognition of an impairment loss is required, determine the implied value of goodwill"*.
The implied value of goodwill is the surplus that the firm would have recognized should it have acquired the cash generating unit in a business combination at the date of the impairment test. It should be seen as the goodwill the firm would have paid on top of the unit's identifiable assets, liabilities and contingent liabilities, would it not be the owner, but a buyer.

Step 4: *"Reduce the carrying amount of goodwill by the amount of the impairment loss"*.
The carrying amount of goodwill must be reduced by the amount of the recognized impairment loss. It is however possible that the amount of goodwill that should be written off is actually larger than the amount of goodwill on the balance sheet that is allocated to the cash generating unit. Should this occur, then the excess amount should be written off against other assets of the cash generating unit. To determine the write-off per asset, the proportion of the book value of each asset should be made up at the moment of acquisition. The goodwill impairment loss will then be allocated to each of the assets in the cash generating unit based on this proportion (or percentage) (IAS 36.104).

3.4 Implications of applying the impairment test

When considering the four step approach of the impairment test it should be concluded that in order to determine the fair value, the carrying amount and the recoverable amount first many other factors need to be determined. With respect to the determination of fair value, Lander and Reinstein (2003, pp. 228) argue that firms who are making estimations regarding future cash-flows to measure fair value, should make use of assumptions and projections that are reasonable and can be supported. The weight that is given to these assumptions and projections should be seen in the amount of verification a firm can provide on an objective basis. If a firm uses ranges of possible cash-flows for its calculations, the possible effects of these ranges should be shown in the calculation immediately. Another possibility is to adjust the discount rate to represent the risk that follows from using the ranges.

This does however not change the fact that the factors used in an impairment test depend on a lot of assumptions made by management, since the responsibility for preparing the initial impairment calculation lies with management. The role of the auditor is to check this calculation. Examples of assumptions that are needed for the impairment test are the discount factor (for example the weighted average cost of capital), expected future cash flows and the growth factor of cash flows. All of these assumptions give rise to the level of subjectivity that is associated with the impairment test. Kuipers and Boissevain (2005) have expressed their concern about the level of subjectivity of the impairment test. According to them the cash flow projections have given management important possibilities to manage earnings. It is therefore necessary to challenge the underlying assumptions of the impairment decision, both internally in the firm and by an outside auditor, to know whether they are realistic or not. In practice this might be harder to achieve than it looks however. Concerns regarding control of the impairment calculations are expressed by Johnson (2007), who is questioning whether an auditor actually has the training necessary to estimate fair value on a correct manner. Should this concern be true, then serious questions should be raised regarding the implementation of the principle of fair value and the corresponding impairment decision in practice.

Ball (2006) argues that another level of subjectivity is introduced with the impairment test. This subjectivity is concerned with the assumptions management has to make with regard to the impairment test. The determination of what the cash generating units of a firms are, which part of goodwill is allocated to them and the estimation of the recoverable amount is in managements hands. The replacement of annual amortization with the impairment test therefore provides management with another tool for earnings management according to Ball (2006).

This reasoning is also supported by empirical evidence found by Li, Shroff and Venkataraman (2005). Their findings show that, relative to a control sample of acquiring firms, firms that announce an impairment loss are more likely to have overpaid for firms acquired during the five years prior to the impairment. Their tests also revealed that a negative correlation exists between the impairment loss and the firm's post-acquisition return performance. This means that after the impairment the firm's performance does not improve. Therefore it appears that the impairment losses recognized by these firms can be related to an overpayment for the acquired firms. Management has a tool however to cover the overpayment up, by not recognizing an impairment.

An analysis performed by Bini and Bella (2007, pp. 912-914) supports the view that the level of subjectivity of the goodwill impairment test provides management with opportunities to influence the outcomes. Their findings show that the discretionary power management has in the impairment decision leaves them with enough opportunities for opportunistic behaviour. This was most present in the cases where management was not able to meet the targets that were set. However, as Bini and Bella (2007, pp. 914) continue, this is not the only tool management has in mitigating the impact of poor execution of its plans on the carrying value of goodwill. By reducing the amount of dividends that are subtracted from a firm a same result can be reached. This however leads to a misallocation of capital among reporting units in a diversified group.

To solve the problems that can be associated with the application of the impairment test, Holterman (2004, pp. 273-274) proposes the development of generally accepted valuation procedures for impairment tests. These procedures should provide auditors, draughters, and users of financial statements more guidance than current regulation can. It is questioned however whether the implementation of these regulations would actually lower the level of subjectivity enough in order for the impairment test to become more reliable. Management will still be responsible for preparing the impairment calculation and it is questionable whether management would apply these generally accepted valuation procedures in a more correct manner than current regulation. As with current regulation this would be difficult to check for auditors, because in these situations managers have more information than they do. Therefore management would still have possibilities to influence the impairment test. Furthermore, it is possible that situations occur where managers do not have the knowledge to live up to the new valuation standards, but they act if they do. This would not decrease but possibly even increase the level of subjectivity.

According to Knoops (2004, pp. 4) such a level of subjectivity in the impairment test could provide a firm's management with an opportunity for earnings management if the impairment test is not robust enough. According to him this could lead to the development of a new form of big bath accounting (for a definition see chapter 2). This will lead to the recognition of very large impairment losses at first, followed by lower or less impairment losses in years to come. It could even lead to the absence of the recognition of impairment losses for a period of time, because of the initial big loss.

3.5 Summary and conclusion

In this chapter the definition of goodwill and impairment have been discussed. Goodwill has been defined as being the value of a firm on top of the value of equity that is visible on the balance sheet. The term goodwill in this thesis will however only cover the goodwill that has been paid for at an acquisition. The impairment of goodwill has been defined as a test to verify whether the value of goodwill has undergone any changes in value. The process of applying an impairment test has been discussed by using a four step process. Implications of the application of the impairment test were discussed as well, indicating that this decision can be associated with a (very) high level of subjectivity. The consequence of this subjectivity, is that management is given an opportunity to influence the impairment, consequently the presented earnings in the financial statements as well.

Chapter 4: Managing goodwill impairments: empirical evidence

4.1 Introduction

In a continuance on the second and third chapter, the empirical evidence regarding earnings management and the link that exists between earnings management and goodwill impairments will be discussed in this chapter. This discussion will be based on prior empirical research performed by numerous authors. In the second section empirical research about the existence of earnings management will be discussed. Section three will then discuss empirical evidence found of the link between earnings management and goodwill impairment. The chapter ends with a short summary and conclusion. The empirical evidence as discussed in this chapter will form the basis for the hypothesis of this thesis to be tested, as will be discussed in chapter five.

4.2 Empirical evidence for earnings management

As described in chapter two, based on the positive accounting theory and the agency theory there are three hypotheses that distinguish the incentives for earnings management, the bonus plan hypothesis, the debt hypothesis and the political cost hypothesis. All three of the hypotheses have been subject to empirical research. Some of these researches and their outcomes will be discussed in this section. Research about big bath accounting and income smoothing will be discussed as well. Models used in the empirical research discussed in this section will only be discussed briefly. The discussion should enable the reader to know the goal of the model, but since these models will not be used in the empirical research in this thesis elaborating them in more detail will not add value.

4.2.1 The bonus plan hypothesis

According to the bonus plan hypothesis of the positive accounting theory management that is granted a bonus scheme will adopt accounting methods that increase earnings. Bonuses normally depend, at least in some manner, on a firms presented results, therefore management has an incentive to manipulate the firms financial results. Healy (1985) has investigated whether a relation exists between a managers bonus scheme and the accounting decisions made by this manager. The subjects of investigation for this research were the accruals of a firm and changes in accounting procedures. Healy's (1985) research differs from previous research, because he included an upper bound in managements bonuses. In this way it is incorporated in the research that it can actually be advantageous for management to reduce the firms income in a year, when profit exceeds a certain amount. In previous research only a lower bound of the bonus schemes had been used.

To perform his research Healy (1985) investigated the bonus schemes and financial statements of 94 firms listed on the 1980 Fortune Directory. This means that during his research the firms belonged to the 250 biggest industrial companies in the United States. To test whether evidence could be provided for the bonus hypothesis Healy (1985) investigated two primary subjects taking the management bonus scheme into consideration. The first was the accruals in the financial statements, the second the changes in accounting procedures. His results suggest that the bonus hypothesis will not be rejected. Managers actually try to maximize their bonuses. When managers face the upper bound of their bonus plan, or when the firm's results are not good enough to receive a bonus, management is more likely to

choose income-decreasing accruals. When these boundaries are not binding management is more likely to choose income increasing accruals, or they maximize the firms results. Voluntary changes in accounting methods were found to be associated with the change of a manager's bonus scheme. By changing the accounting methods, the bonuses granted to management could be maximized. Healy (1985) did not find any evidence of a relation between changes in accounting methods and the lower and upper bound of the bonus scheme however.

Support for Healy's statement can be found in Guidry, Leone and Rock (1999). The research conducted by them was directed at independent business units rather than the aggregate firm. The reason to choose such a research sample was to eliminate contradicting goals of business unit managers. In a firm with different business units, it is probable that different financial results are reached. These differences lead to different behaviour regarding earnings management. Therefore both income decreasing and income increasing behaviour can take place in the aggregate firm, mitigating the overall effect on earnings. It is therefore possible that on the level of the aggregate firm no earnings management is detected, but that it has taken place on one or several lower levels in the firm.

Guidry, Leone and Rock (1999) investigated the bonus plan hypothesis for 179 business unit years during the period 1993-1995. The business units that were part of their sample were all part of large multinational conglomerates in the United States. To test the hypothesis Guidry et al. (1999) used the modified Jones model, Healy's proxy for discretionary accruals and an inventory reserve measure. The first step in the process was to use Healy's proxy for discretionary accruals. By taking the current assets without cash and distracting current liabilities less depreciation expenses an indication for the discretionary accruals is made. As a control the modified Jones model was used. The Jones and modified Jones model are described by Dechow and Sloan (1995). The modified Jones model is, as its name implies, a modified version of the Jones model. The goal of both models is to estimate the discretionary accruals in the financial statements of a firm. At its time of development the Jones model was innovative, because the model does not assume non-discretionary accruals to be constant over time. However one of its limitations is that all growth in sales is considered to be non-discretionary, but management can actually influence sales by delaying or accelerating them. Should the sales of a firm be managed, then the classification as non-discretionary is incorrect. For this reason the modified Jones version of the model includes a variable that accounts for the change in credit sales. All changes in credit sales are considered to be earnings management in this model. The reason to adapt the model for credit sales only, instead of both credit and cash sales is that it is easier to manage credit sales than cash sales. The reserve measure is directed at discovering manipulation of the value of inventory. This is done by relating the level of the inventory reserve to the level of inventory.

The outcomes of the research by Guidry et al. (1999) were align with Healy (1985). Managers in business units use accruals to manipulate income. In units with profits that are too low to earn a bonus, or when the upper bounds of bonuses are reached, managers will use discretionary accruals to lower income. Should the profit of a business unit entitle management a bonus, but not its maximum, then income increasing accruals are used.

4.2.2 The debt hypothesis

According to the second hypothesis of the positive accounting theory, accounting methods that increase income will be chosen by managers of firms with a bad, or low, solvability. By adopting income increasing methods management tries to avoid the violation of loaning agreements. Research regarding the accounting choices made by firms in the year preceding and the year of a violation of a debt covenant has been performed by DeFond and Jiambalvo (1994). They investigated whether this violation is of influence on the accounting choices made by management. The research focused on the accruals made by the firm, especially on abnormal accruals.

The sample investigated by DeFond and Jiambalvo (1994) consisted of 94 firms that during the period 1985-1988 were known to have violated debt covenants at least once. To test whether there was evidence for the debt hypothesis, the actual accruals of the firms were compared to the 'normal' accruals that the firms were expected to have. The level of normal accruals was estimated by using time-series and cross-sectional models. A time-series model is used to investigate differences of the same firm between years. A cross-sectional model does not compare between firm years, but uses companies in the industry to make the comparison. By comparing the total accruals in the firms financials statements with the calculated normal level of accruals the abnormal accruals can be calculated.

The results of the research of DeFond and Jiambalvo (1994) align with the hypothesis. Both the time-series model and cross-sectional model indicated that in the year prior to the breaking of the debt covenant the abnormal total and working capital accruals were significantly positive. This indicates that these abnormal accruals were used to increase earnings the year prior to the violation. During the year of the violation both the time-series model and cross-sectional model indicated that the abnormal accruals were negative, indicating that when the covenants were broken profit was actually decreased. If these outcomes are corrected for the effects of a change in management, and the effects of the going-concern qualification given by an auditor, then the abnormal working capital accruals would have been positive. These differences are explained by DeFond and Jiambalvo (1994) as well. The firms with a change in management have to be excluded, because new management is expected to engage in big bath accounting. Firms with a going-concern qualification are thought to be pressured by their auditor to use conservative accounting.

4.2.3 The political cost hypothesis

The third and final hypothesis of the positive accounting theory is the political cost hypothesis. According to this hypothesis managers will adopt accounting methods that decrease earnings in times of unwanted political attention. Han and Wang (1998) have performed empirical research to test the political cost hypothesis. They have investigated the effects of the Iraq invasion of Kuwait in 1990 on the oil firms in the United States. Because of this incident the world oil price and the prices at service stations in the United States had risen sharply in a short time period. Oil firms were accused of driving up prices even further to increase their own wealth and a public outcry for government action was given. In response to this outcry the U.S. federal government considered various actions, like tax increases, to reply.

Using a time series model Han and Wang (1998) found that in the petroleum refining industry accruals were used to decrease income. In the petroleum refining industry amongst others inventory accounting took place, which should be seen as valuating inventories on a lower price than market value. Forecasts about good results in quarters to come were being disclosed late or not at all to keep political attention as low as possible. In the crude oil and natural gas industry this effect was not found. These findings are consistent with the political cost hypothesis if the characteristics of both industries are taken into account. Firms in the refining industry derive their revenues from the sales to consumers, whereas firms in the crude petroleum and natural gas industry derive their revenue from other firms. The first mentioned group of firms is therefore more vulnerable to political attention, since consumers consider them the firms that enrich themselves at their expense.

4.2.4 Income smoothing and big bath accounting

The purpose of income smoothing is to report a consecutive line of increasing earnings throughout the years. In order to achieve this, both earnings management to increase and to decrease firm income can be used. DeFond and Park (1997) have performed research to test whether managers actually smooth income. The purpose of engaging in earnings management is related to job security according to them. By smoothing current and future income managers can decrease the chance of being dismissed due to poor performance of the firm.

To test whether managers actually smooth income DeFond and Park (1997) used a sample that consisted of all the available observations on the Compustat Industrial over the period 1984 through 1994. For their analysis DeFond and Park (1997) related the accruals of a firm of one year to the next year. This means that accruals in the current year were not supposed to be based solely on earnings in the current year, but the expected performance of the next year was taken into account as well. The underlying thought was that managers look to the future when making accruals in the current year. In this way they are able to 'save' income for the next period by decreasing current income for future income, or to 'borrow' income from the future. Or in some cases it proved better for management to undertake none of these actions at all. This occurred for example when future income was considered too low to be supported by current income. In order to estimate the discretionary accruals a variation of the Jones model was used. Using a time series model enabled the researchers to estimate the difference between the expected accruals and the reported accruals. DeFond and Park (1997) found that eighty-nine percent of the firms that were expected to smooth earnings actually acted in such a manner. Earnings management was found to be used to smooth firm income both when income was higher and lower than targeted.

Management can use a variety of discretionary accruals to smooth income of a firm. Peek (2004) conducted research regarding the use of provisions in earnings management in the Netherlands. The goal of his research was to test whether it was possible to make an association between a firm's current and following year's income changes in a systematical manner, based on unexpected changes in provisions. For this research he investigated the annual reports of 134 non-financial firms that were listed on the Amsterdam Stock Exchange for at least three years during the period 1989 through 2000. This led to a sample of 975 firm-year observations.

To investigate whether provisions changed in an unexpected way Peek (2004) had developed his own model, which used different drivers for different provisions to estimate a normal amount. These are not described here for convenience. By estimating the normal amount of provisions they could be compared to the actual amounts. In this way a conclusion could be drawn about the height of the unexpected change in the provision. Peek (2004) concluded that Dutch firms used their discretion in provisions to manage their earnings. The unexpected changes in provisions proved a benchmark for the future results of a firm when a firm's income of the previous year was higher than current income. The decrease in income was less persistent for firms with unexpectedly positive changes in provisions than for firms with unexpectedly negative changes in provisions. These outcomes are consistent with big bath accounting, as explained by Healy (1985). Firms with unexpected high positive changes in provisions lower current income to increase future income, they store reserves that can be used in later periods when firm income is lower than expected. Unexpected negative changes in provisions means that the reserves previously mentioned are used by the firm, or it means that income is borrowed from the future.

4.2.5. Positive effects of income smoothing

Although earnings management by its definition can be associated with disturbing a true view about the performances of a firm, several empirical studies provide evidence for positive effects of managing earnings. Barth, Elliot and Finn (1999) have provided evidence that income smoothing has an affect on the price-earnings relation of a firm. Their findings suggest that stocks of firms that smooth income are priced at a premium.

Barth et al. (1999) have investigated the price-earnings relation of a firm by using the models of Miller and Modigliani (1966), and Ohlson (1995). From the Miller and Modigliani (1966) model only the basis was used. It should be mentioned that this model is based on restrictive economic assumptions, that may not exist in the real world. The assumptions underlying the model are perfect working capital markets, assets that provide a uniform income stream, investors behave rational and tax does not exist. In the model of Miller and Modigliani (1966) a firm's value is calculated by multiplying the permanent earnings of the firm with the outcome of dividing one through the market interest rate. Barth et al. (1999) assume accounting earning to be a proxy for permanent earnings to adjust the model. This enables them to test whether firms with a pattern of increasing earnings have higher price earnings relation than firms without this pattern. The model of Ohlson (1995) is somewhat more extensive than that of Miller and Modigliani (1966). The basis for this model is formed by the assumption that share prices are determined by the present value of future dividends paid by the company. The market value of a firm is expressed as the present value of these dividends and the present value of expected abnormal earnings by the firm in the future.

To test whether firms with a pattern of increasing earning have a higher price-earnings relation than firms without this pattern Barth et al. (1999) used a sample of all firms on Compustat for the period 1982 till 1992. The firms that have been included in their research had to be listed for at least five years. In this way the pattern of earnings and the possible effects of the pattern could be distinguished. As mentioned earlier Barth et al. (1999) found that income smoothing has a positive effect on the

price-earnings relation. A firm with a pattern of increasing earnings has a earnings price-earnings relation that is significantly higher than for firms without a pattern of increasing earnings. There is a negative side to the existence of the higher price-earnings relation however. If the pattern is broken, the price-earnings relation will reduce significantly. The positive effect of the smoothing of income is reduced. Should the pattern be broken several times in a row a negative price-earnings relation arises.

A possible explanation for the price-earnings relation and the way it changes can be found in Tucker and Zarowin (2006). Their research was directed at examining whether income smoothing can be associated with improving earnings informativeness, or that it disturbs the accounting information of current and past earnings about future earnings and cash flows of a firm. To perform their research the approach of Collins et al. (1994) was used. This approach examines how much information of future earnings is reflected by the change in current stock prices. According to Tucker and Zarowin (2006, pp. 252) this approach is superior to estimating the direct relationship between a firm's future and its current and past earnings for two reasons. The first reason is that future income is not only predicted by realized income, but by other information sources as well. Information from these sources can affect future income, although it has not yet been included in the firm's past earnings. Secondly Tucker and Zarowin (2006, pp. 252) state that although a firm's current income may not be affected by changes in future income, its stock price might.

To investigate the earnings informativeness of income smoothing, Tucker and Zarowin (2006) focussed on the association between the current stock returns and future earnings of a firm. To test this association the cross-sectional version of the Jones model, as modified by Kothari et al. (2005), has been used. The Jones model has been adjusted by Kothari et al. (2005) to prevent errors in the specification of accruals when firms perform extreme (very good or very bad). Firms have higher accruals in the case of an extreme performance. If the Jones model is used, more of these accruals are being specified as discretionary accruals, which indicates more earnings management. To correct for these circumstances the model Kothari et al. includes the return on assets variable. In this way the performance of the firm is taken into account, and thus corrected. The sample under investigation consisted of the 2004 version of Compustat's combined industrial annual data file over the period 1993-2000. From this data firms in the financial and regulated industries were excluded.

