



**The effects of ex-CEO's board service and
CEO change type on the association between
CEO changes and goodwill impairments:
Evidence from U.S. companies during 2002-
2009**

Master's Thesis
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Accounting
Fall 2018

Approved in the Department of Accounting __/__/20__ and awarded the grade

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Title of thesis The effects of ex-CEO's board service and CEO change type on the association between CEO changes and goodwill impairments: Evidence from U.S. companies during 2002-2009

Degree Master of Science in Economics and Business Administration

Degree programme Accounting

Thesis advisor(s) Henry Jarva

Year of approval 2018**Number of pages** 82**Language** English

Abstract

The purpose of this paper is to examine whether there is an association between CEO changes and goodwill impairments in U.S. companies during 2002-2009, and how ex-CEO's board service and CEO change type affect this association. In 2001, the FASB introduced a new goodwill accounting standard SFAS 142, which allows goodwill to be tested for impairment instead of periodic amortization. To determine whether goodwill is impaired, managers estimate the fair value of goodwill, which is highly subjective in nature. Many researchers have raised concerns about this increased managerial discretion with regard to goodwill accounting.

The highly subjective nature of goodwill impairment tests makes goodwill impairments an ideal earnings management tool for managers. Many prior studies document that new CEOs tend to record initial "earnings baths", especially after CEO resignations. It is hypothesized that new CEOs use goodwill impairments in their baths, and that this is driven by CEO resignations. CEOs might resist the write-off of personally-acquired goodwill because the write-off could harm their reputation. It is further hypothesized that ex-CEO's presence on the board prevents goodwill impairments by the new CEO.

The topic of this paper is important because of goodwill's increased importance in financial statements, substantial managerial discretion afforded by SFAS 142, and managerial incentives related to CEO changes. There is also little prior research on CEO's board service.

Data used in this study is obtained from Compustat database. This study focuses on years 2002-2009 because SFAS 142 was introduced in 2001, and data when CEOs have left their companies is stored until 2009 on Compustat. The final sample consists of 30,625 firm-year observations. Hypotheses of this paper are studied using both logistic and linear regression. Decisions of whether to record a goodwill impairment in a given year or not are of primary interest.

The main findings of this paper are the following. First, it is shown that CEO changes and goodwill impairments are positively and significantly associated, implying that new CEOs use goodwill impairments in their earnings baths. Second, it is shown that ex-CEO's board service does not affect the positive association between CEO changes and goodwill impairments, despite the incentives for preventing impairment. Third, it is shown that the positive association between CEO changes and goodwill impairments is driven by CEO resignations and not by CEO retirements. Finally, it is shown that goodwill impairments after CEO changes are also larger.

Keywords goodwill impairment, SFAS 142, CEO change, CEO board service, logistic regression, CEO resignation, CEO retirement, earnings bath, managerial discretion

Tekijä Henrik Harjula

Työn nimi Ex-toimitusjohtajan hallitustyöskentelyn ja toimitusjohtajavaihdostyyppin vaikutukset toimitusjohtajavaihdosten ja liikearvon alaskirjausten väliseen yhteyteen yhdysvaltalaisissa yrityksissä vuosina 2002-2009

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Työn ohjaaja(t) Henry Jarva

Hyväksymisvuosi 2018**Sivumäärä** 82**Kieli** Englanti

Tiivistelmä

Tässä tutkielmassa tutkitaan, onko toimitusjohtajavaihdosten ja liikearvon alaskirjausten välillä yhteyttä yhdysvaltalaisissa yrityksissä vuosina 2002-2009, ja vaikuttaako ex-toimitusjohtajan hallitustyöskentely ja toimitusjohtajavaihdostyyppi tähän yhteyteen. FASB otti vuonna 2001 käytäntöön uuden liikearvostandardin SFAS 142:n, jonka mukaan liikearvon arvonalentumista tulee testata jaksottaisen poistamisen sijaan. Määrittääkseen onko liikearvon arvo alentunut, johto arvioi liikearvon käyvän arvon, mikä on luonteeltaan hyvin subjektiivista. Moni tutkija on ollut huolissaan tästä lisääntyneestä johdon harkinnanvarasta liittyen liikearvolaskentaan.