Tucker and Zarowin (2006) found that the stock price of a high-smoothing firm impounds future earnings more than stock prices do at low-smoothing firms. The income smoothing theory can be used to explain this. Management's purpose of using income smoothing is to report a consecutive line of increasing earnings. It can therefore be expected that firms that engage in more income smoothing than other firms will have a more predictable pattern of earnings. Although the research by Tucker and Zarowin (2006) provides outcomes that align with the theory, it has two potential flaws. The first potential flaw is that the basis for the research is market efficiency. If markets are not efficient the outcomes of the research may be completely different. Secondly, a potential measurement error exists because as Tucker and Zarowin (2006) state a manager's discretionary behaviour is unobservable.

4.3 Empirical evidence for managing goodwill impairments

In this section the link between earnings management and the impairment of goodwill will be discussed based on a summary of prior research performed on this subject. In the following subsections a distinction will be made between different kinds of research to give different insights into the subject. Amongst others the effects of a goodwill announcement on the capital market and the effects of a change in CEO will be discussed.

4.3.1 Main evidence of managing goodwill impairments

As already has been mentioned shortly in the introduction of this thesis, research regarding the usage of goodwill impairments as a tool for earnings management has recently been performed by Van de Poel et al. (2008). The research was conducted by studying a sample of listed companies in 15 European Union countries preparing financial statements under IFRS during the period 2005-2006. The findings of this research, based on the regression analysis as described in appendix 2, are that the goodwill impairment decisions for the investigated firms are highly associated with financial reporting incentives. More specifically, the findings of Van de Poel et al. (2008) support the view that firms typically take their impairments in two situations. The first situation is when earnings can be described as unexpectedly high, by taking impairments firms smooth their income. The second situation is when earnings can be described as unexpectedly low, under these circumstances firms engage in big bath accounting. This evidence is therefore in accordance with the evidence of the existence of income smoothing and big bath accounting as discussed in the previous section.

In earlier research Zucca and Campbell (1992) investigated the link between goodwill impairments and earnings management as well. Because of an increase in asset write downs and write offs, there was a need to formulate an answer to certain empirical questions. Amongst others Zucca and Campbell (1992) investigated whether a timing pattern of goodwill impairments could be distinguished, and what possible motivation could exist for this pattern. To perform their research Zucca and Campbell (1992) made use of a random walk model. This means that the starting point of their research is that no pattern in the path of expected earnings exists (Aczel and Sounderpandian, 2002, pp.599). Therefore earnings are expected to follow a path that can be called ‘random’. The consequence of this choice is that the future course of the firm’s earnings is unpredictable and that the best forecast of earnings is equal to their present value, corrected with a random error that can be both positive and negative.

The sample they used by Zucca and Campbell (1992) consisted of 77 write downs made by 67 firms during the period 1981-1983. The results of Zucca and Campbell (1992) corresponded to the theory regarding earnings management. Of the 77 write downs 45 were recorded when a firm’s earnings were below the expected results, which is an indication for big bath accounting. Indications for income smoothing were found as well, 22 of the write downs were recorded when a firms earnings were above the expected results. Zucca and Campbell (1992) interpreted these results as evidence that write-downs were being used to manage earnings, which is consistent with the results of Van de Poel et al. (2008) as discussed previously.

In a continuance on the discussion of the agency theory earlier in this thesis, Van de Poel et al. (2008, pp. 6-7) refer to research performed by Alciatore et al. (1998). Their findings support the view that a firm's management could use the discretion in GAAP regarding the impairment of goodwill for their self interest. An example given by Alciatore et al. (1998) to support this view is the usage of the flexibility in GAAP to avoid impairments. The recognition of impairments is avoided because the firm's management is concerned about the potentially negative reactions this might have on the firm's value of stock. On the other hand firms could also recognize an impairment loss to smooth their income should this be unexpectedly high in a year. Impairments could also be used to maximize losses, by taking a bath, and accelerating impairment when results are low. According to Alciatore et al. (1998) this suggests that the discretion managers have could be used for strategical reasons by adjusting the timing or the amount of the impairment.

According to Van de Poel et al. (2008, pp. 7) empirical evidence that is consistent with this behaviour is found by Francis et al. (1996). According to their research managers use two kinds of determinants regarding the impairment decision. On the one hand market conditions that influence the value of an asset, like the firm's performance, the economic climate the firm is in and competition it endures, are taken into account. On the other hand management's personal reporting incentives are of influence. As already stated by Alciatore et al. (1998) this means that a firm's management may take advantage of its discretion in accounting regulation to influence earnings. Impairments may not be recognized when needed, or recognized to a greater amount than necessary because management can prosper from it.

Francis et al. (1996, pp. 134) further investigated the extent to which impairment decisions can be explained by proxies for incentives for management to manipulate both earnings and the impairment of assets. To conduct their research they used a multivariate analysis that was based on a weighted tobit model. The usage of this analysis enabled them to make estimations about the importance of impairment and earnings management variables, in order to explain both the actual write-off and the amount of the write-off made by a firm (for the model see appendix 3). A tobit model can, in its simplest form, be described as an econometric model in which the dependent variable is censored, which means that values below zero are not observed[1]. Using this model, Francis et al. (1996, pp. 134) found that for the write-offs, both manipulation and impairment are important determinants, but that incentives play a substantial role in explaining such items as goodwill write-offs.

Other research regarding the link between earnings management and goodwill impairments has been performed by Beatty and Weber (2006). Their research was directed at examining which potentially important economic factors influence the impairment decision of a firm. Factors like debt contracting, the firm's bonus schemes and the time the firm's CEO was in place were taken into account to test their influence on the impairment decision. To perform their research Beatty and Weber (2006) used the regression analysis as depicted in appendix 4 on a sample of 553 firms. To be enclosed in the sample, it had to be likely that firm would recognize an impairment and financial data for at least twelve consecutive quarters had to be available. By setting these requirements for the firms to be enclosed in their sample Beatty and Weber (2006) increased the power of their test. Firms were likely to report an

[1] http://economic.about.com

impairment, therefore there had to be an explanation should such a loss not be recognized. The findings of Beatty and Weber (2006) are consistent with previously discussed literature. The impairment decision made by the management of a firm is influenced by its debt contracts, bonus schemes, possible delisting from a stock exchange and the time a CEO is in place.

Bens (2006) however questioned the model used by Beatty and Weber (2006, pp. 296). He argued that accounting decisions can be quite complex. An, according to him, simple linear framework as used by Beatty and Weber (2006, pp. 296) may not capture many of the interesting subtleties involved in these decisions. Moreover he argued that many of the proxy variables used by the Beatty and Weber were difficult to interpret unambiguously. This criticism does not only indicate that the regression model as used by Beatty and Weber (2006) should possibly be adjusted to capture more of the complexity of accounting (impairment) decisions, but possibly also the model used by for example Van de Poel et al. (2008). They should at least be given a thorough examination before they are used.

The final empirical research that will be discussed here is that of Henning et al. (2004, pp. 119). This research was conducted to investigate the criticism on US GAAP regarding the amount of and the timing of goodwill impairments before the implementation of SFAS 142. According to the critics firms were given too much discretion regarding the impairment decision. SFAS 142 are regulations regarding the impairment of goodwill as IFRS 3. For their research Henning et al. (2004) examined 171 firms in the United Kingdom and the United States that announced an impairment of goodwill or a revaluation of intangible assets during the period 1990 till 2001. Henning et al. (2004) used the regression analysis as depicted in appendix 5.

The outcomes of the research of Henning et al. (2004) indicated that the write-offs made by firms in the United States and revaluations made by firms in the United Kingdom can be explained by the models they used. When the change in value of goodwill, after the acquisition that led to the recognition of goodwill, is taken into account no significant differences were found between the write-offs and revaluations and their predicted amounts. According to Henning et al. (2004) however it was disturbing that during the transition to SFAS 142 significantly higher than predicted impairments were taken. This means that although the impairments could be explained the timing of the recognition of the impairment could not. The advantage of an impairment loss during the transition period was that the impairment was shown as a non-operating loss in the year of the adoption of SFAS 142, but as an operating expense in subsequent years. According to Henning et al. (2004) these outcomes were consistent with the findings of Elliott and Shaw (1988) (see also section 4.3.3) regarding big bath accounting. The firms in the United States appeared to have postponed the effects of the impairment and the firms in the United Kingdom appeared to time the income increasing effect of the revaluations of goodwill. These findings indicate that a certain amount of influence was used in determining the timing of the impairment decision, because a different timing of the impairment (and revaluation) could have had a major influence on the presented income in the financial statements.

4.3.2 The effect of a change in CEO

A completely different direction of research that supports the link between earnings management and goodwill impairments, has been performed by Masters-Stout et al. (2007). This research was directed at the influence of a change in CEO on the goodwill impairment decision. The thought behind the ration for this research is that CEOs tend to manipulate the impairment decision in the early years of their tenure. Impairments taken shortly after the new CEO has taken office can be blamed on the previous CEO. If this difference would exist, it would imply that the regulations regarding the impairment of goodwill are not implied consistently. To investigate the possible effects of a change in CEO Masters-Stout et al. (2007) examined the change of this position of the 500 biggest companies in the world during the period 2004-2006. The results of the analysis (Masters-Stout, 2007, p. 13) provide compelling evidence that more goodwill is being impaired by new CEOs than their senior counterparts. A relationship between net income of a firm and the amount of impairment recognized was found for all CEOs. The impairment increases when net income of a firm decreases. In situations were firms report a loss, significant evidence exists that CEOs take more impairment losses. These last two findings can be associated with big bath accounting. Overall the results indicate that new and senior CEOs apply the impairment rules differently.

In their analysis of the effects of a change in CEO, Masters-Stout et al. (2007, pp. 4) also referred to prior research regarding earnings management. A short summary of the for this thesis relevant findings is discussed here.

Jordan and Clark (2004) have provided evidence for the usage of big bath accounting which is consistent with the findings of Henning et al. (2004) as discussed in section 4.2.2. They found that when firms recognized an impairment loss after the introduction of impairment rules by the FASB, their performance was significantly lower compared to the non-impairing group (before introduction of these rules). This implies that firms take as much losses at once, indicating big bath accounting.

Sevin and Schroeder (2005) performed research regarding the transitional year of SFAS 142. Their findings suggest that smaller firms were more negatively impacted by these new regulations, and were more likely to take impairment losses than bigger firms. Sevin and Schroeder (2005) therefore argued that goodwill seemed to be lending itself to some level of manipulation. Relevant factors in the manipulation of an impairment decision seem to be a firms size and its level of earnings.

A reference to other research regarding CEO changes was made as well by Masters-Stout et al. (2007). Strong and Meyer (1987) concluded, as Masters-Stout et al. (2007) did, that a change in senior management was of significant influence on the impairment decision. If a distinction is made between new CEOs that come from within the firm or the ones that are attracted externally a distinction can be made as well. Externally attracted CEOs tend to influence the decision more than internally attracted CEOs. This is supported by research done by Wells (2002), who also found evidence of earnings management that decreased income particularly for externally attracted CEOs.

Lapointe-Antunes et al. (2008) also investigated the effects of a change in CEO on the relation of earnings management and goodwill impairments (for the model see appendix 6). They found that the adoption of the impairment approach led to large recognitions of impairment losses for Canadian firms. Firms were found to both overstate and understate the impairment losses. Higher than necessary goodwill impairment were found to be reported under several conditions, amongst others a change in CEO. Another reason to recognize an impairment loss was to minimize the deviation between a firms return on equity and return of assets and that of the industry it operated in. Lapointe-Antunes et al. (2008) found this deviation to be important to recognize smaller impairment losses as well, firms did not want to underachieve relative to the industry they operated in. The recognition of smaller impairment losses proved to be caused by unrealized gains on stock options, the issuance of new equity or debt capital and whether a firm has a double stock listing. The impact of reporting lower than average results would influence the values and costs of these attributes, therefore firms try to report similar results as in the industry they are in.

Finally the findings of this research seem to indicate that the composition of the audit committee of a firm is of influence to the impairment decision as well. Financially literate and independent audit committee members seem to have an influence on the goodwill impairment decision. These members seem to be able to constrain the opportunism of management with respect to transitional goodwill impairment losses. Noticeable for this research is that Lapointe-Antunes et al. (2008) divided the total sample into industry groups (energy, materials, industrial, consumer discretionary, consumer staples, health care, financials, information technology, telecommunications and utilities), according to TSX Indices, as given by Compustat.

4.3.3 The effect of incorporating the capital market

Research focusing on reactions of the capital market after the announcement of goodwill impairments, instead of the timeliness and accuracy of goodwill impairments, has been performed by Elliott and Shaw (1988). They have investigated the market reactions on the reporting of impairment or restructuring charges of 240 firms during the period 1982-1985. To be included in the research the charges had to be at least one percent of the firms year-end assets. The research performed by Elliott and Shaw (1988) is based on a regression analysis as depicted in appendix 7, which is consistent with the research approach adopted by Van de Poel et al. (2008), Beatty and Weber (2006) and Masters-Stout et al. (2007).

Elliott and Shaw (1988) found that the firms in their sample recognized impairment losses due to economic difficulty. In the three years prior to the impairment the firms experienced a declining return on assets and market value related to earnings. Share returns of the firms were found to be significantly below the average of their industry. The firms also announced a more than average decline in dividend pay-outs and were confronted with more bond decreases than other industries. This can be explained as follows, in economically difficult times the firms performed poorly. Both the firm's stock returns and dividends pay-out reflected these conditions. Consequently, the recognition of an impairments loss was necessary, because the value of the firm and its assets had declined.

Elliott and Shaw (1988) found the consequences of the recognition of an impairment on the stock market were found to be negative. After the loss was recognized the firm's industry-adjusted stock returns remained negative. During the first two days after the announcement of the impairment loss the share return proved to be significantly negative. These findings also support the view that the firm recognized an impairment during economic difficulty. Problems are not solved by recognizing an impairment loss, the firm is still expected to encounter economic difficulties. Zucca and Campbell (1992) also focused on the capital market and found that there was no significant market reaction to impairment announcements. Their research period covered a shorter period however, 60 days before and after the impairment announcement. Although this finding is in contrast to the findings of Elliott and Shaw (1988) it could be caused by the period captured in the research.

4.3.4 Other insights

The research carried out by Li, Shroff and Venkataraman (2005) has already been discussed shortly in chapter 3. One of the purposes of the research was to investigate whether firms that recognized an impairment loss had overpaid for acquisitions made in the five years prior to the impairment. The sample of Li, Shroff and Venkataraman (2005) consisted of 385 firms in the United States that announced a loss caused by a transition goodwill impairment during the period 2002-2003. To be included in the sample the announcement of the impairment loss had to be the first announcement of such kind since the beginning of 2002.

Based on their particular sample and regression models (see appendix 8) Li, Shroff and Venkataraman (2005) found that, relative to a control sample of acquiring firms, the firms announcing one or more impairments losses during their research period were more likely to have overpaid for the target acquisitions made during the five years prior to the impairment. Their tests also revealed that a negative correlation exists between the impairment loss and the firm's post-acquisition return performance. This means that after the impairment the firms performance does not improve. This is consistent with prior discussed research from Elliott and Shaw (1988).

Hayn and Hughes (2006) have examined whether investors were able to effectively predict a goodwill impairment based on the financial disclosures about acquired firms. They found that the disclosures available for investors were not providing enough information to enable them to act in such a manner. This was not the only findings of their research however. By using a prediction model, as depicted in appendix 9, on a sample of 1276 write-offs on acquisitions over the period 1988-1998, they discovered a time lag between the deterioration of the results of the acquired firm and the recognition of an impairment loss. This means that impairment losses are not recognized immediately, but only after a certain amount of time, which was found to be three to four years on average. Hayn and Hughes (2006, pp. 226) suggest that for some firms, this lag is acceptable. It enables the firm to recover, therefore this behaviour should not be seen as delaying impairments. About one out of three firms however experienced a persisting poor performance of the acquired entity that lasted for six up to ten years before the recognition of a write-off. According to Hayn and Hughes (2006) this might reflect managerial discretion in the timing of goodwill write-offs in order to meet certain reporting objectives.

Conclusion

Based on the empirical evidence discussed in this section it can at least be suggested that the impairment decision of firms is influenced by managerial incentives that are not purely economic. Both the potential for discretion because of firm specific characteristics and the flexibility in accounting standards play a role in these incentives. The research discussed has provided many different insights regarding the link that exists between earnings management and the goodwill impairment decision. The insights that have been discussed in the third section of this chapter will be mainly used to develop a model that can be used to examine this link even better and further.

4.4 Summary and conclusion

In this chapter empirical research that provided evidence for the existence of earnings management has been discussed. Evidence provided suggests that managers manage a firm's earnings, by engaging in income smoothing or by taking a bath. Evidence regarding the link between earnings management and the impairment of goodwill has been provided as well. This evidence suggests that the impairment decisions of a firm are influenced by managerial incentives that are not purely economic. Both the potential for discretion because of firm specific characteristics and the flexibility in accounting standards plays a role in these incentives.

4.5 Overview of important literature

In this section an overview of the important empirical literature discussed in this chapter will be provided. Table 1 provides an overview of the empirical literature discussed in the second section, the area of earnings management. Table 2 provides an overview of the discussed empirical literature in the third section, the link between earnings management and goodwill impairments.

Table 1: Overview of important literature regarding earnings management

Author (Year of publication)	***Research question***	***Research method***	***Sample***	***Research Findings***
Healy (1985)	Does management select income increasing accounting procedures in order to maximise its bonuses?	Analysis of firm accruals and changes in accounting methods.	94 companies listed on the 1980 Fortune Directory.	The accrual policies of managers are influenced by incentives regarding their bonus schemes. Changes in accounting procedures can be related to changes to these schemes.
Guidry, Leone and Rock (1999)	Are discretionary accrual decisions used by business-unit managers to maximize short-term bonuses?	The modified Jones model, Healy's proxy for discretionary accruals and inventory reserve measure.	179 business-unit years for the time period 1994-1995.	Earnings are managed by U.S. business unit managers in order to maximize short-term bonuses in a manner that is found to be consistent with Healy (1985)
DeFond and Jiambalvo (1994)	Is the violation of debt covenants of any influence on accounting choices made in the year of and the year preceding the violation?	Time-series and cross-sectional models.	94 firms that during the period 1985-1988 were known to have violated one or more debt covenants.	In the year preceding the violation abnormal total and working capital accruals were found to be significantly positive. In the year of violation abnormal working capital accruals were found to be positive,
Han and Wang (1998)	Did U.S. oil firms during the Persian Gulf crisis use earnings management to decrease their income?	Time series model.	Oil firms during the 1990 Persian Gulf crisis in the U.S.	U.S. firms in the petroleum refining industry used accruals (earnings management) to decrease their earnings. Firms in the crude petroleum and natural gas industry did not decrease their income (no earnings management).

Table 1 (part 2)

Author (Year of publication)	*Research question*	*Research Method*	*Sample*	*Research Findings*
DeFond and Park (1997)	Do managers engage in income smoothing because of job security while considering both firm performance of current and future periods?	A variation of the Jones model.	All available observations on the 1994 Compustat Industrial.	Eighty-nine percent of the firms that were expected to smooth earnings actually acted in such a manner. Earnings management was found to be used to smooth firm income both when income was higher and lower than targeted.
Barth, Elliot and Finn (1999)	Do firms that smooth income have higher price-earnings multiples than firms that do not smooth income?	The models of Miller and Modigliani (1966), and Ohlson (1995).	All firms on Compustat for the period 1982 -1992.	Firms with a pattern of increasing earnings have a higher earnings multiple than others. If the pattern is broken, then the earnings multiple will reduce significantly.
Peek (2004)	Is accounting discretion regarding provisions used by Dutch firms in the 1990's to manage earnings?	Descriptive statistics, a regression equation, a regression model and diagnostic test.	134 non-financial Amsterdam Stock Exchange listed firms that between 1989-2000 were listed for at least three years.	Unexpected changes in provisions are a benchmark for the future results of a firm when a firm's income of the previous year is higher than current income.
Tucker and Zarowin (2006)	Does a positive relation exist between income smoothing and earnings informativeness?	The Cross-sectional version of the Jones model, as modified by Kothari et al. and an own alteration of the Jones model.	The 2004 version of Compustat's combined industrial annual data file over the period 1993-2000. Financials and regulated industries were excluded.	Future earnings are more impounded by current stock prices of high smoothing firms than low smoothing firms.