Liikearvon arvonalentumistestin hyvin subjektiivinen luonne tekee liikearvon alaskirjauksista ideaalisen tuloksenohjailukeinon johdolle. Moni aiempi tutkimus dokumentoi, että uusilla toimitusjohtajilla on tapana kirjata ”tulosityöskentely”, etenkin eroamisen jälkeen. Hypoteesin mukaan uudet toimitusjohtajat käyttävät liikearvon alaskirjauksia kylvyissään, ja että tämä johtuu eroamisista. Toimitusjohtajat voivat vastustaa itse hankkimansa liikearvon alaskirjaamista, koska alaskirjaus voi vahingoittaa heidän mainettaan. Hypoteesin mukaan ex-toimitusjohtajan läsnäolo hallituksessa estää liikearvon alaskirjaukset uudelta toimitusjohtajalta.

Tutkielman aihe on tärkeä, koska liikearvo on yhä tärkeämpi osa tilinpäätöksiä, SFAS 142 mahdollistaa huomattavan harkinnanvaran johdolle ja johdolla on kannustimia liittyen toimitusjohtajavaihdoksiin. Myös aiempaa tutkimusta toimitusjohtajien hallitustyöskentelystä on vähän.

Tutkielmassa käytetty data on saatu Compustat-tietokannasta. Tutkielma keskittyy vuosiin 2002-2009, koska SFAS 142-standardi tuli käytäntöön vuonna 2001, ja tieto siitä milloin toimitusjohtajat ovat lähteneet yrityksistään on lisätty Compustatiin vuoteen 2009 asti. Lopullinen aineisto koostuu 30 625 yritys-vuosi havainnosta. Hypoteeseja tutkitaan sekä logistisella että lineaarisella regressiolla. Päätökset siitä kirjataanko liikearvon alaskirjauksia tietyinä vuosina vai ei ovat ensisijaisen kiinnostuksen kohteena.

Tutkielman päälöydökset ovat seuraavat. Ensiksi näytetään, että toimitusjohtajavaihdosten ja liikearvon alaskirjausten välinen yhteys on positiivinen ja merkitsevä. Tämä tarkoittaa, että uudet toimitusjohtajat käyttävät liikearvon alaskirjauksia tulosityöskentelyssään. Toiseksi näytetään, että ex-toimitusjohtajan läsnäolo hallituksessa ei vaikuta toimitusjohtajavaihdosten ja liikearvon alaskirjausten väliseen positiiviseen yhteyteen, huolimatta kannustimista estää alaskirjaus. Kolmanneksi näytetään, että toimitusjohtajavaihdosten ja liikearvon alaskirjausten välinen positiivinen yhteys johtuu toimitusjohtajien eroamisista eikä toimitusjohtajien eläköitymisistä. Viimeiseksi näytetään, että liikearvon alaskirjaukset toimitusjohtajavaihdosten jälkeen ovat myös suurempia.

Avainsanat liikearvon alaskirjaus, SFAS 142, toimitusjohtajavaihdos, toimitusjohtajan hallitustyöskentely, logistinen regressio, eroaminen, eläköityminen, tulosityöskentely, harkinnanvara

Table of Contents

1. INTRODUCTION.....	1
1.1 Background and motivation for the study	1
1.2 Objective and scope of the study.....	3
1.3 Research design and main findings.....	4
1.4 Structure of the paper	5
2. GOODWILL AND GOODWILL IMPAIRMENTS.....	7
2.1 What is goodwill?	8
2.2 SFAS 142 standard.....	12
2.2.1 Critique on SFAS 142	15
2.3 Prior research on goodwill impairments	17
2.3.1 Goodwill impairments as a dependent variable.....	17
2.3.2 Managerial discretion and delaying goodwill impairments	20
3. CEO CHANGES AND CORPORATE GOVERNANCE	25
3.1 The CEO.....	25
3.1.1 CEO and Earnings Management	27
3.2 The Board of Directors.....	29
3.3 Prior research on CEO changes.....	31
3.3.1 Prior research on the type of the CEO change.....	36
3.4 Prior research on CEO's board service	37
4. HYPOTHESES DEVELOPMENT.....	41
5. RESEARCH DESIGN	48
5.1 Developing models.....	48
5.2 Data collection and sample selection	55
6. EMPIRICAL RESULTS.....	58
6.1 Descriptive statistics.....	58
6.2 Correlation between explanatory variables	62
6.3 Regression results.....	65
6.4 Interpretation of regression results	70
6.5 Sensitivity analyses	75
7. CONCLUSION	79
REFERENCES.....	83

Tables

Table 1. Sample selection criteria	56
Table 2. Descriptive statistics from years 2002-2009 for variables used in this study	59
Table 3. Descriptive statistics with respect to years studied	61
Table 4. Correlation matrix of explanatory variables.....	63
Table 5. Regression results from Model 1	65
Table 6. Regression results from Model 2	67
Table 7. Regression results from Model 3	68
Table 8. Regression results from Model 4	69

Figures

Figure 1. Components of goodwill (Johnson and Petrone, 1998)	9
Figure 2. Goodwill impairment testing according to SFAS 142	14

Abbreviations

CEO	Chief Executive Officer
FASB	Financial Accounting Standards Board
IASB	International Accounting Standards Board
IAS	International Accounting Standards
IFRS	International Financial Reporting Standards
OLS	Ordinary Least Squares
SEC	United States Securities and Exchange Commission
SFAS	Statement of Financial Accounting Standards
U.S. GAAP	Generally Accepted Accounting Principles in the United States

1. INTRODUCTION

1.1 Background and motivation for the study

Since 2001, all U.S. companies have been obliged to adopt SFAS 142 goodwill accounting standard (FASB, 2001b). SFAS 142 introduced new goodwill impairment testing to be performed instead of periodic amortization of goodwill. This conceptual change from goodwill amortization to goodwill impairment testing was remarkable. The FASB introduced new goodwill standard because it had received feedback that goodwill amortizations were not useful information: The FASB argued that SFAS 142 would improve goodwill accounting because SFAS 142 would better reflect the underlying economics of goodwill (FASB, 2001b). The implicit goal of SFAS 142 is to make goodwill more useful in firm valuation (Kothari et al., 2010).

The introduction of SFAS 142 led to a considerable amount of critique among the academia. According to the standard, goodwill can be tested for impairment. In the tests, managers estimate the fair value of their firm's goodwill: Determining the fair value of goodwill is highly subjective in nature because fair value is based on estimates and assumptions (Watts, 2003; Ramanna and Watts, 2012). No one can prove whether an estimate made by the manager is right or wrong *ex ante* (Ramanna and Watts, 2012). In addition, there does not exist any observable market price for goodwill (Kothari et al., 2010). These issues mean that managers are afforded with substantial discretion to decide whether goodwill is impaired or not during a given year and time goodwill impairments according to their own interests (Hayn and Hughes, 2006). Many studies indeed document that goodwill impairments in accounting lag many years behind the economic impairment of goodwill (Hayn and Hughes, 2006), which means that goodwill balances might often be inflated on balance sheets (Li and Sloan, 2017).

The highly subjective nature of goodwill impairment tests makes goodwill impairments an ideal earnings management vehicle for managers (Jahmani et al., 2010). Delaying a goodwill impairment (when economic impairment has occurred) can be considered as income-increasing earnings management. Recording large and untimely "big bath" goodwill impairments can be considered as income-decreasing earnings management. Using goodwill

impairments to manage earnings gives financial statement users a distorted view of the company's earnings and financial position.

One possible event triggering goodwill impairments is the change of the company's CEO. Many prior studies find that newly-appointed CEOs tend to record initial "earnings baths" in the very beginning of their service (e.g. Strong and Meyer, 1987; Pourciau, 1993; Weisbach, 1995). The new CEO is incentivized to record an income-decreasing "earnings bath" because he can (implicitly or explicitly) attribute these poor initial earnings to the previous CEO's bad decisions (Pourciau, 1993). In addition, the new CEO can take credit for the higher earnings in the following years, as it should be easy to improve from the "earnings bath" year's low earnings (Pourciau, 1993). The outgoing CEO is likely to be the one who made the acquisition(s) which created goodwill in the first place, while the incoming CEO has had nothing to do with the acquisition(s). The outgoing CEO might have delayed goodwill impairments in his last years in service because any impairments could harm his reputation (Ramanna and Watts, 2012). In this situation the incoming CEO has a trivial task to write impaired goodwill off. Because of all these incentives related to CEO changes and goodwill impairments, it is important to study whether newly-appointed CEOs engage in "earnings baths" with goodwill impairments specifically.