Table 2: Overview of important literature regarding the link with goodwill impairments

Author (Year of publication)	*Research question*	*Research method*	*Sample*	*Research Findings*
Van de Poel, Maijoor and Vanstraelen (2008)	Are firms more likely to take a goodwill impairment when their earnings are 'unexpectedly' low or high?	Regression analysis.	Listed companies in 15 EU countries preparing financial statements under IFRS in the period 2005-2006.	Companies typically take their impairments in two situations, when earnings can be described as unexpectedly high, to smooth income and when earnings can be described as unexpectedly low, to take a bath.
Zucca and Campbell (1992)	Does a timing pattern of goodwill impairments exist? What could be the explanation for this pattern?	Information content study.	77 write-downs taken by 67 firms selected from the NAARS database during the period 1978-1983.	There is evidence of both big bath accounting and income smoothing. There is no significant market reaction to the announcement of the write-off.
Francis, Hanna and Vincent (1996)	Are write-off decisions driven by manipulation or impairment, and are these factors of influence on the market reaction of these write-offs?	Multivariate analysis based on a weighted tobit model.	3909 potential write-off announcements published by PR Newswire during 1989-1992.	Both manipulation and impairment were found to be important determinants, but incentives play a substantial role in explaining such items as goodwill write-offs.
Beatty and Weber (2006)	By what factors is the write-off decision affected, and conditional on taking a write-off, what is the percentage of the goodwill that is actually written off?	Regression analysis.	553 Compustat firms that were relatively more likely to recognize a goodwill write-off.	A firms debt contracting, bonus schemes, turnover of stock and exchange delisting incentives affect the decisions to accelerate or delay the recognition of an impairment.

Table 2 (part 2)

Author (Year of publication)	*Research question*	*Research Method*	*Sample*	*Research Findings*
Masters-Stout, Costigan and Lovata (2007)	Do newer CEOs tend to impair more goodwill than senior CEOs?	Regression analysis.	CEOs of the 500 biggest firms over the period 2004-2006.	New CEOs impair more goodwill than their senior counterparts.
Lapointe-Antunes, Cormier and Magnan (2008)	Can reporting incentives and constraints be associated with the magnitude of transitional goodwill impairment losses reported by Canadian firms?	Multivariate tobit model.	All firms listed on the TSX that report under Canadian GAAP and have a positive goodwill balance at the year-end preceding the adoption of Section 3062. (Compustat)	Firms influence the impairment decision to minimize the deviation from their industry median ROE and ROA. Large impairment losses were recognized when the impairment approach was implemented, as well as when a change in CEO was experienced.
Henning, Shaw and Stock (2004)	Are firms given too much discretion in the determination of the amount and timing of goodwill write-offs?	Regression analysis.	171 firms in the UK and USA that announced a goodwill impairment or revaluation during the period 1990-2001.	Write-offs and revaluations can be explained by the models used, the timing not. Write-offs were found to be delayed.
Elliott and Shaw (1988)	What is the effect on share prices when a write-off is disclosed?	Regression analysis.	240 firms that reported discretionary write-offs of at least one percent of their assets during 1982-1985. (Industrial Compustat Tape).	Firms announced impairment losses due to economic difficulty. After the recognition of the loss the firm's industry-adjusted stock returns remain negative.

Table 2 (part 3)

Author (Year of publication)	*Research question*	*Research method*	*Sample*	*Research Findings*
Li, Shroff and Venkataraman (2005)	Is the recognition of an impairment loss positively correlated with indicators of overpayment for the original acquisition and negatively correlated with post-acquisition performance of the acquirer?	Regression analysis.	385 announcements of transition goodwill impairment losses made by US firms from January 2002 to December 2003 in the Lexis-Nexis database.	Firms that announce an impairment are more likely to have overpaid for the acquisitions made during the five years prior to the impairment relative to a control sample of acquirers. The impairment loss is positively correlated with indicators of initial overpayment and negatively correlated with the firms' post-acquisition return performance.
Hayn and Hughes (2006)	Are investors able to estimate goodwill write-offs and financial performance of acquired businesses based on financial disclosures?	Prediction (regression) model.	1276 write-offs from the Securities Data Corporation (SDC) database in the period 1988 to 1998.	Impairment losses are not recognized immediately when performance deteriorates, but only after a certain amount of time, on average after three to four years

Chapter 5: Research design

5.1 Introduction

In this chapter the research design of this thesis will be developed. This development will be made based on the discussion of the previous chapter, the use of earnings management and the use of goodwill impairments as a tool for earnings management. The first step in this process is the development of several hypotheses based on the literature that has been discussed in earlier chapters of this thesis. This is the subject of the next section. The second step in developing the research design is to find or to develop a model or several models that can be used to test the hypotheses. The model that will be used in this thesis will be discussed in the third section of this chapter. The sample that will be used in this research will be discussed in the fourth section. The gathering of the data that is needed to conduct the research is described and discussed in the fifth section. This chapter ends with a short summary and conclusion.

5.2 Development of hypotheses

The basis for the empirical research in this thesis is the research performed by Van de Poel et al. (2008). Therefore, if relevant and correct, the same reasoning as applied by Van de Poel et al. (2008) can be used in this thesis. Van de Poel et al. (2008, pp. 13) make a distinction between two types of errors in financial reporting that can be caused by irregularities in the goodwill impairment test. First, it is possible that firms recognize an impairment loss when this is not necessary. This means that although the fair value of goodwill is higher than its book value, an impairment loss is reported. This kind of error is also called a Type I error. Secondly firms can fail to recognize an impairment loss, although the fair value of goodwill is less than its book value. This kind of error is also called a Type II error. The two types of errors can be summarized in the following figure.

		Financial reporting	
		Impairment reported	No impairment reported
Goodwill	Fair value > Book value	Type I error	correct
	Fair value < Book value	correct	Type II error

Figure 1: The impairment matrix

Source: Van de Poel et al (2008, pp. 31)

This impairment matrix will be used to develop the hypothesis that will be used and answered in the reminder of this research.

According to Van de Poel et al. (2008, pp. 13-14) agency contracts between managers and shareholders of a firm are designed to align managerial incentives with shareholder benefits. To support this statement several examples are given by Van de Poel et al. (2008). Managers are for instance granted stock options or bonus plans that are earnings-based. By granting these rewards to managers they might be encouraged to maximize a firm's profit and thus act in the way shareholders desire. It is

therefore expected that managers have incentives to maximize firm profit by postponing the recognition of goodwill impairment losses to maximize their own wealth. If such a circumstance occurs it is called a Type II error. Not only is this consistent with Van de Poel et al. (2008), but it can also be supported by empirical evidence as provided by Hayn and Hughes (2006, pp. 226) that has been discussed in section 4.3.4 regarding the timing of goodwill impairments. Their findings support the view that a delay in accounting for write-offs exist. It is possible that this delay in the timing of goodwill write-offs reflects the use of managerial discretion to meet certain reporting objectives.

It is possible however that maximizing a firm's reported earnings is not the optimal strategy for managers. To support this statement Van de Poel et al. (2008, pp. 13-14) refer to Kirschenheiter and Melumad (2002). These authors found incentives for managers to engage in income decreasing behaviour. Large earnings surprises were found to have a negative impact on the inferred precision of earnings, reducing the effect it has on the value of a firm. Mangers therefore have incentives to reduce earnings surprises. The first incentive is to smooth earnings when they can be described as unexpectedly high. The second incentive is to take a big bath when earnings are sufficiently low. It is possible to minimize earnings in several ways. First it is possible to recognize an impairment loss when it is necessary, instead of postponing it, which will lead to less Type II errors. Secondly the recognition of impairment losses could actually be accelerated, which will lead to more Type I errors. Considering this, the only conclusion can be that the timing of goodwill impairments can have a great impact on reported earnings.

The timing of the recognition of impairment losses can be influenced by management in using the discretion that is incorporated in the test. More specifically management can influence the assumptions that form the basis for the impairment test. Managers are therefore given the discretion necessary to use earnings management. Research supporting this view has been discussed in section 4.3.1 (Zucca and Campbell, 1992; Alciatore et al., 1998; Francis et al., 1996; Beatty and Weber, 2006).

From the above discussion regarding Type I and Type II errors and the discussion of empirical evidence about the link between earnings management and goodwill impairments in the previous chapter the first hypothesis can be derived:

H1: Firms are more likely to recognize a goodwill impairment loss when their earnings can be described as unexpectedly low, ceteris paribus.

This hypothesis can be linked back to the discussion regarding big bath accounting. The reasoning for this is as follows. If a firm has earnings that can be described as unexpectedly low, the firm's overall performance can be described as below the desired level. In these circumstances a firm's management is more likely to recognize an impairment loss. By recognizing an impairment that is actually bigger than necessary, a Type I error, management provides itself with the opportunity to prevent (up to a certain level) the recognition of impairment losses in the future and thus to improve future earnings. Increasing future profit is not possible however since the goodwill impairment is irreversible. Not only can this hypothesis be linked back to big bath accounting, the bonus plan hypothesis as dis-

cussed in chapter two can also be used. Should managers be unable to reach the profit level where they receive a bonus in one year, they improve their chances of receiving this bonus in coming years by making use of big bath accounting. Based on these arguments, it is expect that this hypothesis will hold when tested by the model that will be developed in the next section.

Based on the discussion of income smoothing, the second form of earnings management discussed, from the second chapter, the second hypothesis can be developed:

> ***H2: Firms are more likely to recognize a goodwill impairment loss when their earnings can be described as unexpectedly high, ceteris paribus.***

The reasoning for this hypothesis is as follows. Under the circumstances that a firm has earnings that can be described as unexpectedly high, the ceiling of management's bonus will probably be reached. The bonus received by management will not increase after a certain profit level anymore. If these circumstances occur management has an incentive to recognize an impairment loss. By accelerating the recognition of the loss, management has a bigger chance of receiving their bonus in next years as well, since it will not be necessary to recognize the impairment at that moment.

The choice for recognizing an impairment loss, or not, can also be derived back to management's desire to present a consecutive line of increasing earnings. Depending on the absolute size of the impairment, it can have a big influence on the consecutive reported earnings by a firm. It is therefore well possible that management has incentives to postpone the impairment loss and to pass the impairment on to the future in the case of poor performance. But, when looking at the case that earnings can be described as unexpectedly high, earnings can be smoothed by recognizing an impairment loss even though this is not necessary. This would be a Type I error. As can be concluded from this discussion, the hypothesis can be discussed form several different points of view, the first is based on the bonus plan hypothesis, the other is based on the incentive to smooth earnings. Based on the latter, it is expected that this hypothesis will hold when tested by the model.

Overall it can be concluded that the first two hypotheses imply that it is expected that managers are encouraged to underreport earnings (by recognizing impairment losses) when there are large earnings surprises, both positive and negative. Management has an incentive to recognize all impairments, which leads to fewer Type II errors, and has an incentive to accelerate impairments, which leads to more Type I errors. In this way earnings in the future can be boosted, because it is not necessary to recognize an impairment (also see Van de Poel et al., 2008, pp. 15). By answering these hypotheses an answer to the first research question can be formulated.

To answer the second research question of this thesis, the empirical results of the first two hypotheses are used. The only difference with the first two hypotheses is that the sample will be divided into predetermined industrial sectors. Since there is no specific empirical research regarding this specific topic an expectation can only be based on reasoning. In this thesis the following reasoning will be followed. Industrial sectors differ in many ways, for example in the way management is granted bonus schemes and political attention. These kind of differences will form the basis of the choice for specific accounting decisions as described in the positive accounting theory. A firm that receives a lot of political attention has incentives to choose different accounting methods than a firm that does not receive this attention. These conditions are however normally not only specific for a certain firm, but most of the times for a complete industrial sector. Between the different industrial sectors differences can easily exist however. A good example of these differences can be found in Han and Wang (1998), as discussed in chapter two, where oil firms received a lot of political attention. A specific group of firms in the oil industry, the petroleum refining industry, engaged in earning management to lower their reported income, and thus lower the political attention these firms received. Firms in other parts of the industry did not share the same burden however, they did not have to use earnings management to reduce attention.

This does however not mean that although management of firms in some industries are tempted to engage in earnings management more than others, no earnings management takes place in the other industries. Firms in these industries may have other reasons related to the positive accounting theory to engage in income smoothing or big bath accounting. Potential differences between the industries can however only be found by dividing the sample up in different industrial sectors. This division can for example have the consequence that in the entire sample no significant presence of managing of the recognition of goodwill losses can be found, but that a different conclusion has to be made on industrial sector level, or the complete opposite. The third hypothesis that has been developed and is expected to hold is:

H3: Management's influence on goodwill impairment decisions differs between industrial sectors , ceteris paribus.

The reason to expect that there are differences in the influence on goodwill impairment decisions between industrial sectors is build on the positive accounting theory and firm industry specific characteristics. Based on the positive accounting theory it is expected that although managers operate in different industries and may have different reasons to use earnings management, the incentives for them to act in such a manner are the same. Their attitude towards using earnings management is based on the three hypotheses described by this economic theory. If firm industry specific characteristics are taken into account however differences between industries are expected. During the research period not all managers have the same incentive to use earnings management based on these differences.

Based on one of the variables in the model that will be developed in the next section, change in industrial return on assets, it is expected that differences between industries will be found based on the industrial performance. When performance is declining more indications of big bath accounting is expected and when results are increasing more income smoothing is expected. It should however be noted that as stated earlier, managerial incentives, that could possibly not be controlled are most important.

Based on the discussion of empirical evidence in chapter four, section 4.3.2 to be more precise, it would also be possible to include a fourth hypothesis to the research. This hypothesis would be directed at the effects of a CEO change on the goodwill impairment. As has been described in chapter four it is discussed that a change in CEO can result in big bath accounting. It would therefore be hypothesised that firms that experience a change in CEO record more goodwill impairment losses. Important research on this topic has been performed by Masters-Stout et el. (2007). The findings from this research suggest that new CEOs impair more goodwill than CEOs that work for a firm for a longer period. Lapointe-Antunes et al. (2008) found higher transitional goodwill impairment losses when a firm experienced a change in CEO. Based on these studies it is expected that a relation exists between a change in CEO and the recognition of goodwill impairment losses in empirical research. However as will be discussed in the fifth section no database for the change in European CEOs exist, therefore this research is beyond the reach of this research. To be able to conduct this research every financial statement will have to be examined.

5.3 Development of model

To be able to test the hypotheses developed in the previous section, a model has to be found or needs to be developed. The basis for the model that will be used in this thesis can be found in the second model as used by Van de Poel et al. (2008, pp. 21), which looks as follows:

$$IMP_{it} = \alpha_0 + \alpha_1 GW_{it-1} + \alpha_2 SIZE_{it} + \alpha_3 GW\_Country_{it} + \alpha_4 \Delta GDP_{it} + \alpha_5 \Delta indROA_{it} + \alpha_6 \Delta SALES_{it} + \alpha_7 \Delta CFO_{it} + \alpha_8 BATH_{it} + \alpha_9 SMOOTH_{it} + \alpha_{10} LAW_{it} + \alpha_{11} BATH_{it} * LAW_{it} + \alpha_{12} SMOOTH_{it} * LAW_{it} + \Sigma \alpha_j Controls_{itj} + \varepsilon_{it}$$

Some of the variables used in the model will however be removed from it, whereas other variables will be included. As stated earlier, the basis for these changes is formed by the variables used in the models that are incorporated in the appendices. Both the inclusion of new variables and the exclusion of old variables will be based on a discussion and a comparison of the variables as included in the different models. The main focus will be on variables that have proven to have a significant effect on the goodwill impairment decision in previous studies and variables that are interesting to include according to the author. The reasoning of including the variables will be discussed as well. The variables that will be included in the model will now be discussed separately. How the variables were measured in previous research will be discussed as well, since this might have an influence on the outcomes of the model and its analysis.

5.3.1 Dependent variable

The dependent variable in this research will represent the impairment choice made by firms and is called $\boldsymbol{IMPAIR_{it}}$. In this way it is possible to investigate the effects that factors have on the impairment decision made by firms. As has been done in previous research of Van de Poel et al. (2008), Beatty and Weber (2006), Henning et al. (2004) and Hayn and Hughes (2006) this variable will be tested as a dummy or an indicator variable. This means that when the firm has recognized a goodwill impairment loss, the value of the variable equals one, otherwise it will equal zero. According to Van de Poel et al. (2008) the outcomes of the research would not significantly differ if instead of a dummy variable actual amounts would be used. To control for this, the regression analysis will be performed twice. Instead of a dummy variable the amount of goodwill impairments will be used in the calculation. In the case of the second analysis the dependent variable will be named $\boldsymbol{IMPAIR\_AMOUNT_{it}}$. When filling in amounts instead of a dummy variable in an analysis it is necessary to control for the size of the firm. In this way the relative size of an impairment is tested instead of the absolute amount. If the absolute amount would be tested, the results could be distorted. Therefore $\boldsymbol{IMPAIR\_AMOUNT_{it}}$ will be tested as the reported impairment amount deflated by total assets at the end of the previous year. The way the dependent variable is tested is in accordance with the model as used by Lapointe-Antunes et al. (2008) (appendix 6), and partly in accordance with model of Francis et al. (1996, pp. 122-124)(appendix 3). Francis et al. (1996) measure the dependent variable as the reported amount of the write-off deflated by total assets at the end of year t-1 for write-off firms. In the case of non-write-off firms the value equals zero. The model as used by Francis et al. (1996) must therefore be seen as a combination of models that use a dummy variable and models that use amounts. It therefore justifies the usage of both methods.

5.3.2 Independent variables

In this subsection the variables that will be incorporated into the model as independent variables will be discussed. The first independent variable that will be included in the model is $\boldsymbol{GOODWILL_{it}}$. This variable has proven significant in the research of Van de Poel (2008) et. al. at the level of one percent. The reason for including this variable can be found in Lapointe-Antunes et al. (2008, pp. 44). Firms that have a higher amount of goodwill relative to their assets can be expected to incur more and bigger goodwill impairment losses. The ratio behind this is that with the increase in the relative size of goodwill comes a bigger exposure to impairments. It is therefore expected that a positive relation between this variable and the impairment decision exists. $\boldsymbol{GOODWILL_{it}}$ will be measured in the same way as has been done by Van de Poel et al. (2008) (appendix 2), Masters-Stout et al. (2007) and Lapointe-Antunes (2008) (appendix 6). This means that the amount of goodwill on the balance sheet will be deflated by the firm's total assets on the opening balance.

The next variable that will be included into the model is $\boldsymbol{SIZE_{it}}$. This variable has proven to be of significant influence on the impairment of goodwill decision in the research of Van de Poel (2008) et. al. at the level of one percent. According to Van de Poel et al., (2008, pp. 20), this variable is included into the model to compensate for the size of the firm. The variable is measured as a firm's natural logarithm of its total assets, as has been done by Van de Poel et al. (2008) (appendix 2) and Lapointe-Antunes et al. (2008) (appendix 6). In other research, that of Henning et al. (2004, pp. 114, appendix 5) and Francis et al. (1996, pp. 122-124, appendix 3), sales is used to measure the size of the firm. As will be discussed into more detail when discussing other variables of the model that is being developed, sales is already included. Therefore it is chosen to use the natural logarithm of the firm's assets to determine $\boldsymbol{SIZE_{it}}$.

It is expected that a positive relation between the variable and the goodwill impairment decision exists. This means that larger firms are expected to recognize more and bigger goodwill impairment losses than smaller firms. This is somewhat in contrast with Sevin and Schroeder (2005) as discussed in section 4.3.2, who concluded that smaller firms were more likely to recognize an impairment loss. Their research only covered the transitional year of SFAS 142 however. As has been stated, that year led to several accounting standards that deviated from the standard in later years. The outcomes of their research are therefore not completely comparable for this research. Sevin and Schroeder (2005) did however conclude as well that the possibilities of influencing the impairment decision were positively correlated with the size of a firm, implying that bigger firms can influence their impairments more than smaller firms. In this research it is therefore expected that a positive relation exists between a firm's size and the impairment decision.