As stated, a CEO might be reluctant to write off personally-acquired goodwill because the write-off would prove that the acquisition(s) related to goodwill was a mistake: This would harm the CEO's reputation (Weisbach, 1995; Ramanna and Watts, 2012). The newly-appointed CEO is free to write off goodwill because he has had nothing to do with the original acquisition(s). The outgoing CEO might continue serving the company as a director on the board (Evans et al., 2010). Quigley and Hambrick (2012) suggest that the ex-CEO is likely to favor strategies and policies he has put in place and his presence on the board might hinder the new CEO from making major changes. Berenbeim (1995) concludes that it might be difficult to reverse a past decision or action with a board which includes the person who made the original decision. Daily and Dalton (1997) argue that the new CEO might fear that any major changes might offend the former CEO. Thus, it is important and interesting to study how the incoming CEO's goodwill impairment decision is affected if the outgoing CEO stays on the board of directors. There is very little prior research on CEO's board service, and a major contribution of this study is that the consequences of ex-CEO's board service are examined. More precisely, it is examined how ex-CEO's board service affects the association between CEO changes and goodwill impairments. To the best of the author's

knowledge, this is the first study to examine how ex-CEO's board service affects goodwill impairment decisions by the newly-appointed CEOs.

Several past studies document that different types of CEO changes (e.g. resignations and retirements) have different consequences. These studies generally report that new CEOs tend to record "earnings baths" after non-routine CEO changes (resignations) but not after routine CEO changes (retirements) (e.g. Pourciau, 1993; Wells, 2002). Thus, it is interesting to further study how the CEO change type (resignation or retirement) affects the association between CEO changes and goodwill impairments.

It is important to study goodwill and goodwill accounting for several reasons. The proportion of intangible assets on firms' balance sheets has been increasing steadily (Dichev, 2008), and around 85% of total intangible assets is goodwill (Lee, 2011). Both the proportion of firms having goodwill on their balance sheet and the proportion of goodwill to total assets have been increasing during the last decades (Hayn and Hughes, 2006). Dollar amounts involved in goodwill are very large (Jarva, 2014). Thus, goodwill is a prominent asset on the balance sheets of companies. Goodwill is important in estimating future cash flows and thus in firm valuation (Hayn and Hughes, 2006). As stated before, SFAS 142 standard affords managers with substantial discretion with regard to goodwill impairments, which might compromise the usefulness of goodwill in firm valuation. Finally, goodwill impairments are among the largest types of long-lived asset write-offs (Francis et al., 1996), and the economic significance of goodwill impairments has been increasing (Li et al., 2011), meaning that managerial decisions of whether or not to impair goodwill might significantly influence earnings reported by companies.

1.2 Objective and scope of the study

The purpose of this study is to examine the association between CEO changes and goodwill impairments. It is also examined how ex-CEO's board service affects the association between CEO changes and goodwill impairments. Furthermore, CEO changes are categorized into resignations and retirements, and it is further studied how different types of CEO changes are associated with goodwill impairments.

Condensed, the two main research questions of this study are the following:

- 1) *Are CEO changes and goodwill impairments associated?*
- 2) *How ex-CEO's board service and CEO change type affect the association between CEO changes and goodwill impairments?*

This study focuses on goodwill impairments under SFAS 142 standard. Thus, the focus is on U.S. companies. The first year to study is 2002, because SFAS 142 was introduced in 2001. It should be noted that accounting treatment for goodwill is very similar under both U.S. GAAP and IFRS standards (FASB, 2001b; IASB, 1998). This means that this study could have focused on companies following IFRS as well. The author decided to study companies following U.S. GAAP because of the better availability of data.

This study contributes to prior accounting literature in at least three ways. First, even though extensive evidence of newly-appointed CEOs' "earnings bath" behavior exists (Pourciau, 1993), this study provides further empirical evidence on whether goodwill impairments specifically (instead of some other accounting items) are used by newly-appointed CEOs in their "earnings baths". Second, to the best of the author's knowledge, this is the first study to provide empirical evidence on how ex-CEO's board service affects the association between CEO changes and goodwill impairments. Third, even though there exists some evidence on how the CEO change type (resignation or retirement) affects "earnings baths" by newly-appointed CEOs (Wells, 2002), this study provides further empirical evidence on how CEO resignations and CEO retirements are associated with goodwill impairments specifically. Moreover, the findings presented in this paper should be of interest for financial statement users, standard setters, and people working in the industry.

1.3 Research design and main findings

Data used in this study is obtained from Compustat-database: Financial statement data is obtained from Compustat Fundamentals Annual and CEO change data is obtained from Compustat ExecuComp. The time period studied in this paper (years 2002-2009) is chosen because year 2002 was the first full year when following SFAS 142 standard was mandatory and year 2009 was the last year when data on the dates when CEOs have left their companies was stored on Compustat. Only firm-years with a positive goodwill balance on the beginning

balance sheet are studied because there is no point to compare goodwill impairment firms to firms with no possibility to impair goodwill (Jarva, 2014). Some other restrictions on firm-years are also introduced, and the final sample used in this study consists of 30,625 firm-year observations. To test for the four hypotheses of this paper, four goodwill impairment models are developed. Associations between variables of interest are studied using both logistic and linear regression analysis. Decisions of whether or not to impair goodwill during a given year are of primary interest and the actual goodwill impairment amounts are of secondary interest in this study.

The main findings of this paper are the following. First, it is shown that CEO changes and goodwill impairments are positively and significantly associated. This implies that new CEOs use goodwill impairments specifically in their “earnings baths”. Second, it is shown that ex-CEO’s board service does not affect the positive association between CEO changes and goodwill impairments, despite the incentives for preventing impairment. To the best of the author’s knowledge, this is the first study to show that ex-CEO’s presence on the board does not prevent goodwill impairments by the new CEO. Third, it is shown that the positive association between CEO changes and goodwill impairments is driven by CEO resignations and not by CEO retirements. This implies that different types of CEO changes have different implications for goodwill impairment behavior by newly-appointed CEOs. Fourth, it is shown that neither resigned nor retired ex-CEOs on the board prevent goodwill impairments by the new CEO. In addition, it is shown that goodwill impairments after CEO changes are also larger. This is also driven by CEO resignations and not by CEO retirements. Finally, it is shown that goodwill impairments are not larger after CEO changes if the departing CEO stays on the board.

1.4 Structure of the paper

This paper is structured as follows. In section 2, goodwill as an asset is first introduced. After that, SFAS 142 goodwill accounting standard is introduced along with critique presented by accounting researchers. Finally, prior research on goodwill impairments is presented, including research on both the variables explaining goodwill impairments and the discretion afforded to managers by the standard. In section 3, CEOs and boards of directors as corporate governance institutions are first introduced. Some background on managerial earnings

management is also presented. After that, prior research on CEO changes, CEO change types, and CEO's board service is presented. In section 4, the four hypotheses of this paper are thoroughly rationalized and introduced. In section 5, the development process of the four models used in this study is presented, and expectations on the coefficients in the models are formed. In addition, data collection and sample selection processes are thoroughly presented. In section 6, the empirical results of this paper are shown. First, selected descriptive statistics of the variables used in this study along with the Pearson and Spearman correlations of the explanatory variables are shown. After that, regression results are presented along with the author's interpretation of the regression results. Finally, some sensitivity analyses to validate the main findings of the paper are conducted. In section 7, this paper is concluded with implications and limitations of this study along with suggestions for future research.

2. GOODWILL AND GOODWILL IMPAIRMENTS

Goodwill accounting has been subject to a considerable amount of debate among the academic society for the past 50 years (Ramanna and Watts, 2012). Researchers become especially interested in goodwill accounting in time periods when a lot of mergers and acquisitions take place (Johnson and Petrone, 1998). There has been discussion on whether acquired goodwill should be (1) expensed immediately, (2) amortized gradually over a number of years, or (3) tested for impairment periodically and recorded as impairment losses if needed. All of the three alternative accounting treatments for acquired goodwill have been allowed by different accounting regimes in the past. Currently, both U.S. GAAP and IFRS require acquired goodwill to be tested for impairment periodically (FASB, 2001b; IASB, 1998).

Both the FASB and the IASB have been shifting from historical cost accounting towards fair value accounting in their standards (Kothari et al., 2010). Allowing goodwill impairment testing with SFAS 142 and IAS 36 standards instead of goodwill amortization is an example of this conceptual shift towards increasing use of fair values (Kothari et al., 2010). The main goal of the shift towards fair value accounting is to make accounting figures more useful for firm valuation (Kothari et al., 2010). There have also been propositions of shifting from rules-based accounting to more principles-based accounting (SEC, 2003; Kothari et al., 2010). This shift would increase the use of fair values, leading information to be more relevant, but less reliable (Kothari et al., 2010). The SEC mentioned SFAS 142 as an example of a principles-based accounting standard (SEC, 2003).