Before the introduction of IFRS firms reported their financial statements according to local GAAP of the country they were situated in. The standards used in these countries did have their similarities, but differed as well. Because of these differences the point of start under IFRS was not equal for firms coming from different countries. The differences in regulation, regarding for example goodwill, led to differences in reported values of these assets of firms in similar situations in different countries. To compensate for these differences Van de Poel (2008) et. al included the variable $\boldsymbol{GW\_Country_{it}}$, that was found significant at the ten percent level. This variable represented the median proportion of goodwill that firms in a specific country have on their opening balance. In this way the effects of country specific regulations on the occurrence and the height of impairment is taken into account. Since the sample used in this thesis contains firms from different countries with different GAAPs before IFRS as well, the variable is included as well. The variable is expected to have a positive effect on the impairment decision, as stated with $\boldsymbol{GOODWILL_{it}}$ it is expected that the presence of a higher amount of goodwill will lead to an increase in impairments.

As value for $GW\_Country_{it}$ another measurement as Van de Poel (2008) et. al will be used however. In this thesis the variable will represent the average amount of goodwill, as a percentage, on the opening balance of the firms from a specific country used in this research. The underlying reason behind this is that no database with the information needed could be found. The reason to choose for the average amount of goodwill instead of the mean of goodwill on the opening balance in a country is that the average amounts represents the differences between countries better according to the author. In appendix ten the values of both the average and mean amount of goodwill of the countries in this research are presented to show the effects of this choice.

Not only differences in past regulation are of importance to the impairment decision, but the manner in which regulation was and is lived up to as well. For this reason the rule of law code ***LAW*** is added to the model. This factor has been found significant at the one percent level by Van de Poel (2008) et. al. The rule of law code of 212 countries has been published by the world bank. The basis for this score has been formed by a research covering the period 1996 until 2006. For the research six dimensions of governance have been measured, *"voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law, and control of corruption"* (Worldbank, 2007, pp. 1). By measuring these variables, the score represents amongst others how well rules and regulations are lived up to by the inhabitants and firms in a country. Another determining factor for the value of this variable is the quality of law enforcement, like the working of courts and other law enforcing institutes, in a country. By including this variable this kind of country specific characteristics are accounted for. It is expected that a negative relation between this variable and the impairment decision exists. In countries with a higher **LAW** score, management of firms is expected to follow regulations better and thus engage less in earnings management.

To compensate for the economic condition a specific country is in, the variable ΔGDP_{it} is enclosed in the model, as has been done by Van de Poel (2008) et. al, who found it to be significant at the one percent level. The economic conditions of the countries in the sample are most likely to differ, as will probably also be reflected in the results of the firms in these countries. Data from all firms can therefore not be compared without being corrected for the economic conditions, since it could lead to wrong conclusions. The increase of goodwill impairments in a country and its different industries may be attributed to an increase in earnings management, whereas the actual reason is an economically troublesome period. It is therefore expected that this variable has a negative effect on the impairment decision. During periods of growth the number and amount of impairments is expected to reduce, whereas in periods of decline the opposite is expected.

The next variable to be included in the model is $\Delta IndROA_{it}$. This variable will be measured as the change in return on assets of a firm's industry from year t-1 to year t, as has been done by Van de Poel et al. (2008) (appendix 2). In this thesis the return on assets will be calculated after correction for recognized impairment losses. In this way the incentive for engaging in big bath accounting or income smoothing will can be measured more correctly. Would the variable be calculated without this correction, then it could be concluded that the recognition of the impairment loss was not due to earnings management, while in fact it was. Moreover it is important to correct for the impairment decision of a firm, since the firm's return on assets compared to the industrial return on assets will be the basis for the variables that are related to reporting incentives.

The research performed by Van de Poel et al. (2008) showed that $\Delta IndROA_{it}$.was of significant influence on the goodwill impairment decision on a five percent level. The reason for Van de Poel et al. (2008) to include this variable was to control for the overall performance of the industry a firm operates in. In their research Francis et al. (1996) (appendix 3) and Hayn and Hughes (2006) (appendix 9) made use of a return on assets variable as well. The only difference is that they had chosen the ROA on firm level instead of industry level. Because of the importance of industries in this thesis the level of industry performance will be chosen. In this way a comparison can be made between a firm and the industry it operates in. Would be chosen to include the firm ROA, then this comparison would not be possible. It is expected that a negative relation exists between the $\Delta IndROA_{it}$. and the impairment decision. The goodwill impairments recognized in an industry are expected to decline when overall results rise. (In appendix 12 the respective return on assets are depicted together with the industrial codes and the names of these industries).

To control for firm specific factors instead of industry specific factors the variables $\Delta SALES_{it}$ and ΔCF_{it} are included in the model. $\Delta SALES_{it}$ is used to measure the change in a firms sales form year t-1 to t deflated by total assets at the end of year t-1. In the research of Van de Poel et al. (2008, pp. 21) the variable proved to be significant on the one percent level. The purpose of including the variable is to be able to enclose the economic condition of a firm in some manner. If the firm is experiencing (strong) decreases in sales it could be a possible reason for the recognition of a goodwill impairment, not taking a possible increase of margins on sales into consideration. The variable is therefore expected to have a negative effect on the goodwill impairment decision of a firm. Variable ΔCF_{it} has proven to be significant at the five percent level by Van de Poel et al. (2008). As with $\Delta SALES_{it}$ it is included in the model to enclose the economic condition of the firm in some manner. The variable is measured as the change a firm experiences in operating cash-flows from year t-1 to year t, divided by the total assets of the firm at year t-1. Although none of the other researches described in this thesis incorporated a variable like ΔCF_{it} it is included in this model anyway. The reason for this is to be able to include the firms economic condition in a correct manner. Both variables complement each other.

To include the expectations regarding earnings management in the model, the variables $\boldsymbol{BATH_{it}}$ and $\boldsymbol{SMOOTH_{it}}$ are incorporated. The value of these two variables depends on the value of the dependent variable. If the regression is being performed with $\boldsymbol{IMPAIR_{it}}$, the dummy variable, both $\boldsymbol{BATH_{it}}$ and $\boldsymbol{SMOOTH_{it}}$ will be used as a dummy as well. This is consistent with the model of Van de Poel et al. (2008, pp. 19/22), who found both variables to be significant at the level of five percent. $\boldsymbol{BATH_{it}}$ will have a value of one when earnings can be describes as unexpectedly low and a value of zero otherwise. The variable therefore is an indication of big bath accounting by a firm. It is therefore expected that this variable is positively related to the impairment decision. Low earnings are an indication of poor firm performance, which could lead to the recognition to an impairment loss. $\boldsymbol{SMOOTH_{it}}$ will have a value of one when earnings can be described as unexpectedly high and a value of zero otherwise. In the case of the recognition of an impairment loss only the situation of unexpectedly high earnings can be taken into account, since negative impairments are not possible. The variable is therefore an indication of income smoothing. It is expected that a positive relation exists between the variable and the impairment decision. Unexpected good performance of a firm provides an incentive to smooth income by recognizing an impairment loss. When earnings are considered unexpectedly high and low will be discussed in the next section.

When the regression is being performed with $\boldsymbol{IMPAIR\_AMOUNT_{it}}$ the variables described in the last paragraph will be called $\boldsymbol{BATH\_AMOUNT_{it}}$ and $\boldsymbol{SMOOTH\_AMOUNT_{it}}$. The value of these variables will be calculated with actual amounts as in Francis et al. (1996) (appendix 3), who found similar variables (*POOR* and *GOOD*) of significant influence on the goodwill impairment decision at the level of one percent. The variable $\boldsymbol{BATH\_AMOUNT_{it}}$ will have the form of a semi dummy variable. If a firm has earnings that can be described as unexpectedly low, the variable will equal this unexpected amount, in other circumstances the variable equals zero. $\boldsymbol{SMOOTH\_AMOUNT_{it}}$ will be measured as a semi dummy variable as well. If a firm has earnings that can be described as unexpectedly high, the variable will equal this unexpected amount, in other circumstances the variable equals zero. The reason for including these variables in the model are the same as for including $\boldsymbol{BATH_{it}}$ and $\boldsymbol{SMOOTH_{it}}$, they represent the expectations regarding earnings management. The only difference between them is the usage of dummy variables and actual amounts. What amounts of earnings are considered unexpectedly will be discussed in the next section.

To be able to distinguish between industries and investigate the possible differences between them, the variable $\boldsymbol{INDUSTRY_{it}}$ is included in the model. A similar variable can be found in Lapointe-Antunes et al. (2008). In their research the division between industries as used in Compustat has been used. In this research a similar division will be used, the ICB industry code. Each firm in the sample will be allocated to one of the distinguished groups, as will be discussed in more detail in the next section. Regarding the research of Lapointe-Antunes et al. (2008) a difference will be made in the groups of firms that will be included in the sample. In this thesis the financials and insurance companies will be excluded as in Van de Poel et al. (2008, pp. 18). The reason for this is to be found in laws and regulations. Financials and insurance companies are excluded because of the different regulations they have to comply to. These differences make it difficult, or impossible, to compare the findings for these firms with other results.

The final variable that will be included in the model is the error term, or residual ε_{it}. This term is included to represent the differences between the values that are the result of the regression analysis and the observed values (Aczel and Sounderpandian 2002, pp.437). The errors or residuals result from the fit of data and model.

In the research of Van de Poel (2008, pp. 21) et. al, a variable BIG4 was included as well, representing the effects a big 4 audit firm has on the impairment decision. In this thesis it is chosen not to include a similar variable. The reasons for this choice are to be found in the effects the inclusion would have on the size of the final sample and contribution to the goal of this thesis. One of the primary goals of this thesis is to investigate whether managers in different industries act in a consistent manner regarding the usage of earnings management. Should the variable big 4 be included, firms for which data about the auditor is unknown should be excluded from the sample. It could also be chosen to find the missing data, but as with the information regarding the change in CEO, this should be done manually and is beyond the scope of this research. The exclusion of firm years where the auditor information is missing would however lead to the exclusion of essential parts of the sample for certain industries. Overall it can also be concluded that a significantly large proportion of the firms is audited by a big 4 firm, reducing the contribution of such research (see appendix 11 for data regarding the auditors).

After describing all included variables, the models that have been developed in this section are:

$$IMPAIR_{it} = \alpha_0 + \alpha_1 GW_{it-1} + \alpha_2 SIZE_{it} + \alpha_3 GW\_Country_{it} + \alpha_4 \Delta GDP_{it} + \alpha_5 \Delta IndROA_{it} + \alpha_6 \Delta SALES_{it} + \alpha_7 \Delta CF_{it} + \alpha_8 BATH_{it} + \alpha_9 SMOOTH_{it} + \alpha_{10} LAW_{it} + \alpha_{11} INDUSTRY + \varepsilon_{it}$$

$$IMPAIR\_AMOUNT_{it} = \alpha_0 + \alpha_1 GW_{it-1} + \alpha_2 SIZE_{it} + \alpha_3 GW\_Country_{it} + \alpha_4 \Delta GDP_{it} + \alpha_5 \Delta IndROA_{it} + \alpha_6 \Delta SALES_{it} + \alpha_7 \Delta CF_{it} + \alpha_8 BATH\_AMOUNT_{it} + \alpha_9 SMOOTH\_AMOUNT_{it} + \alpha_{10} LAW_{it} + \alpha_{11} INDUSTRY + \varepsilon_{it}$$

It should be noted that interaction terms have not yet been included in the models developed in this section. Interaction terms are joint the effects variables have not only on the dependent variable, but also on each other (Aczel and Sounderpandian 2002, pp.408). If there is interaction between the variables and to what extend will be examined in the next chapter, by determining the Pearson correlation coefficients (Van de Poel et al., 2008, pp. 36)

In the following table on the next page a summary of all included variables and their definitions can be found.

Dependent variable	
$IMPAIR_{it}$	An indicator variable with a value of 1 when the firm has recognized an impairment loss in the year, and zero otherwise.
$IMPAIR\_AMOUNT_{it}$	The amount of the recognized goodwill impairment loss deflated by the firm's total assets at the ending balance of year t-1.
Economic factors	
$\Delta IndROA_{it}$	The change in return on assets as a percentage of the industry the firm operates in. The firm's industry is derived from the Industrial Classification Benchmark Industry (ICB) in Worldscope.
$\Delta SALES_{it}$	The change in sales as a percentage, where the absolute change in sales in deflated by the firm's total assets at the ending balance of year t-1.
ΔCF_{it}	The change in operational cash flow as a percentage, where the absolute change in operational cash flows in deflated by the firm's total assets at the ending balance of year t-1.
$GW\_Country_{it}$	The average proportion of goodwill in a year on the opening balance of firms situated in that country.
ΔGDP_{it}	The change in GDP as a percentage of the country the firm is situated in.
Institutional factor	
LAW_{it}	Score that represents how well rules and regulations are followed in a country by its inhabitants.
Reporting incentives	
$BATH_{it}$	An indicator value with a value of 1 when the firm has unexpected negative earnings.
$SMOOTH_{it}$	An indicator value with a value of 1 when the firm has unexpected positive earnings.
$BATH\_AMOUNT_{it}$	The amount of the firm's unexpected negative earnings.
$SMOOTH\_AMOUNT_{it}$	The amount of the firm's unexpected positive earnings.
Control variables	
$GOODWILL_{it}$	The firm's amount of goodwill on the opening balance deflated by it's total assets.
$SIZE_{it}$	The natural logarithm of the firm's total assets on the opening balance.
$INDUSTRY_{it}$	A variable has the value of the ICB industry codes when the total sample is divided into different industrial groups. The division is based on the Industrial Classification Benchmark Industry division. There are nine different industrial groups enclosed in the sample.

5.3.3 Unexpected high and low earnings

This section will define when a firm's earnings will be labelled as unexpectedly high or unexpectedly low, and in if the second model is applied which value is given to the variable. The first step in this process is to determine a normal level of earnings for a firm. By comparing this amount to the actual earnings, the unexpected part can be distinguished. These amounts can then be labelled as being high or low.

As already has been mentioned shortly in the introduction of this thesis, it is necessary that firms are in a somewhat stable environment to be able to define a normal level of earnings. The environment provides a framework that can be used to estimate the normal earnings. The normal level of earnings can be determined in several ways, for example by comparing the firm's current profits to earnings in the past and by comparing these earnings to results in the industry a firm operates in. Firms in (fast) developing environments will not have a stable basis on which these comparisons can be based. The chance of making wrong assumptions will therefore increase in less stable environments.

In this thesis a firm's normal earnings will be based on the return on assets of the industry it operates in. More specifically the average of the return on assets of the current the preceding year will be used. The reason to choose for this approach instead of only comparing the firm's own results over a certain period is to be found in the introduction of IFRS, which is only mandatory from the year 2005. Financial statements under local GAAP and IFRS cannot be compared due to differences in regulation. Considering the research period of this thesis, this means that a maximum of four years can be compared. This period is too short to be able to distinguish a pattern of normal earnings for one firm on a stand alone basis. The best next alternative is then to compare a firm to the industry it operates in, by establishing the normal level of earnings as the aggregate of the industry it operates in. Therefore a firm's normal earnings will be measured as the return on assets in the industry it operates in during the year under investigation and if possible the preceding.

The reason for including the preceding year in the calculation is that results in this year should be seen as a proxy for the results in the year under investigation. The actual performance of the industry during the prior year is known, whereas performances of the current year can only be estimated. It is therefore expected that the results of the preceding year are altered for expectations regarding the current year, but remains of influence. Therefore it is chosen to set the normal level of earnings on the aggregate of these two years. As stated before, the rule of measurement will be the return on assets. This is consistent with Lapointe-Antunes et al. (2008) who amongst others concluded that goodwill impairment losses were used by Canadian firms to minimize the deviation from the industrial return on assets.

If a firm achieves a higher return on assets than the industrial average, these earnings are considered to be unexpectedly high. This will be seen as an indication for income smoothing, since the recognition of an impairment could mitigate the difference between the firm's results and that of the industry it operates in. If the firm a lower return on assets than the industrial average, then these earnings are considered to be unexpectedly low. This will be seen as an indication for big bath accounting. It can however not be expected that even the smallest deviation from the industrial average will lead to the

recognition of impairment losses to smooth income or to take a bath. This is consistent with Lapointe-Antunes et al. (2008), who found that firms both overstate and understate their impairment losses to minimize the deviation from the industrial return on assets. Some deviation from industrial performance should be possible before earnings management will be applied. It is therefore chosen to include three indicators for both income smoothing and big bath accounting. In this way it is possible to, in some extent, examine what deviation from industrial performance is accepted before management uses earnings management. The first indicator is set at any deviation of the industrial average, it is irrespective of the difference. Even the smallest deviation will be accounted for as an incentive to smooth earnings or take a big bath by recognizing an impairment loss. The second indicator will be set at a deviation from industrial average of two and a half percent. The third indicator is set at a deviation of five percent. This means that only a deviation from industrial performance of respectively two and a half and five percent minimum are considered to be an incentive for earnings management. In the following of this thesis the difference between the indicator variables will be defined as the level of the indicator variable. The higher the deviation from the average industrial return on assets, the higher the level the indicator is set.

When the second model is applied, and actual amounts instead of dummy variables are used, the unexpected earnings will be calculated using the (average) industrial return on assets as well. The unexpected earnings are the difference between a firm's own return on assets and that of the industry it operates in, multiplied by the firm's average assets. This amount is then deflated by the firm's assets on the ending balance. In this way the variables are measured in the same manner as IMPAIR_AMOUNT$_{it}$, which deflates a firm's impairment loss by the total assets at the ending balance as well. When considering the indicators for big bath accounting and income smoothing of respectively two and a half and five percent it should be noted that this will be taken into account when calculating the unexpected earnings. This means that only earnings above this indicator are considered unexpected.

5.4 Research sample

In this section the process of defining the sample that will be used in this thesis will be discussed. As has been discussed in the introduction, the stock listed firms of Belgium, Germany, France, Luxembourg, the Netherlands, Austria and the United Kingdom (including Ireland) are the focus of this research. The initial sample of this thesis therefore consists of 8.125 firms that are or were listed on the stock exchange in these countries. The number of firms is this high, because both currently active and inactive firms are included in the initial sample. Excluding the inactive firms would have resulted in a smaller sample, but this would have led to the waste of usable data as well. Firms that have been active before the last year of investigation (2008), but not in that particular year, because of for example mergers and acquisitions, would have been removed from the sample.

The initial sample will be adjusted to fit the research design in several consecutive steps. As discussed earlier in this thesis, the sample will be split up into several different industries, as has been done by Lapointe-Antunes et al. (2008). However in this thesis another distribution over industries is chosen. The information necessary for the sample and research design is attained through use of the Thomson

financial databases. This database works with industry codes from the Industrial Classification Benchmark Industry (ICB) (The industry codes and the respective industry names are stated in appendix 12), which is slightly different from the distribution of Worldscope, as used by Lapointe-Antunes et al. (2008). Therefore the first step is to remove the firms without any known industry code, since this code is essential for the outcomes of the empirical research of this thesis. The effect of this step is that 3.382 firms are excluded from the initial sample. It is possible that in later research these firms are given an industry code. This should however be done based on research regarding the activities of these firms. This kind of research is beyond the reach of this thesis. It would also be possible to include the firms without industry codes in a different group and label this group 'other'. This would however potentially harm the aggregate outcomes of the research, since for instance the variable industrial ROA that is used in the regression analysis will be defined incorrect.

The second step is to remove the financial and insurance firms. This exclusion is based on the different reporting standards that these firms have to apply to. Should these groups of firms be included, then the outcomes of the research regarding this group could distort the outcomes on aggregate level. The effect of this step is that 1.123 firms are excluded. The exclusion of these firms is consistent with Van de Poel et al. (2008, pp. 18), but in contrast with Lapointe-Antunes et al. (2008), who did not remove the financials from their sample. Since Lapointe-Antunes et al. (2008) did not provide any explicit reasons for not removing the financials and insurance firms from their sample they will be excluded from the sample in this thesis anyway.