Critics remind that with fair values, unverifiable estimates are used in official financial reports, affecting decisions made by financial statement users (Watts, 2003). Accounting researchers have debated for ages whether relevance or reliability is a more important accounting property (Bens et al., 2011). Historical cost accounting is considered being more reliable, but less relevant, whereas fair value accounting is considered being more relevant, but less reliable (Bens et al., 2011). Bens et al. (2011) highlight that for the accounting for intangible assets it is especially difficult to balance relevance and reliability in an appropriate way.

2.1 What is goodwill?

Goodwill is an intangible asset that is recorded as a separate line item on the balance sheet under long-term assets. Goodwill can be either purchased or internally generated (Davis, 1992). Purchased goodwill arises when a firm acquires another firm for a premium price. Internally generated goodwill is something that arises inside the firm, not related to any acquisitions. It is important to notice that only purchased goodwill is recognized on the balance sheet, meaning that internally generated goodwill cannot be seen in financial statements (Davis, 1992). This paper focuses on purchased goodwill visible on firms' balance sheets. Thus, internally generated goodwill is not discussed any further than this.

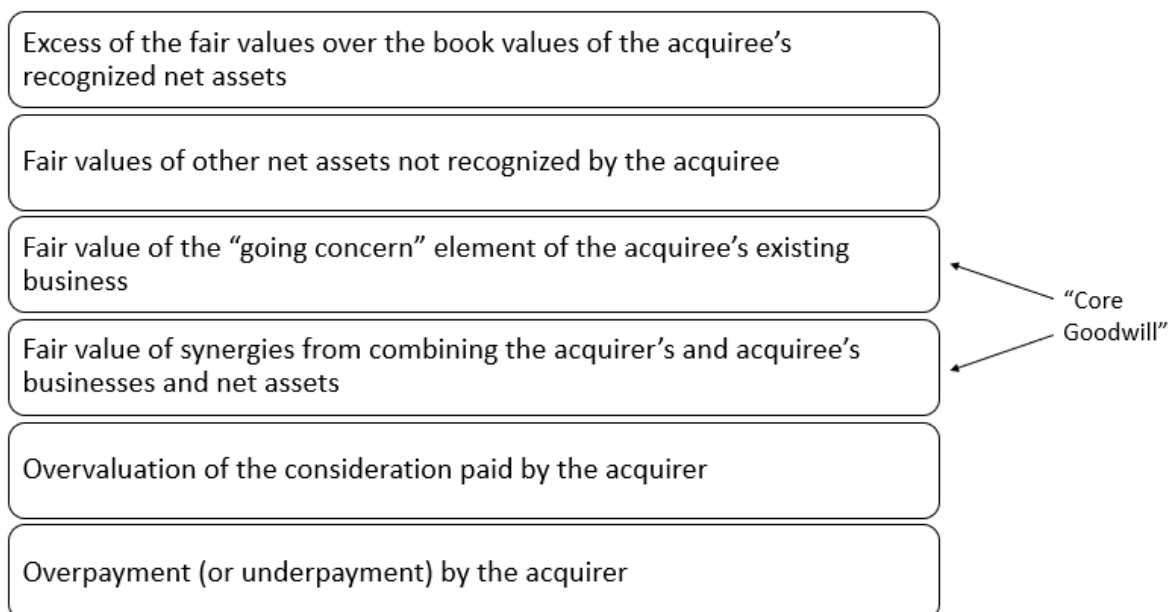
Some believe that goodwill should be recognized as an asset, while others believe that goodwill should not be recognized on the balance sheet at all (Johnson and Petrone, 1998). One of the main reasons behind this controversy around goodwill recognition is the fact that goodwill is probably “the most intangible of the intangibles”: It is difficult to determine what goodwill exactly is (Davis, 1992). In 1997, the FASB stated that goodwill meets the definition of an asset under its Concepts Statement No. 6. Johnson and Petrone (both of whom were project managers at the FASB in 1997) define the components of goodwill and analyze the implications of this FASB's decision (Johnson and Petrone, 1998).

Goodwill can be seen from two perspectives: From “top-down perspective” and from “bottom-up perspective” (Johnson and Petrone, 1998). Under top-down perspective goodwill is seen as a component or subset of something larger, while under bottom-up perspective goodwill is seen as a sum of the components making it up. More specifically, the top-down perspective views goodwill as a component of the investment that the acquirer made to purchase the acquiree: The investment was made because the acquirer expects future earnings from the acquiree's business after combining it to its own (Johnson and Petrone, 1998). The question is whether the larger item (the investment) qualifies as an asset. If it does, the components making it up must also be assets. Other component of an investment is the identifiable assets acquired (and liabilities assumed), and the residual part of the investment represents goodwill. The bottom-up perspective, on the other hand, understands that if the acquirer pays more than what the fair value of the net identifiable assets of the acquiree is, the acquirer must have bought some other unidentifiable resources that are valuable for it (Johnson and Petrone, 1998). Under this perspective, goodwill is seen broadly

as the “purchase premium”, i.e. as the premium that is paid over the book value of net assets of the acquiree. It should be noted that this definition is broader than comparing premium to the fair value of the net assets acquired. Johnson and Petrone (1998) argue that this broader definition might be useful because goodwill is sometimes calculated in this way in practice, especially if the fair values of the net assets are not reliable enough.

The following six are the components of goodwill (Johnson and Petrone, 1998): (1) Excess of the fair values over the book values of the acquiree’s recognized net assets, (2) Fair values of other net assets not recognized by the acquiree, (3) Fair value of the “going concern” element of the acquiree’s existing business, (4) Fair value of synergies from combining the acquirer’s and acquiree’s businesses and net assets, (5) Overvaluation of the consideration paid by the acquirer, and (6) Overpayment (or underpayment) by the acquirer. These six components of goodwill are further illustrated in Figure 1.

Figure 1. Components of goodwill (Johnson and Petrone, 1998)



The FASB does not consider components 1 or 2 to be part of goodwill. Johnson and Petrone (1998) remind that fair values for component 1 might be difficult to ascertain. They continue that component 2 is primarily identifiable intangible assets that cannot be recognized on the balance sheet. Component 3 reflects the synergies of the net assets of the acquiree and factors related to market imperfections, e.g. ability to earn monopoly profits or ability to earn higher

profits because of barriers to entry to the acquiree's market. Johnson and Petrone (1998) state that component 4 reflects the value stemming from the synergies of the business combination consisting of the acquirer and the acquiree: By definition, this value stemming from synergies differs for different business combinations. Component 5 reflects any errors the acquirer made in valuing the purchase consideration. Finally, component 6 may occur if there was a bidding contest for the acquiree that drove the purchase price up (Johnson and Petrone, 1998). Johnson and Petrone (1998) state that if goodwill is seen broadly as the "purchase premium", all these six components can be included in goodwill under the top-down perspective, but not under the bottom-up perspective.

Johnson and Petrone (1998) further analyze these six components that make up goodwill. They state that components 1 and 2 are related to the acquiree and conceptually are not part of goodwill. Component 1 reflects gains on assets that the acquiree did not recognize and thus is part of those assets rather than goodwill. Component 2 reflects intangible assets that might have been separately identified and recognized by the acquiree. Johnson and Petrone (1998) state that components 5 and 6 are related to the acquirer and conceptually are not part of goodwill either. Component 5 represents measurement error and component 6 represents loss, implying these two are not even assets, and thus cannot be part of the goodwill asset (Johnson and Petrone, 1998).

Johnson and Petrone (1998) argue that only components 3 and 4 are conceptually part of the goodwill asset and call these two the "core goodwill". Component 3 can be thought of as pre-existing goodwill that the acquiree has generated internally or acquired in previous business combinations: They refer to component 3 as "going-concern goodwill". Because of component 3 the acquiree can earn higher profits with the combination of its assets than if those same assets were acquired separately. Component 3 thus represents the price that should be paid if the acquirer had no plans in combining the acquiree to its operations (Johnson and Petrone, 1998). Johnson and Petrone (1998) continue that component 4 arises from the business combination, i.e. it does not exist before the acquisition takes place: They refer to component 4 as "combination goodwill". The value of component 4 equals the amount that the purchase price exceeds the market value of the acquiree as a stand-alone company (Johnson and Petrone, 1998). Johnson and Petrone (1998) conclude that goodwill conceptually consists of components 3 and 4 only, but there is a danger that all the other components are included in goodwill too.