The next step in reaching the final sample is to exclude firms and firm-years from the sample if the data needed to calculate the industrial return on assets is incomplete. The reason for not excluding the firm (year) observations that cannot be related to goodwill prior to the calculation of the industrial return on assets, is that this is not an essential condition for calculating the return on assets. When calculating the industrial return on assets, outliers are removed from the sample as well. In total there were 107 outliers spread through the different industries. From the removal of these observations no significant changes in the returns on assets occurred, since the removed values were both positive and negative. After this firm (year) observations without goodwill on the opening and ending balance were removed if no impairment loss had been recognized during that year. The reason for excluding these firm (year) observations is that no relation to the subject of this thesis can be found. Without the presence of goodwill at a certain moment during a year it is impossible to perform an impairment test. This means that the indicators reflecting incentives for income smoothing and big bath accounting included in the model would be useless. After these steps a sample of 7.862 firm year observations remained.

The final step was to eliminate the firms and firm-years for which not all data of all the other respective variables in the models was available, since this would make it impossible to derive correct data from the regression analysis. As with the industry code of a firm, it could be chosen to search for missing data in the financial statements of the firms to obtain these. This is however beyond the scope of this thesis. After all the consecutive eliminations of firms and firm years, a final sample of 7.654 firm years will form the basis for the regression analyses that will be discussed in the next chapter. The characteristics of the sample are depicted in the table below.

Descriptive statistics – Recognized goodwill impairment losses divided by industry

Industry group		*Number of companies*			
		Total	***% of total***	***Impairment***	***% of total***
0001	Oil and Gas	143	1,87%	29	20,28%
1000	Basic materials	357	4,66%	53	14,85%
2000	Industrials	2.372	30,99%	375	15,81%
3000	Consumer goods	1.070	13,98%	151	14,11%
4000	Health care	553	7,22%	74	13,38%
5000	Consumer services	1.574	20,56%	287	18,23%
6000	Telecommunications	161	2,10%	35	21,74%
7000	Utilities	108	1,41%	26	24,07%
9000	Technology	1.316	17,19%	192	14,59%
	Total	*7.654*	*100,00%*	*1.222*	*15,97%*

Based on the descriptive statistics presented in the table above it can be concluded that differences in size both an absolute and relative level between the industrial groups exist. This stresses the importance of splitting up the total sample into different industrial sectors. Outcomes in the smaller industries could be overshadowed by outcomes in the other industries considering the differences. The actual size of an industrial group is important for the outcomes of the regression analysis in another way as well. In statistical research a regression analysis can only be executed when there are enough observations in the group under investigation. Several different rules of thumb exist about the minimum size of a sample to be able to use a regression analysis[2]. These vary from a minimum of thirty observations or five to forty times the number of variables included in the regression analysis. It is however common to choose a minimum of ten times the number of variables in the regression analysis. With a total of ten independent variables (excluding the dummy variable for the industries) the minimum number of observations in a sample should be one hundred. As can been seen in the descriptive statistics, the smallest industry, utilities has a higher amount of observations, therefore all the regression analyses will be performed.

5.5 Data sources

The information necessary to be able to perform the empirical research of this thesis and to test the hypothesis distinguished in this chapter has been collected from Thomson's financial databases. An overview of the data derived from this databases is given in the following table. The emphasis in this table is on the names that the data is given in the databases and the variables that make use of this data in the regression formula as described in this chapter. It should be noted that no variable or database exists where the change in CEO position for European firms exists. This limits the possibilities of investigating the effects of a CEO change in this thesis.

[2] www.palgrave.com

Name/code of data in Thomson	***Name of the vari-able(s)in the models***	***Description Thomson regarding the data***
Impairment (WS.ImpairmentOfGoodwill)	$IMPAIR_{it}$ $IMPAIR\_AMOUNT_{it}$	No explanatory or extra definition given.
Goodwill (WS.Goodwill)	$GOODWILL_{it}$	*Cost in excess of assets purchased*
Total assets (WS.TotalAssets)	$IMPAIR\_AMOUNT_{it}$ $\Delta SALES_{it}$ ΔCF_{it} $BATH_{it}$ $SMOOTH_{it}$ $BATH\_AMOUNT_{it}$ $SMOOTH\_AMOUNT_{it}$ $GOODWILL_{it}$ $SIZE_{it}$	*The sum of total current assets, long term receivables, investment in unconsolidated subsidiaries, other investments, net property plant and equipment and other assets*".
Sales (WS.Sales)	$\Delta SALES_{it}$	*Net sales or revenues*
Cash flow (WS.CashFlow)	ΔCF_{it}	*Income before extraordinary items and preferred dividend plus depreciation and amortization expenses.*
Net income (WS.NetIncome)	$BATH_{it}$ $SMOOTH_{it}$ $BATH\_AMOUNT_{it}$ $SMOOTH\_AMOUNT_{it}$ $\Delta IndROA$	*Period income or loss a firm has presented, after subtracting all costs from all revenues.*
Income taxes (WS.Income Taxes)	$\Delta IndROA$	*Income taxes*
ICB industry division (WS.ICBIndustry)	$INDUSTRY_{it}$	The Industrial Classification Benchmark Industry division that is based on the stock exchange markets in the US (Dow Jones) and UK (FTSE).
Big 4 auditor (WS.Auditor)	-	The names of auditors were presented by Worldscope, the division in big 4 or not has been made by the author.

5.6 Summary and conclusion

In this chapter the design of the empirical research on earnings managements and goodwill impairments has been discussed. At first the three hypotheses that will be tested have been developed based on the empirical research that has been discussed in chapter four. After this a model as used by Van de Poel et al. (2008) has been used as a starting point in the development of the two models used in this thesis. This model has been adapted to fit the research design based on a discussion of models that have been used in previous studies. The selection of variables has been made on the influence they had on the impairment decision in previous research. After the development of the model, the sample used in this thesis has been selected. After several eliminations, based on completeness of data and firm relations with goodwill, a sample of 7.654 firm year observations remained. These observations will be tested several times, first to conclude whether management influences the impairment decision and secondly to conclude whether this differs between industries. To be able to answer these questions three levels of indicators of income smoothing and big bath accounting have been included in the model. In this way it can be tested whether, and to what extent, deviation between firm and industrial performance can be expected before earnings management is used to minimize or maximize this difference. Some possibilities of future research to increase the sample are given as well.

Chapter 6: Empirical research

6.1 Introduction

In this chapter the empirical research based on the regression analyses described in chapter five will be performed. First the descriptive statistics of the samples under investigation will be discussed shortly. After this in the third section the samples will be analysed to conclude whether earnings have been managed. With every analysis that will be made, the reason for applying the test, and the outcomes will be discussed. As stated in the previous chapter, each of the samples will be analysed six times, leading to a total of sixty regression analyses. For convenience the tables that present the outcomes of some of these tests are placed in the appendices, only once will they be placed in the main text. The reason for not including all outcomes is a practical one, it will not add any more value for the understanding of the conclusions of this theis. The focus with the regression analyses will be on the indicators of earnings management mainly. The chapter ends with a short summary and conclusion.

6.2 Descriptive statistics

At first the descriptive statistics of the total sample will be given. In this way the characteristics of the sample, that have been mentioned shortly in chapter five as well, that will be used in the regression analyses are determined. These characteristics will however not be used to make conclusions, since these can only be derived from the Pearson correlation coefficients and the regression analysis which will be discussed in the next section.

Frequency table industry total sample

WS.Industry

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0001	143	1,9	1,9	1,9
	1000	357	4,7	4,7	6,5
	2000	2372	31,0	31,0	37,5
	3000	1070	14,0	14,0	51,5
	4000	553	7,2	7,2	58,7
	5000	1574	20,6	20,6	79,3
	6000	161	2,1	2,1	81,4
	7000	108	1,4	1,4	82,8
	9000	1316	17,2	17,2	100,0
	Total	7654	100,0	100,0	

Frequency table impairments total sample

Impair

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	6432	84,0	84,0	84,0
	1	1222	16,0	16,0	100,0
	Total	7654	100,0	100,0	

As shortly mentioned before, the total sample consists of 7.654 firm year observations during which 1.222 goodwill impairment losses have been recognized. From the descriptive statistics it can be seen that four of the industrial sectors have a share of more than ten percent of the total sample, with a maximum of thirty one percent. This stresses the importance of splitting up the total sample into different industrial sectors. As stated earlier the total sample will be split up in nine different sub-samples representing nine different industries after conclusions have been drawn from the total sample.

6.3 Empirical research

6.3.1 Total sample

The first step in conducting a regression analysis is to determine the level of multicollinearity between the independent variables. This means that it will be investigated what the relationships amongst the independent variables themselves, instead of the relationship between dependent and independent variable is (Aczel and Sounderpandian, 2002, pp.568). This is important because if independent variables are correlated this means that the explanatory value of the variables decreases. A part of the explanatory power is given by the other variable. Detecting multicollinearity is done by performing a Pearson correlation test. In this way the correlation efficients between the independent variables are calculated and it will be known whether this relation is significant. The outcomes of the Pearson correlation test are shown on the next page. As can be seen in this table multiple significant relations between the variables exist, meaning that the influence of these variables influence each other. One of the variables, the indicator of big bath accounting, has been found to be explained entirely by other variables. This means that including the variable would not improve the analysis and that it is not of influence on the regression analysis. In SPSS this variable is removed from the dependent variables as can be seen in the excluded variables table.

Excluded Variables[b]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
1	Bath	.[a]	.	.	.	,000

a. Predictors in the Model: (Constant), Change Sales, Law , Change Ind_ROA, Change CF, Goodwill, Smooth, Size, GW Country, GDP Country

b. Dependent Variable: Impair

Pearson correlation matrix

Correlations

	GDP Country	Law	Goodwill	GW Country	Size	Change Ind_ROA	Bath	Smooth	Change CF	Change Sales
GDP Country										
Law	,152**									
Goodwill	,007	,082**								
GW Country	-,261**	,059**	,224**							
Size	-,035**	-,023*	-,081**	-,015						
Change Ind_ROA	,279**	,012	-,098**	-,239**	,086**					
Bath	-,035**	,014	,001	-,039**	-,116**	,023*				
Smooth	,035**	-,014	-,001	,039**	,116**	-,023*	-1,000**			
Change CF	,049**	,003	-,014	-,046**	-,058**	,026*	-,146**	,146**		
Change Sales	,091**	,002	-,009	-,053**	-,144**	,036**	-,088**	,088**	,089**	

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Now we have concluded that nine of the ten dependent variables will be included into the model we can perform the regression analysis. When conducting a regression analysis it has to be tested what the overall significance of the model is. This is done by performing an ANOVA test (Aczel and Sounderpandian, 2002, pp.508). As can be seen in the ANOVA table the regression analysis is proven to be significant on the one percent level.

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	48,875	9	5,431	42,444	,000[a]
	Residual	978,026	7644	,128		
	Total	1026,901	7653			

a. Predictors: (Constant), Change Sales, Law , Change Ind_ROA, Change CF, Goodwill, Smooth, Size, GW Country, GDP Country

b. Dependent Variable: Impair

Now we have concluded that the regression analysis is found to be significant, we can test the power of the regression and formulate the regression model. The power of the regression is tested by the multiple coefficient of determination, or R^2. *"This value measures the proportion of the variation in the dependent variable that is explained by the combination of the independent variables in the multiple*

regression analysis" (Aczel and Sounderpandian, 2002, pp.511). The table showing this score is presented below.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,218[a]	,048	,046	,358

a. Predictors: (Constant), Change Sales, Law , Change Ind_ROA, Change CF, Goodwill, Smooth, Size, GW Country, GDP Country

As can be seen in the table the R^2 is less than five percent for this regression. This means that although the regression analysis has been found to be significant, only five percent of the deviation between expected and actual scores can be determined by the model. The way the regression model looks like can be found in the Coefficients table.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-,458	,052		-8,825	,000
	GDP Country	-,011	,004	-,030	-2,505	,012
	Law	,117	,022	,060	5,284	,000
	Goodwill	,002	,000	,077	6,641	,000
	GW Country	-,003	,001	-,037	-3,052	,002
	Size	,026	,002	,163	14,129	,000
	Change Ind_ROA	,000	,000	-,024	-2,011	,044
	Smooth	-,048	,008	-,066	-5,757	,000
	Change CF	-,002	,000	-,088	-7,727	,000
	Change Sales	3,423E-5	,000	,007	,611	,541

a. Dependent Variable: Impair

Based on this table the regression look like this:

$$IMPAIR_{it} = -0{,}458 + 0{,}77\ GW_{it-1} + 0{,}163\ SIZE_{it} - 0{,}37\ GW\_Country_{it} - 0{,}3\ \Delta GDP_{it} - 0{,}24\ \Delta IndROA_{it} - 0{,}88\ \Delta CF_{it} - 0{,}66\ SMOOTH_{it} + 0{,}6\ LAW_{it} + \varepsilon_{it}$$

As can be seen in the regression analysis the variable change in sales has not been included. This is done because the variable has not been proven to be of significant influence on the impairment decision as can be seen in the coefficients table. This means that for the total sample at the lowest indicator, when using dummy variables, only an indication for income smoothing can be found. As already

stated in chapter five this can easily be explained. Some deviation from industrial performance should be possible before earnings management will be applied, especially with big bath accounting. All five other analysis that have been performed on the total sample will now be discussed, the tables representing the data for this analysis can be found in appendix 13-17.

As with the regression analysis of the total sample just described, the Pearson correlation matrix of all five other analyses shows that significant correlations between the dependent variables exist. In contrary to the first analysis no variables are excluded due to multicollinearity however. This means that the variable that represents the indicator for big bath accounting is found to have added value in the other regression analyses. The ANOVA test shows that like the first regression analysis all five other models have proven to be significant at the level of one percent. The R^2 has improved as well, meaning that deviation between expected and actual scores can be explained better by these models than the model just described. Noticeable is that the explanatory power of the models differs based on both the usage of dummy variables or real amounts and the indicator variables used for big bath accounting and income smoothing. The explanatory power of the model increases both when real amounts of impairments and expected impairments are being used instead of dummy variables and when the indicator variable for earnings management is set at a higher level. Although the indicators for big bath accounting and income smoothing are all found to be significant in the five analyses some differences appear. The indication for big bath accounting is found to be significant at the level of one percent in all five analyses. Smoothing on the other hand is found to be significant at the ten percent level when the indicator is set at two and a half percent, when using dummy variables, and at the five percent indicator level, when using dummy variables, the variable is found significant at the five percent level. In the circumstances amounts were used, the variable is found significant at the one percent level.

Several conclusions can be drawn from these findings. First there is an indication for the usage of earnings management in firms in the total sample. The presence of both big bath accounting and income smoothing is significant when some deviation from industrial return on assets is taken into account. When this deviation is not present big bath accounting is not even included in the model. These findings are as expected, since firms will not engage in big bath accounting for simply underperforming the industrial average only a bit. The significance of income smoothing is most present when the indicator with the lowest level is used and when amounts instead of dummy variables are used. The outcomes are therefore consistent with Van de Poel et al. (2008) who found evidence for managerial influence on the impairment decision as well.

6.3.2 The oil and gas industry

The outcomes of the analyses for the oil and gas industry differ in some manner from the outcomes for the sample as a whole. When considering the Pearson correlation matrices it should be concluded that, as in the total sample, in the oil and gas industry significant correlations between dependent variables exist. Also the indicator for big bath accounting is removed from the model because of multicollinearity when the lowest indicator of earnings management and dummy variables are being used. The first difference with the total sample arises when the results of the ANOVA tests are taken into account. Although the models are significant at all tests, the level at which they are found to be significant varies between the levels of one and ten percent. This means that the models used have less explanatory power for this specific industry than for the total sample. It should therefore be concluded that for an even more significant research in this industry, it could be necessary to include other variables or to remove existing. When real amounts are being used instead of dummy variables the model is found to be more significant however. This difference also exists when the R^2 of the model is taken into account. As in the total sample, the explanatory power increases both when real amounts of impairments and expected impairments are being used instead of dummy variables, and when the indicator variable for earnings management is set at a higher level.

Evidence for the existence of earnings management can not be provided unambiguously in the oil and gas industry. When the indicator is set at the lowest level and dummy variables are being used, no indication for earnings management is present. As stated in the first paragraph big bath accounting was removed from the model. The influence of income smoothing on the impairment decision is not found to be significant. In this situation almost none of the dependent variables is found to be of significant influence. When amounts instead of dummy variables are used, evidence for big bath accounting becomes significant at the level of one percent, but there is still no evidence for income smoothing. If the indicator is set at the level of two and a half percent, evidence for both income smoothing and big bath accounting is provided when dummy variables are used. The variables are both found significant at the level of one percent. When using actual amounts, big bath accounting is still found significant at the one percent level, but income smoothing is no longer significant. When the indicator level is set at five percent, the presence of income smoothing remains significant, but only at the ten percent level when dummy variables are being used. The presence of big bath accounting is no longer significant. When amounts are being used, big bath accounting is found significant at the level of one percent and the presence of income smoothing is no longer significant.

Several conclusions can be drawn from these findings. First there is no unambiguous evidence for the presence of earnings management in firms in this sample. The presence of both big bath accounting and income smoothing is significant at some of the analyses, but not at all. These outcomes can be explained by research of Lapointe-Antunes et al. (2008) as discussed in the previous chapter. It can therefore be expected that from the deviation of two and a half percent firms are persuaded more to use earnings management to minimize or maximize the difference with the industrial performance. They can smooth their income, or take a bath in order to save income to lower the deviation with industrial performance in later years. The circumstance that more evidence for the usage of big bath accounting than for income smoothing can be found can be explained by the development in the return

on assets of the industry. As shown in appendix twelve, the performance of the industry is declining over the years, indicating that there will be more incentives for big bath accounting than income smoothing. Secondly it could be concluded that the models used to predict earnings management in this industrial sector may have to be changed to its specific characteristics.

The fact that when amounts instead of dummy variables are used the significance of the indicators of earnings management changes is because of the way the amounts are calculated. Although there may be a relation between the recognition of an impairment loss and a dummy indicator, suggesting the recognition was expected, this does not mean that the same relation can be concluded when comparing expected and actual amounts. Therefore in the rest of the analyses only the difference between the two methods will be mentioned. These observation will lead to a conclusion about the usefulness of using amounts instead of dummy variables in the conclusion of this chapter.

6.3.3 The basic materials industry

The outcomes of the analyses for the basic materials industry point out different findings than the previously discussed samples. When the outcomes of the Pearson correlation matrices are discussed, it should be concluded that, as in the other samples, significant correlations between dependent variables exist. The indicator for income smoothing is removed from the model because of multicollinearity when the lowest indicator of earnings management and dummy variables are being used. When the results of the ANOVA tests are taken into account it should be noted that only the models that make use of actual amounts instead of dummy variables have been found significant. Moreover the R^2 of the models that have been found significant is very low, below the ten percent level. This means that the models used have a very low explanatory power for the difference between expected and observed data in this specific industry. The first conclusion to be drawn should therefore be that for a more significant research in this industry, it is necessary to adapt the model, based on a thorough research in the industry.

The only outcomes that will be discussed here are those of the models that have been proven significantly, therefore the models that make use of actual amounts instead of dummy variables. In these models only evidence for the existence of big bath accounting has been found. This variable has been proven significant at the level of five percent at all the levels of indicators. No evidence for income smoothing has been found. As with the oil and gas industry the evidence for big bath accounting can be in some manner be explained by the industrial return on assets over the years. Although the average returns increased form 2005 to 2006, in consecutive years it is found to have declined. The outcomes for this particular sample can however be distorted by the exclusion of half on the models used, and the low explanatory power of the models used. Therefore these outcomes should be used with caution.

6.3.4 The industrials industry

The outcomes of the analyses of the industrials sector are somewhat more comparable to those of the total sample than the two industries discussed previously, but interesting differences can still be found. The comparability of results with the total sample can of course be explained by the weight of this industry in the total sample, since it represents thirty one percent of the included observations. Investigating the Pearson correlation matrices shows that significant correlations between dependent variables exist. The indicator for big bath accounting is removed from the model because of multicollinearity when the lowest indicator of earnings management and dummy variables are being used. In all other regressions the variable is included however. The results of the ANOVA tests show that the model has been found significant at the level of one percent for all analyses. Observations of the R^2 of the models shows that explanatory power increases both when real amounts instead of dummy variables are used, and at the higher levels of the indicator variables for earnings management.

Although the indicator of big bath accounting is removed from the model when the lowest indicator of earnings management and dummy variables are being used, the variable is of significant influence on the level of one percent in all other models. This indicates that firms will relatively quick use big bath accounting when their results differ from the industrial average. This is somewhat comparable to the outcomes of the oil and gas industry and the research of Lapointe-Antunes et al. (2008). It is expected that some deviation between the firm's performance and the industry it operates in exist before earnings management is used to minimize this deviation. The results for income smoothing are somewhat more unambiguous. When dummy variables are being used, smoothing is significant at the level of one percent only at the lowest indicator of earnings management. This implies that only small positive deviations from the industrial average are being minimized by the recognition of goodwill impairment losses. Bigger deviations are not being minimized however, implying that the difference is considered to be too high. These findings are not comparable to the outcomes of the models that make use of real amounts. In these models income smoothing is found significant at the level of one percent, implying the use of real amounts is a better indicator of earnings management than dummy variables.

The absence of an indication for income smoothing and the presence of indicators for big bath accounting can be explained in some manner from the industrial return on assets. As can be seen in appendix twelve, the industry shows stable returns over the years. When a firm performs poorly opposed to the industry it operates in, there are incentive to engage in big bath accounting, as has been found in all other samples investigated. When performance is stable however, less incentives for income smoothing are present. This is due to the way the indicators for earnings management are calculated. The indicator is the average of industrial returns of current and last year. When industrial performance is constant, the lowest level indicator of earnings management will be set at approximately the current years performance. Firms therefore have, especially with the higher indicators, almost no incentives to smooth their income, because returns are already stable.

6.3.5 The consumer goods industry

The outcomes of the analyses for the consumer goods industry are somewhat comparable to the basic materials industry. The Pearson correlation matrices show that significant correlations between dependent variables exist. Also the indicator for big bath accounting is removed from the model because of multicollinearity when the lowest indicator of earnings management and dummy variables are being used. Although the ANOVA tests reveal that all models are significant at the level of one percent, the R^2 of all models is low. The highest score is not even ten percent. This means that as in the basic materials industry, the models used have a low explanatory power for the difference between expected and observed data. The first conclusion to be drawn should therefore be that for a more significant research in this industry, it is necessary to adapt the model, based on a thorough research in the industry.

In the consumer goods industry the indicator for income smoothing is only found of significant influence, at the level of five percent, when the lowest indicator of earnings management and dummy variables are used. In all other models there is no indication for income smoothing found. This implies that only small deviations with the industrial average are being minimized by the recognition of goodwill impairment losses. As with the industrials industry this can be explained by the industrial return on assets. The performance of the industry, and therefore probably the performance of the respective firms as well, can be called stable. The indicators of big bath accounting are all found to be significant at the level of one percent. Only in the model that uses the lowest indicator of earnings management and dummy variables the variable is removed. As in the industrials industry the evidence for big bath accounting and the absence of significant indicators for income smoothing can be explained by the industrial performance. When a firm performs poorly opposed to the industry it operates in there are incentive to use big bath accounting, as in the other samples investigated. When performance is stable however, less incentives for income smoothing are present. These outcomes are therefore supported by research of Lapointe-Antunes et al.

6.3.6 The health care industry

The outcomes of the analyses for the consumer health care industry are somewhat comparable to the basic materials industry and consumer goods industry. The Pearson correlation matrices show that in this industry significant correlations between dependent variables exist. Also the indicator for big bath accounting is removed from the model because of multicollinearity when the lowest indicator of earnings management and dummy variables are being used. For the health care industry all models used are found to be significant at the level of one percent by the ANOVA tests, but the R^2 of all models is low. The highest score is almost ten percent. This means that the explanatory power for the difference between expected and observed data in this specific industry in the models used is very low. Therefore again the conclusion to be drawn is that for a more significant research in this industry, it is necessary to adapt the model, based on a thorough research.

The usage of earnings management can not be proven unambiguously in the health care industry. The indicator of income smoothing is only significant if the indicator level is set at two and a half percent. When dummy variables are being used, it is proven to be significant at the five percent level, and when amounts are being used it is significant at the one percent level. These outcomes are somewhat consistent with Lapointe-Antunes et al. (2008). Firms actually try to minimize the deviation from industrial performance, but not from every deviation. The indicators of big bath accounting have been found of significant influence in some, but not in all cases. As stated before the variable is excluded from the model when the lowest indicator and dummy variables are being used. The variable is however found to be significant, when the lowest indicator is used, at the one percent level when amounts instead of dummy variables are being used. When the indicator is set at two and a half percent, the variable is significant at the five percent level when using dummy variables and when amounts are used at the one percent level. When the indicator is set at five percent only the indicator that uses amounts has a significant influence at the level of one percent level. The dummy variable is not found to be significant.

6.3.7 The consumer services industry

Considering all outcomes discussed this far, the most compelling results of the existence of earnings management are found in the consumer services industry. As always the Pearson correlation matrices show that significant correlations between dependent variables exist, and the indicator for big bath accounting is removed from the model because of multicollinearity when the lowest indicator of earnings management and dummy variables are being used as well. The ANOVA tests reveal that all models used are significant at the level of one percent. The value of the R^2 however depends on the manner the research is performed. When amounts instead of dummy variables are used the explanatory power of the model increases with more than thirty percent.

The outcomes of the research performed shows that there is compelling evidence for the presence of both income smoothing and big bath accounting in the consumer services industry. Except for the indicator of big bath accounting used when the lowest indicator of earnings management and dummy variables are being used all indicators of earnings management are found to be significant. The variables indicating big bath accounting are all found significant at the level of one percent when amounts are being used. If dummy variables are being used they are significant respectively at the levels of five and one percent at the indicator levels of two and a half and five percent. The variables that represent income smoothing are found significant at level of one percent when the lowest indicator of earnings management and dummy variables are used. In the other models using dummy variables it is proven to be significant at the level of five percent. If amounts are being used instead of dummy variables, then the indicators of income smoothing are all found significant at the level of one percent.

The outcomes of the research is this industry are compelling, there are serious indications that earnings management is being used. When using amounts instead of dummy variables the outcomes become even stronger, the R^2 of the model increases significantly as well. The outcomes can however not easily explained, as done before by the industrial return on assets. The returns show a somewhat stable pattern as in the consumer goods and industrials industry, where a less strong indication of income smoothing was found. Perhaps it should be concluded that management in the consumer services industry follows can be described as being more aggressive when recognizing impairment losses.

6.3.8 The telecommunications industry

The outcomes regarding the usage of earnings management of the analyses for the telecommunications industry are almost the complete opposite of those made regarding the consumer services industry. The Pearson correlation matrices show significant correlations between dependent variables as in all earlier discussed models. The indicator for big bath accounting is removed from the model because of multicollinearity when the lowest indicator of earnings management and dummy variables are being used as well. Also all ANOVA tests prove to be significant at level of one percent.

Although the above described statistics are all comparable to the consumer services industry, as well as many other industries, differences exist regarding the results of the variables representing earnings management. In the telecommunications industry no unambiguous evidence for the use earnings management can be found. Evidence for income smoothing is only found when dummy variables and an indicator level of five percent are being used, under those conditions the variable is significant at the level of five percent. In all other circumstances no significant evidence of the usage of income smoothing is found. Evidence for big bath accounting is only found when the indicators are represented by amounts. These variables are all significant at the level of one percent.

6.3.9 The utilities industry

The healthcare industry can in some manner be compared to the basic materials and the consumer services industry. The Pearson correlation matrices show that significant correlations between dependent variables exist. Also the indicator for big bath accounting is removed from the model because of multicollinearity when the lowest indicator of earnings management and dummy variables are being used. As in the basic materials industry, the value of the ANOVA tests however show that one of the models is not proven to be significant. The regression analysis performed at the indicator of five percent with dummy variables, it is found not to be significant.. All other models that use dummy variables are only found significant at the ten percent level, whereas the models that make use of amounts have been found significant at the level of one percent. The R^2 show similar differences, presenting a score below ten percent when dummy variables are being used, but scores of almost ninety percent are presented when amounts are being used.

It should therefore be concluded that for an even more significant research in this industry, it could be necessary to include other variables or to remove existing. The outcomes for this particular sample can also be distorted because of the exclusion of one of the models used, and the low explanatory power of two of the models used. Therefore these outcomes should be used with caution. In all the researches

that have been found significant, the only indication for earnings management that has been found significant is that of big bath accounting. When amounts are used all indicators are significant at the level of one percent. When dummy variables are used no evidence for the existence of earnings management by big bath accounting can be found. Income smoothing has been found significant in none of the models.

6.3.10 The technology industry

The outcomes of the analyses for the technology industry are the final sample that has been distinguished and will be discussed in this thesis. As with every sample the Pearson correlation matrices show significant correlations between dependent variables. Also the indicator for big bath accounting is removed from the model because of multicollinearity when the lowest indicator of earnings management and dummy variables are being used. The ANOVA tests show that all model are significant at the one percent level. The R^2 of the models used are higher when instead of dummy variables the indicators for earnings management are presented by amounts.

In the technology industry the indicators of big bath accounting are found to be significant at the level of one percent, except for the circumstances when lowest indicator of earnings management is being used in combination with dummy variables. The significance of the indicators for big bath accounting can be found in the industrial results. As shown in appendix twelve, the performance of the industry is declining over the years, indicating that there will be incentives for big bath accounting. Despite the poor performance of the industry evidence for income smoothing can be found as well. The variable of income smoothing is found significant at the level of one percent when the lowest indicator and dummy variables are being used. When the variables are used as amount, the presence of income smoothing is found significant at the ten percent level with all tests. The presence of income smoothing can, as the presence of big bath accounting, be explained by the industrial results, but as well by Lapointe-Antunes et al. (2008). It can be expected that there are little incentives for income smoothing because of the declining industrial performance. However firms that do perform better than the industry they operate in have incentives to use income smoothing to save some income for years to come.

6.4 Summary and conclusion

In this chapter the outcomes of the researches performed for answering the research questions of this thesis have been discussed. There has been found significant evidence for the usage of earnings management in the total sample as well as in several industries. Both big bath accounting and income smoothing have been found of significant influence in several researches. When instead of the total sample the distinguished industries are being investigated, it is revealed that differences between the industrial sectors exists. In for example the consumer services industry all but one of the indicators of earnings management have been found significant, in other industries like the telecommunication industry no unambiguous evidence for the usage of earnings management can be found.

Some differences between industries can be explained by taking the performance of those particular industries into account. In for example the oil and gas industry and the technology industry it can be, based on industrial performance, expected that more incentives for big bath accounting exist than for income smoothing. Outcomes of the research support this view. Some differences may also be caused by the variables that have been used in the model, since the ANOVA score differs between industries. This means that not all variables are of the same influence in all industries. Resolving this problem would however entail a thorough research of all included industries. Other differences may be due to managerial incentives that cannot be controlled as stated in chapter five.

Differences for indications of earnings management within the same industry can be explained by the usage of dummy variables or actual amounts. As stated before this can be explained by the fact that when amounts instead of dummy variables are used, the significance of the indicators of earnings management changes because of the way the amounts are calculated. Although there may be a relation between the recognition of an impairment loss and a dummy indicator, suggesting the recognition was expected, this does not mean that the same relation can be concluded when comparing expected and actual amounts. On average it would be correct to state that amounts prove to be a better indicator of earnings management than dummy variables. This however is in contrast to the findings of Van de Poel et al. (2008), who found that no differences would exist if instead of dummy variables amount were used. This difference is however probably caused by differences in the calculation of variables.

Although it would be expected that the indicators set at two and a half and five percent deviation from the industrial performance have a higher significance than the lowest indicator only some evidence for this statement can be found. When the variables are set as a dummy, most often one of the variables is excluded from the regression analysis due to multicollinearity. In other circumstances this does not occur however. Strong indications of more significant values because of the deviations can not be found however. This can be caused by two reasons. First the indicators are set at a wrong level, second there is no ‘optimal deviation’ from the industrial average from which firms will use earnings management either to minimize or maximize this difference.

Chapter 7: Summary and conclusion

7.1 Introduction

In this chapter the outcomes of the research performed in this thesis will be discussed. First a summary of the literature review and the empirical research will be given. Subsequent the outcomes of the empirical research will be used to answer the research questions of this thesis. The chapter will end with the limitations of the research and suggestions for future research will be given.

7.2 Summary

This thesis started with the topic of earnings management. Earnings management has been described as defined by Schipper (1989, pp. 92): "*Disclosure management, in the sense of a purposeful intervention in the external financial reporting process, with the intent of obtaining some private gains (as opposed to, say, merely facilitating the neutral operation of the process)"*. It has been discussed that for earnings management to be effective two conditions will have to be met, the existence of accrual accounting and imperfect markets. With the use of accrual accounting it is possible that reported earnings deviate from cash flows. In this way economic consequences of cash flows in the past or the future can be incorporated in current earnings. Imperfect markets enable management to manage earnings without being noticed. If information about managing earnings would be publicly available, users of financial statements would correct the presented figures for this knowledge. The effects of earnings management would them be mitigated. The basis for the existence of earnings management can be explained by two economic theories, the positive accounting theory and the agency theory. In a nutshell the outcome of these two theories is that managers will only act in their self interest, leading to a tension between principals and agents. Although this tension can be relieved by closing contracts, the agent will still try to maximize his own wealth within the boundaries of his contract. Based on these theories three hypotheses regarding earnings management can be distinguished, the bonus plan hypothesis, the debt hypothesis and the political cost hypothesis. All theories predict what accounting policies will be adopted by managers under which conditions. In recent research incentives for earnings management are related to the achievement of benchmarks for the firm. These incentives can however be related to the three hypotheses as distinguished by the positive accounting theory and the agency theory. Two forms of earnings management are big bath accounting and income smoothing. With big bath accounting the purpose is to incur, in one year, as many as possible losses and write-offs. With income smoothing the goal is to report a consecutive line of increasing earnings.

In chapter three both the definition of goodwill and the impairment of goodwill decision have been addressed. Goodwill has been defined as being the value of a firm on top of the value of equity that is visible on the balance sheet. The term goodwill used in this thesis however represents only the goodwill that has been paid for at an acquisition. The impairment of goodwill has been defined as a test to verify whether the value of goodwill has undergone any changes in value. The focus with the test lies with a possible decrease in value, since due to regulation increases in value will not be accounted for in the financial statements. The process of applying an impairment test has been discussed by using a four step process. In short it means that the aggregate firm has to be divided into cash generating units. By comparing the recoverable amount and the carrying value of the units it can be determined whether

the recognition of an impairment loss is necessary. The implications of the application of the impairment test have been discussed as well. Overall it should be concluded that the impairment decision is associated with a (very) high level of subjectivity. Management, responsible for preparing the initial impairment calculation, has to make assumptions regarding for example the discount factor (for example the weighted average cost of capital), expected future cash flows and the growth factor of cash flows. The consequence of this subjectivity, is that management is given an opportunity to influence the impairment decision, consequently the presented earnings in the financial statements as well.

Chapter four has provided empirical evidence for both the existence of earnings management and evidence regarding the link between earnings management. Evidence suggest that managers use earnings management to manipulate earnings in several ways and for several reasons. Two forms of earnings management discussed are income smoothing and big bath accounting. The usage of income smoothing can be associated with a higher price-earnings relation and more predictable firm earnings. The reasons to use earnings management are to be found in the hypotheses distinguished by the positive accounting theory, the bonus plan hypothesis, the debt hypothesis and the political cost hypothesis. Evidence regarding the link between earnings management and the impairment of goodwill suggests that the impairment decisions of a firm are influenced by managerial incentives that are not purely economic. Both the potential for discretion due to firm specific characteristics and the flexibility in accounting standards plays a role in these incentives.

The research design has been presented in chapter five. First three hypothesis have been developed that will be used to answer the research questions of this thesis. Next the model that will be used has been developed. The selection of the variables has been made on the influence they have proven to have on the impairment decision in previous research. After the development of the model, the final sample has been selected. After several eliminations, based on completeness of data and firm relations with goodwill, a sample of 7.654 firm year observations remained. To be able to answer the research questions of this thesis three levels of indicators of income smoothing and big bath accounting have been included in the model. In this way it can not only be tested whether the impairment decision is influenced by management, but also to what extent. It enables the author to estimate, to some extent, the deviation between firm and industrial performance that can be expected before earnings management is used to minimize or maximize this difference.

7.3 Conclusion

In this section the research questions of this thesis will be answered. For convenience they will first both be given, after which an answer will be formulated.

The first research question of this thesis is:
Is the impairment of goodwill decision influenced by a firm's management?

The second research of this thesis is:
Does managerial influence on the goodwill impairment decision differ between industrial sectors?

Both questions can be answered with yes. There is significant evidence that the impairment of goodwill decision is influenced by managers and this influence differs between industries. The outcomes regarding the total sample are as expected based on earlier research. The outcomes of the research regarding the industries that have been distinguished are as expected based on the positive accounting theory and reason. Significant evidence for the usage of both big bath accounting and income smoothing has been found both in the total sample as in the distinguished industries.

When the outcomes of the distinguished industries are being investigated, it is revealed that although there is significant evidence for the presence of earnings management, differences between the industrial sectors exists. In some industries no unambiguous evidence for the presence of either big bath accounting or income smoothing in most of the tests could be found, whereas in other industries this actually was the case.

Some of the differences in the presence of earnings management between the industries can however be explained by examining the overall performance of the particular industries. Based on declining overall industrial performance over the years it is expected that in some industries more incentives for firms to use big bath accounting than income smoothing exist. The outcomes of the researches performed support this view. Another explanation for the differences between industrial sectors is that it is in some manner caused by the variables that have been used in the particular models. This can be shown by comparing the ANOVA scores of the models between industries.

Differences in the significance of the variables indicating earnings management within the same industries can mostly be explained by the usage of dummy variables and actual amounts. Overall it seems that amounts are better indicators than dummy variables. Although this is in contrast with earlier research it is probably caused by differences in the calculation of variables.

7.4 Future research

Like any other research this thesis has its limitations. In this section possibilities for future research are given. First research could be performed in order to establish for all industries an indicator level from which earnings management will be used. In this thesis no unambiguous evidence for the existence of this level could be given. Perhaps that based on a thorough investigation in all industries this could be achieved however, solving another part of the puzzle of earnings management.

Secondly it would be interesting to take into account which part of goodwill on the balance is considered new and which part is considered old. As has been discussed in the literature part of this thesis it is possible that shortly after an acquisition a firm has to recognize an impairment loss. If it was known whether the impairment loss could be linked to this acquisition it would be known whether earnings management was the cause of the impairment loss, or mismanagement by overpaying for a firm.

Finally it could be investigated whether the actual transition to IFRS 3 has had any effects on the impairment decision made by firms in the year of introduction. As has been found in previous research, first time adopters of new regulation sometimes recognize large impairment losses in the year of transition.

References

Books and articles:

Aczel, A.D., Sounderpandian, J. (2002), *Complete business statistics*, McGraw-Hill, New York.

Alciatore, M., Dee, C.C., Easton, P., N. Spear (1998), 'Asset write-downs: A decade of research', *Journal of Accounting Literature*, Vol. 17, pp. 1-39.

Ball, R. (2006), 'International Financial Reporting Standards (IFRS): pros and cons for investors', *Accounting and Business Research*, pp. 5-27.

Barth, M.E., Elliott, J.A., Finn, M.W. (1999), 'Market rewards associated with patterns of increasing earnings', *Journal of accounting research*, Vol. 37, pp. 387-413.

Beatty, A., Weber, J. (2006), 'Accounting discretion in Fair Value Estimates: An Examination of SFAS 142 Goodwill Impairments', *Journal of Accounting Research*, Vol. 44, No. 2, pp. 257-288.

Bens, D.A. (2006) 'Discussion of Accounting Discretion in Fair Value Estimates: An Examination of SFAS 142 Goodwill Impairments', Journal of Accounting Research, Vol. 44, No. 2, pp. 289-296.

Bini, M., Bella, C.D. (2007) 'Determinants of market reactions to goodwill write-off after SFAS 142', *Managerial Finance*, Vol. 33, No. 11, pp. 904-914.

Canadian Institute of Chartered Business Valuators (2002), 'Discussion Paper: Goodwill Impairment Testing'. [https://www.cicbv.ca/UserFiles/pdf/goodwill_doc.pdf] (13-01-2009).

Collins, D.W., Kothari, S.P., Shanken, J., Sloan, R. (1994), Lack of timeliness and noise as explanations for the low contemporaneous return-earnings association, *Journal of Accounting and Economics*, Vol. 18, pp. 289-324.

Dagwell, R., Windsor, C., Wines, G. (2007) 'The Proposed Goodwill Impairment Test - Implications for Preparers, Auditors and Corporate Governance', *Managerial Auditing Journal*, Vol. 22, Issue 9, pp. 862-880.

Dechow, J.M., Sloan, R.G., Sweeney, A.P. (1995), 'Detecting Earnings Management', *The Accounting Review*, Vol. 70, Issue 2, pp. 193-225.

Dechow, J.M., Skinner, D.J. (2000), 'Earnings Management: Reconciling the Views of Accounting Academics, Practitioners, and Regulators', *Accounting Horizons*, Vol. 14, No. 2, pp. 235-250.

DeFond, M.L., Jiambalvo, J. (1994), 'Debt covenant violation and manipulation of accruals', *Journal of Accounting and Economics*, Vol. 17, pp. 145-176.

DeFond, M.L., Park, C. (1997), 'Smoothing income in anticipation of future earnings', *Journal of Accounting and Economics*, 23, pp. 115-139.

Elliot, J.A., Shaw, W.H. (1988), 'Write-offs as accounting procedures to manage perceptions', *Journal of accounting research*, Vol. 26, pp. 91-119.

Francis, J. Hanna, J.D., Vincent, L. (1996), 'Causes and Effects of Discretionary Asset Write-Offs', *Journal of Accounting Research*, Vol. 34 (Supplement), pp. 117-134.

Guidry, F., Leone, A.J., Rock, S. (1999), 'Earnings-based bonus plans and earnings management by business-unit managers', *Journal of Accounting and Economics*, Vol. 26, pp. 113-142.

Han, J.C.Y., Wang, S. (1998), 'Political Costs and Earnings Management of Oil Companies during the 1990 Persian Gulf Crisis', *The Accounting Review*, Vol. 73, No. 1, pp. 103-117.

Hayn, C., Hughes, P.J. (2006) 'Leading Indicators of Goodwill Impairment', *Journal of Accounting, Auditing and Finance*, Vol. 21, Issue 3, pp. 223-265.

Healy, P. (1985), 'The impact of bonus schemes on the selection of accounting principles', *Journal of Accounting and Economics*, Vol. 7, pp 85-107.

Healy, P.M., Wahlen J.M. (1999), 'A Review of the Earnings Management Literature and Its Implications for Standard Setting', *Accounting Horizons*, Vol. 13, No. 4, pp. 365-383.

Henning, S.L., Shaw, W.H., Stock, T. (2004) 'The Amount and Timing of Goodwill Write-offs and Revaluations: Evidence from U.S. and U.K. Firms', *Review of Quantitative Finance and Accounting*, Vol. 23, pp. 99-121.

Holterman, W.G.M. (2004), 'Waardebepaling in het kader van de goodwill impairment-test', *Maandblad voor Accountancy en Bedrijfseconomie*, nummer 6, pp. 269-276.

Johnson, S. (2007), 'Fair Value Stumps Auditors, PCAOB Told'.
[http://www.cfo.com/article.cfm/9388735?f=related] (13-01-2009).

Kaufmann, D., Kraay, A. and Mastruzzi, M. (2007), Governance Matters VI: Aggregate and Individual Governance Indicators 1996-2006. *The World Bank*, June 2007.

Klaassen, J., Helleman, J. van (2004), 'Goodwill', in: *Externe verslaggeving in theorie en praktijk (deel 2)* [M.N. Hoogendoorn, J. Klaassen, F. Krens (editors)], Reed Business Information bv, 's-Gravenhage, pp. 911-929.

Knoops C. (2004), 'Bijzondere waardeverminderingen: mogelijkheden tot resultaatsturing?', *Maandblad voor Accountants en Bedrijfseconomie*, No. 1/2, pp. 2-4.

Kothari, S.P., Leone, A.J., Wasley, C.E. (2005), Performance matched accrual measures, *Journal of accounting & economics*, Vol. 39, pp. 163-197.

Kuipers, F., Boissevain, A. (2005), 'Realiseerbare waarde als grondslag', *Fusie & Overname*, pp. 24-29.

Lander, G.H., Reinstein, A. (2003) 'Models to Measure Goodwill Impairment', *IAER*, Vol. 9, No. 3, pp. 227-232.

Lapointe-Antunes, P., Cormier, D., Magnan, M. (2008), 'Equity Recognition of Mandatory Accounting Changes: The Case of Transitional Goodwill Impairment Losses', *Canadian Journal of Administrative Sciences*, Vol. 25, pp. 37-54.

Li, Z., Shroff, P., Venkataraman, R. (2005), 'Goodwill Impairment Loss: Causes and Consequences', *SSRN Working Paper Series*, University of Minnesota.

Miller, M.H., Modigliani, F. (1966), Some estimates of the cost of capital to the electric utility industry, 1954-57, *The American Review*, Vol. 56, Number 3, pp. 333-391.

Ohlson, J.A. (1995), Earnings, Book Values and Dividends in Equity Valuation, *Contemporary Accounting Research*, pp. 661-687.

Peek, E, (2004), 'The Use of Discretionary Provisions in Earnings Management: Evidence from the Netherlands', *Journal of International Accounting Research*, Vol. 3, No. 2, pp. 27-43.

Masters-Stout, B, Costigan, M.L., Lovata, M.L. (2007), 'Goodwill impairments and chief executive officer tenure', *Critical Perspectives on Accounting*, doi:10.1016/j.cpa.2007.04.002, 14 pages.

Mohanram, P.S. (2003), 'How to manage earnings management?', *Accounting World*, pp. 1-11.

Schipper, K., (1989), 'Commentary on earning management', *Accounting horizons*, Vol. 3, No. 4, pp. 91-102.

Stolowy, H., Breton, G. (2004), 'Accounts Manipulation: A literature review and Proposed Conceptual Framework', *Review of Accounting & Finance*, Vol. 3, No. 1, pp. 5-66.

Tucker, J.W., Zarowin, P.A., (2006), 'Does Income Smoothing Improve Earnings Informativeness?', *The Accounting Review*, Vol. 81, No. 1, pp. 251-270.

Van de Poel, K., Maijoor, S., Vanstraelen, A. (2008), 'Implementation of IFRS within Europe: the case of goodwill' [http://aaahq.org/meetings/AUD2009/ImplementationOfIFRS.pdf] (07-01-2009).

Watts, R.L., and Zimmerman, J.L. (1986), *Positive Accounting Theory*, Prentice-Hall, Englewood Cliffs, New Jersey.

Xiong Y. (2006), *Earnings Management and its Measurement: A Theoretical Perspective*, California State University.

Zucca, L., Campbell, D. (1992), 'A closer look at discretionary writedowns of impaired assets', *Accounting Horizons*, September, pp. 30-41.

Law and regulation:

IAS 36 Impairment of Assets

IFRS 3 Business Combinations (2008). [http://www.iasplus.com/standard/ifrs03.htm] (13-01-2009)

Websites:

http://www.businessdictionary.com/definition/random-walk-theory.html (29-01-2009)

http://www.europa-nu.nl/9353000/1/j9vvh6nf08temv0/vh72mb14wkwh (15-4-2009)

http://economics.about.com/od/economicsglossary/g/tobit.htm (29-01-2009)

http://www.palgrave.com/pdfs/0333734718.pdf (29-01-2009)

Appendix 1: GNP European member states

Member state	Inhabitants		GNP (millions)		GNP per capita
Belgium	10.414.000	2,1%	375.700	2,6%	36.076
Bulgaria	7.205.000	1,5%	83.300	0,6%	11.561
Cyprus	797.000	0,2%	21.000	0,1%	26.349
Denmark	5.501.000	1,1%	202.900	1,4%	36.884
Germany	82.330.000	16,8%	2.806.000	19,1%	34.082
Estonia	1.299.000	0,3%	27.000	0,2%	20.785
Finland	5.250.000	1,1%	184.300	1,3%	35.105
France	62.151.000	12,7%	2.074.000	14,1%	33.370
Greece	10.737.000	2,2%	321.400	2,2%	29.934
Hungaria	9.906.000	2,0%	193.200	1,3%	19.503
Ireland	4.203.000	0,9%	184.200	1,3%	43.826
Italy	58.126.000	11,9%	1.809.000	12,3%	31.122
Latvia	2.232.000	0,5%	37.000	0,3%	16.577
Lithuania	3.555.000	0,7%	56.300	0,4%	15.837
Luxembourg	492.000	0,1%	37.500	0,3%	76.220
Malta	405.000	0,1%	9.300	0,1%	22.963
Netherlands	16.716.000	3,4%	636.100	4,3%	38.053
Austria	8.210.000	1,7%	314.100	2,1%	38.258
Poland	38.483.000	7,9%	596.900	4,1%	15.511
Portugal	10.708.000	2,2%	232.400	1,6%	21.703
Romania	22.215.000	4,5%	237.800	1,6%	10.704
Slovenia	2.006.000	0,4%	53.100	0,4%	26.471
Slowakia	5.463.000	1,1%	101.700	0,7%	18.616
Spain	40.525.000	8,3%	1.337.000	9,1%	32.992
Czech Republic	10.212.000	2,1%	242.700	1,7%	23.766
United Kingdom	61.113.000	12,5%	2.151.000	14,7%	35.197
Sweden	9.060.000	1,9%	337.100	2,3%	37.208
	489.314.000		14.662.000		

Year 2008

Source: www.europa-nu.nl

Appendix 2: The model of Van de Poel et. al (2008)

Van de Poel et al. (2008, pp. 21) use the following model in their research:

$$IMP_{it} = \alpha_0 + \alpha_1 GW_{it-1} + \alpha_2 SIZE_{it} + \alpha_3 GW\_Country_{it} + \alpha_4 \Delta GDP_{it} + \alpha_5 \Delta indROA_{it} + \alpha_6 \Delta SALES_{it} + \alpha_7 \Delta CFO_{it} + \alpha_8 BATH_{it} + \alpha_9 SMOOTH_{it} + \alpha_{10} LAW_{it} + \alpha_{11} BATH_{it} * LAW_{it} + \alpha_{12} SMOOTH_{it} * LAW_{it} + \Sigma \alpha_j Controls_{itj} + \varepsilon_{it}$$

IMPit = indicator variable (equal to 1 if impairment reported, else 0)
GWit-1 = ratio of firm i's opening balance of goodwill on total assets
SIZEit = natural logarithm of firm i's total assets
GW_COUNTRYit = median proportion of goodwill on the opening balance sheet in the country in which firm i is domiciled
ΔGDPit = the % change in Gross Domestic Product from year t-1 to year t in the country in which firm i is domiciled
ΔindROAit = the % change in firm i's industry ROA from year t-1 to year t
ΔSALESit = the % change in firm i's sales from year t-1 to year t
ΔCFOit = firm i's change in operating cash flows from year t-1 to year t, divided by total assets at the end of year t-1
BATHit = indicator variable to proxy for 'big bath' reporting (equal to one if the change in firm i's pre-impaired earnings from year t-1 to t, divided by total assets at year t-1 is below the median of non-zero negative values, else 0)
SMOOTHit = indicator variable to proxy for 'earnings smoothing'(equal to one if the change in firm i's pre-impaired earnings from year t-1 to t, divided by total assets at year t-1 is above the median of non-zero positive values, else 0)
BIG4it = indicator variable (equal to 1 in case of a Big 4 auditor, else 0)
LAWit = the 'rule of law' score for the country in which firm i is domiciled from Kaufmann et al. (2007)

Appendix 3: The model of Francis et al. (1996)

Francis et al. (1996, pp. 122-124) use the following model in their research:

$$\textbf{WRITE-OFF}_i = a_0 + a_1\textbf{RET1}_i + a_2\textbf{RET5}_i + a_3\textbf{BTM}_i + a_4\Delta\textbf{BTM}_i + a_5\Delta\textbf{ROA}_i + a_6\textbf{IND\_GROWTH}_i + a_7\textbf{IND\_}\Delta\textbf{BTM}_i + a_8\textbf{IND\_}\Delta\textbf{ROA}_i + a_9\Delta\textbf{MGMT}_i + a_{10}\textbf{POOR}_i + a_{11}\textbf{GOOD}_i + a_{12}\textbf{HIST}_i + a_{13}\textbf{IND\_HIST}_i + a_{14}\textbf{SIZE}_i + \varepsilon_i$$

WRITE-OFFi = reported amount of the write-off deflated by total assets at the end of year t-1 for write-off firms and 0 for non-write-off firms
RET1 = cumulated abnormal return on security i computed over the year (about 250 trading days) preceding the announcement of the write-off. For non-write-off firms this variable is computed after randomly assign non-write-off firms the announcement dates of the write-off firms.
RET5 = similar to RET1 except the return are measured over the period beginning five years prior to the write-off and ending one year prior to the write-off.
BTMi = firm i's industry-adjusted book-to-market ratio measured at the end of year -1
ΔBTMi = mean change in firm i's book-to-market ratio over years -5 to -1
ΔROAi = mean change in firm i's return-on-assets ratio over years -5 to -1
IND_GROWTHi = mean of the annual median percentage sales growth of all firms in the same industry as firn measured over years -5 to -1
IND_ΔBTMi = mean change in firm i's industry median book-to-market ratio over years -5 to -1
IND-ΔROAi = mean change in firm i's industry median return-on-assets ratio over years -5 to -1
ΔMGMTi = 1 if firm i had a change in key management in year -1 or in year 0 and 0 otherwise
POORi = UEi if UEi < 0 and 0 otherwise (UE = unexpected earnings = [operating earnings in year 0 - operating earnings in year - 1]/total assets at the end of year -1)
GOODi = UEi - WRITE-OFFi if > 0 and 0 otherwise
HISTORYi = number of years in which firm i reported negative special items in the five years preceding the write off
IND_HIST, = mean value of HIST for all firms (except firm i) in firm i's industry
SIZEi = log of firm i's sales in year t- 1

Appendix 4: The model of Beatty and Weber (2006)

Beatty and Weber (2006, pp. 273) use the following model in their research:

$$\begin{aligned}\textbf{Impair} = {} & \alpha + \beta 1\textbf{NWSlack} + \beta 2\textbf{INWSlack} + \beta 3\textbf{AsstPrc} + \beta 4\textbf{AsstPrc} * \textbf{HRisk} + \beta 5\textbf{Bonus} \\ & + \beta 6\textbf{Tenure} + \beta 7\textbf{Nasdaq/Amex} + \beta 8\textbf{Delist} + \beta 9\textbf{Delist} * \textbf{ExpectedImpair} \\ & + \beta 10\textbf{ExpectedImpair} + \beta 11\textbf{OneSegment} * \textbf{ExpectedImpair} + \beta 12\textbf{M/B(Assets)} \\ & + \beta 13\textbf{PropNow/o} + \beta 14\textbf{OneSegment} + \beta 15\textbf{StdRet} + \beta 16\textbf{Size} + \beta 17\textbf{Leverage} + \varepsilon \quad (1)\end{aligned}$$

Impair = a dichotomous variable equal to one if the firm recorded a goodwill impairment as a cumulative effect of accounting change from adoption of SFAS 142
NWSlack = (if the firm has a net worth covenant) the rank of covenant slack, calculated as the book value of equity (Compustat 60) less the net worth threshold, divided by the goodwill balance at the beginning of the year (Compustat 204), zero otherwise
INWSlack = *NWSlack*, if mandatory accounting changes are included in covenant calculations, zero otherwise
AsstPrc = the coefficient from a time-series regression of price per share (Compustat quarterly data item 14) on earnings from continuing operations per share (Compustat quarterly data item 177) using the 20 quarters of data prior to the adoption of SFAS 142
HRisk = a dichotomous variable that is one if the firm has a *StdRet* value that is above the median for our sample firms
Bonus = a dichotomous variable equal to one if the firm's proxy statement in the year prior to the adoption of SFAS 142 discloses the existence of an earnings based bonus plan that does not exclude special items, zero otherwise
Tenure = the number of years that the CEO has held that position
Nasdaq/*Amex* = a dichotomous variable equal to one if the firm trades on either the NASDAQ or the AMEX, zero otherwise
Delist = a dichotomous variable equal to one if recording the expected goodwill impairment would cause the firm to violate the NASDAQ or AMEX listing requirements, zero otherwise
ExpectedImpair = a dichotomous variable equal to one if the book value of equity exceeds the market value of equity, zero otherwise
M/*B*(*Assets*) = the ratio of the market value of the firm's assets (Compustat 6−Compustat 60+Compustat 199 ∗ Compustat 25) divided by the book value of the firm's assets (Compustat 6)
PropNoW /*O* = the fraction of the quarters in the three years before SFAS 142 was adopted that the firm did not recognize a charge associated with a special item (Compustat quarterly data item 177=Compustat quarterly data item 11), zero otherwise
OneSegment = a dichotomous variable equal to one if the firm has one business segment, zero otherwise
StdRet = the firm's standard deviation of daily returns for the year prior to the adoption of SFAS 142
Size = log of market value of equity (Compustat data item 199 ∗ Compustat data item 25)
Leverage = the ratio of debt (Compustat 9 + Compustat 34) to total assets (Compustat 6) in the year prior to SFAS 142 adoption.

Appendix 5: The model of Henning et al. (2004)

Henning et al. (2004, pp. 114) use the following model in their research:

$$\mathbf{IMPAIR}_j = \alpha 0 + \alpha 1\mathbf{AGE}_j + \alpha 2\mathbf{RESID}_j + \alpha 3\mathbf{SIZE}_j + \alpha 4\mathbf{PERFORMANCE}_j + \alpha 5\mathbf{RESID}_j * \mathbf{PERFORMANCE}_j + \varepsilon_j$$

IMPAIR = one if a firm recognized an impairment, zero otherwise.
AGE = the log of the number of months from the acquisition until the write-off or revaluation month.
RESID = the purchase price of the net assets acquired minus the pre-offer fair market value of the net assets acquired minus CORE.
SIZE = the log of net sales of firm *j* at the end of the year preceding the write-off.
PERFORMANCE = the cumulative abnormal return of stock *j* between the acquisition date and the end of the year preceding the write-off. The performance measurement window for control firms starts on the acquisition date and ends on the acquisition date plus the average length of the repricing period for the write-off firms in the same industry.
RESID × *PERFORMANCE* = the interaction of the variables defined above. If H2a is correct, then firms with high RESID and relatively poor performance are more likely to recognize a write-off than other firms.

Appendix 6 : The model of Lapointe-Antunes et al. (2008)

Lapointe-Antunes et al. (2008, pp. 43) use the following model in their analysis:

$$\mathbf{TGIL_i = a_0 + \lambda_1 GOODWILL_i + \lambda_2 EXCGWILL_i + \lambda_3 RUNITS_i + \lambda_4 ROE1_i + \lambda_5 ROE3_i + \lambda_6 CDEBT_i + \beta_7 DEVROE_i + \beta_8 CHANGE_i + \beta_9 PERBONUS_i + \beta_{10} ITMEXERC_i + \beta_{11} FIN_i + \beta_{12} CLIST_i + \beta_{13} AC_i + \beta_{14} OWN_i + \beta_{15} SIZE_i + IND_i + \varepsilon_i}$$

TGIL = Reported transitional goodwill impairment loss deflated by lagged total assets
GOODWILL = Opening balance of goodwill defl ated by lagged total assets (+)
EXCGWILL = Difference between the market value and the book value of the firm at the end of the year preceding the adoption of Section 3062 deflated by lagged total assets (–)
RUNITS = Number of reporting units among which the opening balance of goodwill is split or number of operating segments if data on reporting units are not disclosed (+)
ROE1 = Return-on-equity for the year preceding the adoption of Section 3062 (–)
ROE3 = Annualized return-on-equity for the third and second year preceding the adoption of Section 3062 (–)
CDEBT = Percentage of acquisitions financed entirely with cash and/or debt in the five year period preceding the adoption of Section 3062 (–)
DEVROE = 1 if pre-TGIL adoption year ROE is lower than industry median, 0 otherwise (+)
DEVROA = 1 if pre-TGIL adoption year ROA is lower than industry median, 0 otherwise (+)
DEVLEV = 1 if pre-TGIL adoption year D/E is higher than industry median, 0 otherwise (–)
CHANGE = 1 if there is a change of CEO in the year preceding or the year of adoption of Section 3062, 0 otherwise (+)
PERBONUS = Average percentage of top paid executives' compensation paid in bonus for the adoption year (+)
ITMEXERC = Average value of "in the money" exercisable stock options for the top paid executives as at the adoption year year-end divided by their total annual compensation for that same year (–)
FIN = 1 if the firm raised new debt or equity capital in the year following the announcement of the transitional impairment test being completed, 0 otherwise (–)
CLIST = 1 if the firm is cross-listed in the United States, 0 otherwise (–)
AC = Proportion of financially literate and independent directors on the audit committee in 2002 (?)
OWN = 1 if no external shareholder controls more than 20 percent of outstanding votes (i.e., the firm is widely-held), 0 otherwise (?)
SIZE = Natural logarithm of lagged total assets (?)
IND = Industry dummies, from 1 to 10 based on TSX Indices

Appendix 7: The model of Elliott and Shaw (1988)

Elliott and Shaw (1988, pp. 106) use the following model in their research:

$$y_i = \beta_0 + \beta_1 x_{1,i} + \beta_2 x_{2,i} + \sum_{j=3}^{7} \beta_j x_{j,i} + u_i$$

y_i = two-day industry-adjusted return for firm i ending on the day the write-off was first published in the WSJ.
$x_{1,I}$ = the after-tax write-off scaled by share price for firm i.
$x_{2,I}$ = unexpected earnings scaled by share price as defined in equation (1) for the ith firm.
$x_{j,i}$ = one of five (0, 1) dummy variables for the ith firm.
x_3 = bad news (1 = bad news).
x_4 = stock repurchase (1 = repurchase).
x_5 = write-off type (O = write-down; 1 = reorganization).
x_6 = management change (1 = new management).
x_7= recurring write-off (1 = write-off follows a write-off in prior year).

Appendix 8: The model of Li, Shroff and Venkataraman (2005)

Li, Shroff and Venkataraman (2005) use the following models in their research:

Model 1

To test whether the market reacts negatively to the announcement of goodwill impairment losses, they estimate the following cross-sectional regression (pp. 17-18):

$$\mathbf{AR_i = \alpha_0 + \alpha_1 ILOSS_i + \alpha_2 UE_i + \varepsilon_i}$$

AR_i = 3-day (-1, 0, +1) abnormal returns of firm i centered on the loss announcement date,
$ILOSS_i$ = Per share (after-tax) transition goodwill impairment loss of firm i announced on date t, scaled by the closing price on date t-2, Pt-2, and
UE_i = Unexpected earnings per share of firm i for the latest fiscal quarter whose earnings announcement date precedes or coincides with the loss announcement window, scaled by Pt-2.

Model 2

To test whether the market anticipated the impairment in the value of goodwill prior to the official announcement by the company, they estimate the following regression (pp. 20):

$$\mathbf{R_{it-\tau,t-1} = \gamma_0 + \gamma_1 ILOSS_{it} + \gamma_2 E_{it-\tau,t-1} + u_{it-\tau,t-1} \qquad (\tau = 4, 8)}$$

$R_{it-\tau,t-1}$ = Returns of firm *i* over quarters (*t*-τ) to (*t-1*) relative to the announcement quarter *t*,τ = 4, 8,
$ILOSS_{it}$ = Per share (after-tax) transition goodwill impairment loss of firm *i* announced in quarter *t*, scaled by price at the beginning of quarter *t*-τ,
$E_{it-\tau,t-1}$ = Sum of EPS of firm *i* over quarters (*t*-τ) to (*t-1*) relative to the announcement quarter *t*, scaled by price at the beginning of quarter *t*-τ.

Appendix 9: The model of Hayn and Hughes (2006)

Hayn and Hughes (2006, pp. 236-237) use the following model in their research:

$$\mathbf{WRITE\text{-}OFF_{it} = \alpha + \beta_1 PREM_{iA} + \beta_2 BID_{iA} + \beta_3 GW\%_{iA} + \beta_4 STOCK_{iA} + \beta_5 ANNRET_{iA} + \beta_6 ACQN_{iA} + \beta_7 ROA_{in} + \beta_8 \Delta ROA_{in} + \beta_9 LOSS_{in} + \beta_{10} \Delta SALES_{in} + \beta_{11} \Delta COMP_{in} + \beta_{12} FIRMROA_{in} + \beta_{13} FIRMRET_{in} + \varepsilon_{it}}$$

i = the firm-specific
t = time subscripts
A = the acquisition year in which the goodwill was created
n = the individual year in the time period from the acquisition year to the write-off year
WRITE-OFF = a dichotomous variable that receives the value of 1 if the goodwill arising from the acquisition is written-off in year t and 0 otherwise.
PREM = payment of a significant premium as the extent to which the acquisition cost, measured as the acquisition price plus the assumed liabilities, exceeds the average market value of the acquired firm over the preannouncement period.
BID = the number of bidders which is represented by a dummy variable that receives the value of 1 if more than one bidder is present during the acquisition period and 0 otherwise
GW% = the percentage of the acquisition cost assigned to goodwill
STOCK = an overpricing indicator, defined as the proportion of the purchase price paid for with the acquiring firm's stock and ranges from 0 to 1, with 0 representing an all-cash transaction and 1 denoting a pure stock transaction
ANNRET = the announcement period returns, measure as the cumulative abnormal returns accruing to the acquiring firm's stockholders over the twenty-one-day period beginning fifteen days before the acquisition announcement and ending five days following the announcement date
ACQN = Acquisition activity, ACQN, is measured as the number of acquisitions made by the acquiring firm over the two years preceding, and the year of, the acquisition announcement year.
ROA = operating income-to-identifiable assets
ΔROA= a change in ROA from one year to the next
LOSS = operating losses; a dummy variable coded as 1 if operating income is negative, 0 otherwise
ΔSALES = the percentage change in sales from one year to the next
ΔCOMP = a measure of the change in the competitive environment in which the segment operates, using the Herfindahl index to estimate changes in the level of competition of the reporting unit (see Rhoades [1993]; Harris [1998])
FIRMROA = the annual firm-level return on assets
FIRMRET = the annual cumulative abnormal returns of the firm over the years preceding the write-off

Appendix 10: Median and average proportion of goodwill on the opening balance in the countries in the research sample

The effects of changing form the median proportion of goodwill on the opening balance in a country to the average proportion.

	Year	Median	Average
Austria	2005	1	3,37
	2006	1	3,81
	2007	1	4,21
	2008	3	5,29
Belgium	2005	1	9,07
	2006	1	8,97
	2007	3	9,93
	2008	2	15,85
France	2005	1	9,72
	2006	1	11,29
	2007	2	13,72
	2008	2	21,30
Germany	2005	1	7,68
	2006	1	8,18
	2007	1	9,58
	2008	1	14,97
Ireland	2005	2	10,14
	2006	2 and 5	12,50
	2007	1,2, and 8	13,71
	2008	3 and 8	16,05
Luxembourg	2005	3	12,19
	2006	1	10,02
	2007	1	11,85
	2008	1	13,98
The Netherlands	2005	1	9,30
	2006	1	10,58
	2007	1	12,88
	2008	1	17,21
The United Kingdom	2005	1	14,03
	2006	1 and 3	16,25
	2007	1	18,71
	2008	1	21,37

Appendix 11: Auditor distribution

The distribution of auditors over the sample.

Industry	0001	Big 4 auditor	110	76,92%
		Non big 4 auditor	26	18,18%
		Unknown	7	4,90%
			143	100,00%
	1000	Big 4 auditor	234	65,55%
		Non big 4 auditor	91	25,49%
		Unknown	32	8,96%
			357	100,00%
	2000	Big 4 auditor	1441	60,75%
		Non big 4 auditor	561	23,65%
		Unknown	370	15,60%
			2372	100,00%
	3000	Big 4 auditor	580	54,21%
		Non big 4 auditor	314	29,35%
		Unknown	176	16,45%
			1070	100,00%
	4000	Big 4 auditor	333	60,22%
		Non big 4 auditor	132	23,87%
		Unknown	88	15,91%
			553	100,00%
	5000	Big 4 auditor	846	53,75%
		Non big 4 auditor	414	26,30%
		Unknown	314	19,95%
			1574	100,00%
	6000	Big 4 auditor	90	55,90%
		Non big 4 auditor	33	20,50%
		Unknown	38	23,60%
			161	100,00%
	7000	Big 4 auditor	93	86,11%
		Non big 4 auditor	8	7,41%
		Unknown	7	6,48%
			108	100,00%
	9000	Big 4 auditor	615	46,73%
		Non big 4 auditor	408	31,00%
		Unknown	293	22,26%
			1316	100,00%

Appendix 12: Return on assets of the identified industries

Industrial groups in the Industrial Classification Benchmark Industry and the return on assets.

Industry	Name	Year	ROA
0001	Oil and gas	2005	19,64
0001	Oil and gas	2006	18,09
0001	Oil and gas	2007	17,55
0001	Oil and gas	2008	14,69
1000	Basic materials	2005	11,50
1000	Basic materials	2006	14,92
1000	Basic materials	2007	13,21
1000	Basic materials	2008	11,05
2000	Industrials	2005	4,98
2000	Industrials	2006	5,44
2000	Industrials	2007	5,66
2000	Industrials	2008	4,26
3000	Consumer goods	2005	6,64
3000	Consumer goods	2006	6,31
3000	Consumer goods	2007	8,28
3000	Consumer goods	2008	5,73
4000	Health care	2005	11,97
4000	Health care	2006	14,48
4000	Health care	2007	11,55
4000	Health care	2008	8,62
5000	Consumer services	2005	5,28
5000	Consumer services	2006	5,78
5000	Consumer services	2007	5,84
5000	Consumer services	2008	4,09
6000	Telecommunications	2005	2,84
6000	Telecommunications	2006	3,96
6000	Telecommunications	2007	6,37
6000	Telecommunications	2008	5,81
7000	Utilities	2005	4,70
7000	Utilities	2006	4,51
7000	Utilities	2007	5,67
7000	Utilities	2008	3,67
9000	Technology	2005	5,71
9000	Technology	2006	5,26
9000	Technology	2007	2,51
9000	Technology	2008	0,60

Appendix 13: Research output of the total sample

Correlations

	GDP Country	Law	Goodwill	GW Country	Size	Change Ind ROA	Bath amount	Smooth amount	Change CF	Change Sales
GDP Country										
Law	,152**									
Goodwill	,007	,082**								
GW Country	-,261**	,059**	,224**							
Size	-,035**	-,023*	-,081**	-,015						
Change Ind_ROA	,279**	,012	-,098**	-,239**	,086**					
Bath_amount	,007	,039**	,055**	,046**	-,212**	-,019				
Smooth_amount	,032**	,008	-,043**	,044**	-,033**	-,023*	-,191**			
Change CF	,049**	,003	-,014	-,046**	-,058**	,026*	-,160**	,182**		
Change Sales	,091**	,002	-,009	-,053**	-,144**	,036**	-,076**	,070**	,089**	

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,377[a]	,142	,141	9,49664

a. Predictors: (Constant), Change Sales, Law , Change Ind_ROA, Smooth_amount, Goodwill, Size, Change CF, GW Country, Bath_amount, GDP Country

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	114206,947	10	11420,695	126,635	,000[a]
	Residual	689292,818	7643	90,186		
	Total	803499,765	7653			

a. Predictors: (Constant), Change Sales, Law , Change Ind_ROA, Smooth_amount, Goodwill, Size, Change CF, GW Country, Bath_amount, GDP Country

b. Dependent Variable: Impair_amout

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-4,148	1,397		-2,969	,003
	GDP Country	-,071	,113	-,007	-,630	,528
	Law	,962	,587	,018	1,638	,101
	Goodwill	,072	,006	,131	11,937	,000
	GW Country	,005	,026	,002	,179	,858
	Size	,057	,050	,013	1,156	,248
	Change Ind_ROA	,001	,005	,003	,225	,822
	Bath_amount	,171	,006	,312	27,666	,000
	Smooth_amount	,087	,017	,055	4,992	,000
	Change CF	-,071	,006	-,131	-11,992	,000
	Change Sales	,001	,001	,004	,405	,685

a. Dependent Variable: Impair_amout

Appendix 14: Research output of the total sample with a 2,5 percent margin

Correlations

	GDP Country	Law	Goodwill	GW Country	Size	Change Ind_ROA	Bath	Smooth	Change CF	Change Sales
GDP Country										
Law	,152**									
Goodwill	,007	,082**								
GW Country	-,261**	,059**	,224**							
Size	-,035**	-,023*	-,081**	-,015						
Change Ind_ROA	,279**	,012	-,098**	-,239**	,086**					
Bath	-,035**	,028*	,019	-,013	-,197**	,009				
Smooth	,039**	,008	-,006	,050**	,051**	-,032**	-,595**			
Change CF	,049**	,003	-,014	-,046**	-,058**	,026*	-,157**	,143**		
Change Sales	,091**	,002	-,009	-,053**	-,144**	,036**	-,081**	,089**	,089**	

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,222[a]	,049	,048	,357

a. Predictors: (Constant), Change Sales, Law , Change Ind_ROA, Bath, Goodwill, Change CF, Size, GW Country, GDP Country, Smooth

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	50,711	10	5,071	39,704	,000[a]
	Residual	976,191	7643	,128		
	Total	1026,901	7653			

a. Predictors: (Constant), Change Sales, Law , Change Ind_ROA, Bath, Goodwill, Change CF, Size, GW Country, GDP Country, Smooth

b. Dependent Variable: Impair

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-,510	,053		-9,552	,000
	GDP Country	-,010	,004	-,029	-2,412	,016
	Law	,116	,022	,060	5,235	,000
	Goodwill	,002	,000	,076	6,582	,000
	GW Country	-,003	,001	-,037	-3,036	,002
	Size	,027	,002	,169	14,433	,000
	Change Ind_ROA	,000	,000	-,025	-2,093	,036
	Bath	,047	,011	,061	4,281	,000
	Smooth	-,020	,010	-,027	-1,903	,057
	Change CF	-,002	,000	-,084	-7,356	,000
	Change Sales	4,419E-5	,000	,009	,788	,430

a. Dependent Variable: Impair

Appendix 15: Research output of the total sample with a 2,5 percent margin

Correlations

	GDP Country	Law	Goodwill	GW Country	Size	Change Ind_ROA	Bath amount	Smooth amount	Change CF	Change Sales
GDP Country										
Law	,152**									
Goodwill	,007	,082**								
GW Country	-,261**	,059**	,224**							
Size	-,035**	-,023*	-,081**	-,015						
Change Ind_ROA	,279**	,012	-,098**	-,239**	,086**					
Bath_amount	,012	,045**	,061**	,053**	-,224**	-,021				
Smooth_amount	,031**	,008	-,049**	,037**	-,059**	-,018	-,141**			
Change CF	,049**	,003	-,014	-,046**	-,058**	,026*	-,169**	,179**		
Change Sales	,091**	,002	-,009	-,053**	-,144**	,036**	-,072**	,070**	,089**	

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,393[a]	,154	,153	9,42843

a. Predictors: (Constant), Change Sales, Law , Change Ind_ROA, Smooth_amount, Goodwill, Bath_amount, Change CF, Size, GW Country, GDP Country

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	124072,801	10	12407,280	139,572	,000[a]
	Residual	679426,964	7643	88,895		
	Total	803499,765	7653			

a. Predictors: (Constant), Change Sales, Law , Change Ind_ROA, Smooth_amount, Goodwill, Bath_amount, Change CF, Size, GW Country, GDP Country

b. Dependent Variable: Impair_amout

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-4,576	1,387		-3,299	,001
	GDP Country	-,091	,113	-,009	-,804	,421
	Law	,857	,583	,016	1,468	,142
	Goodwill	,072	,006	,130	11,881	,000
	GW Country	,000	,026	,000	-,020	,984
	Size	,101	,049	,023	2,038	,042
	Change Ind_ROA	,001	,005	,002	,182	,856
	Bath_amount	,204	,007	,332	29,779	,000
	Smooth_amount	,089	,019	,051	4,662	,000
	Change CF	-,066	,006	-,124	-11,357	,000
	Change Sales	,001	,001	,006	,522	,602

a. Dependent Variable: Impair_amout

Appendix 16: Research output of the total sample with a 5,0 percent margin

Correlations

	GDP Country	Law	Goodwill	GW Country	Size	Change Ind_ROA	Bath	Smooth	Change CF	Change Sales
GDP Country										
Law	,152**									
Goodwill	,007	,082**								
GW Country	-,261**	,059**	,224**							
Size	-,035**	-,023*	-,081**	-,015						
Change Ind_ROA	,279**	,012	-,098**	-,239**	,086**					
Bath	-,014	,030**	,036**	,021	-,234**	-,005				
Smooth	,042**	,015	-,013	,052**	-,010	-,033**	-,371**			
Change CF	,049**	,003	-,014	-,046**	-,058**	,026*	-,166**	,140**		
Change Sales	,091**	,002	-,009	-,053**	-,144**	,036**	-,076**	,080**	,089**	

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,230[a]	,053	,051	,357

a. Predictors: (Constant), Change Sales, Law , Change Ind_ROA, Bath, Goodwill, Change CF, Size, GW Country, GDP Country, Smooth

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	54,101	10	5,410	42,505	,000[a]
	Residual	972,801	7643	,127		
	Total	1026,901	7653			

a. Predictors: (Constant), Change Sales, Law , Change Ind_ROA, Bath, Goodwill, Change CF, Size, GW Country, GDP Country, Smooth

b. Dependent Variable: Impair

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-,533	,053		-10,036	,000
	GDP Country	-,011	,004	-,031	-2,548	,011
	Law	,115	,022	,059	5,231	,000
	Goodwill	,001	,000	,075	6,509	,000
	GW Country	-,003	,001	-,039	-3,238	,001
	Size	,028	,002	,176	14,939	,000
	Change Ind_ROA	,000	,000	-,025	-2,101	,036
	Bath	,074	,010	,088	7,020	,000
	Smooth	-,021	,010	-,026	-2,108	,035
	Change CF	-,002	,000	-,079	-6,904	,000
	Change Sales	5,420E-5	,000	,011	,969	,333

a. Dependent Variable: Impair

Appendix 17: Research output of the total sample with a 5,0 percent margin

Correlations

	GDP Country	Law	Goodwill	GW Country	Size	Change Ind_ROA	Bath amount	Smooth amount	Change CF	Change Sales
GDP Country										
Law	,152**									
Goodwill	,007	,082**								
GW Country	-,261**	,059**	,224**							
Size	-,035**	-,023*	-,081**	-,015						
Change Ind_ROA	,279**	,012	-,098**	-,239**	,086**					
Bath_amount	,017	,051**	,067**	,058**	-,233**	-,022*				
Smooth_amount	,028*	,005	-,056**	,028*	-,076**	-,012	-,106**			
Change CF	,049**	,003	-,014	-,046**	-,058**	,026*	-,178**	,176**		
Change Sales	,091**	,002	-,009	-,053**	-,144**	,036**	-,067**	,069**	,089**	

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,411[a]	,169	,168	9,34885

a. Predictors: (Constant), Change Sales, Law , Change Ind_ROA, Smooth_amount, Bath_amount, Goodwill, Change CF, Size, GW Country, GDP Country

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	135494,468	10	13549,447	155,026	,000[a]
	Residual	668005,297	7643	87,401		
	Total	803499,765	7653			

a. Predictors: (Constant), Change Sales, Law , Change Ind_ROA, Smooth_amount, Bath_amount, Goodwill, Change CF, Size, GW Country, GDP Country

b. Dependent Variable: Impair_amout

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-4,989	1,376		-3,627	,000
	GDP Country	-,111	,112	-,011	-,997	,319
	Law	,734	,578	,014	1,269	,204
	Goodwill	,071	,006	,128	11,820	,000
	GW Country	-,005	,026	-,002	-,215	,830
	Size	,142	,049	,032	2,889	,004
	Change Ind_ROA	,001	,005	,002	,141	,888
	Bath_amount	,246	,008	,355	32,110	,000
	Smooth_amount	,096	,021	,049	4,537	,000
	Change CF	-,062	,006	-,115	-10,678	,000
	Change Sales	,001	,001	,006	,608	,543

a. Dependent Variable: Impair_amout