Henning et al. (2000) value the components of acquired goodwill empirically. They divide goodwill into four components:

- 1) The write-up of the target firm's assets to fair market value
- 2) The value of the target as a going-concern or stand-alone entity
- 3) The market's valuation of the synergistic value created by the acquisition
- 4) Any overvaluation of consideration and/or overpayment for the target

Henning et al.'s (2000) goodwill components are essentially the same as those of Johnson and Petrone's (1998). It should be noticed that Henning et al. combined Johnson and Petrone's components 1 and 2 as component 1 and Johnson and Petrone's components 5 and 6 as component 4. Henning et al.'s components 2 and 3 represent Johnson and Petrone's components 3 and 4, respectively.

Henning et al. (2000) note that current U.S. GAAP standards allow acquirers to recognize components 2, 3 and 4 as goodwill on their balance sheet. Thus, they study components 2, 3 and 4 in their analysis and use component 1 as a control variable. Henning et al. (2000) document a positive association between share prices and going-concern goodwill (component 2). They also document a positive association between share prices and synergy goodwill (component 3). Finally, they document a negative association between share prices and residual goodwill (component 4). Their results suggest that the market appreciates the acquiree as a going-concern (component 2) and the synergies the acquirer expects to gain from the acquisition (component 3), while the market does not appreciate overpayments for targets (component 4). Henning et al.'s (2000) findings further suggest that "core goodwill" (Johnson and Petrone, 1998), which consists of components 2 and 3 in their analysis, should be recognized as assets, while other possible components should not be recognized on the balance sheet. In addition, Henning et al.'s finding that investors attach a significantly larger weight to synergy goodwill than to going-concern goodwill suggests that synergy goodwill is the most important component of goodwill. Henning et al. (2000) remind that even though companies are not required to report the components of goodwill and their values, market participants can value these goodwill components themselves with publicly available data.

2.2 SFAS 142 standard

In 2001, the Financial Accounting Standards Board (FASB) issued two accounting standards simultaneously: *Statement of Financial Accounting Standards No. 141: Business Combinations* (SFAS 141) and *Statement of Financial Accounting Standards No. 142: Goodwill and Other Intangible Assets* (SFAS 142). SFAS 141 and SFAS 142 are closely related standards, because goodwill arises from business combinations (SFAS 141), and any recognized goodwill needs to be tested for impairment (SFAS 142). Hayn and Hughes (2006) remind that the effect of SFAS 142 should be evaluated in combination with the effect of SFAS 141.

The standard SFAS 141: Business Combinations is related to mergers and acquisitions (FASB, 2001a). It instructs how the acquirer should determine the fair values of the assets it acquires, the liabilities it assumes, and any non-controlling interests in the acquiree. Before SFAS 141 business combinations could be accounted for using either the “Purchase method” or the “Pooling method”. SFAS 141 prohibited the use of the Pooling method, which means that only the Purchase method has been allowed for business combinations accounting from that on (FASB, 2001a). The standard allows firms to recognize goodwill as an asset on their balance sheets: The amount of goodwill recognized equals the amount that the purchase price exceeds the fair value of the net assets of the acquiree.

FASB’s reasoning behind issuing SFAS 141 was that the Purchase and Pooling methods of accounting had resulted in rather different accounting outcomes, and the FASB wanted that firms could be compared “on an apples-to-apples basis” (FASB, 2001a). Under the Pooling method, the balance sheets of the acquiring and acquired firms were in effect combined, i.e. the balance sheet of the business combination comprised of the merged book values of assets and liabilities of the business combination firms. The implication of this was that the Pooling method did not care of who buys whom nor did it recognize the price the buyer had to pay for the target (FASB, 2001a). Thus, the Pooling method did not allow acquired goodwill to be recognized as an asset on the balance sheet. The other side of the Pooling method was that assets with verifiable fair values could not be written up to their true values. Aboody et al. (2000) report that firms used to structure business combinations in a way that they could use the Pooling method in accounting so that they did not have to record goodwill on their

balance sheet: That way, they avoided any goodwill impairments on their income statement as well.

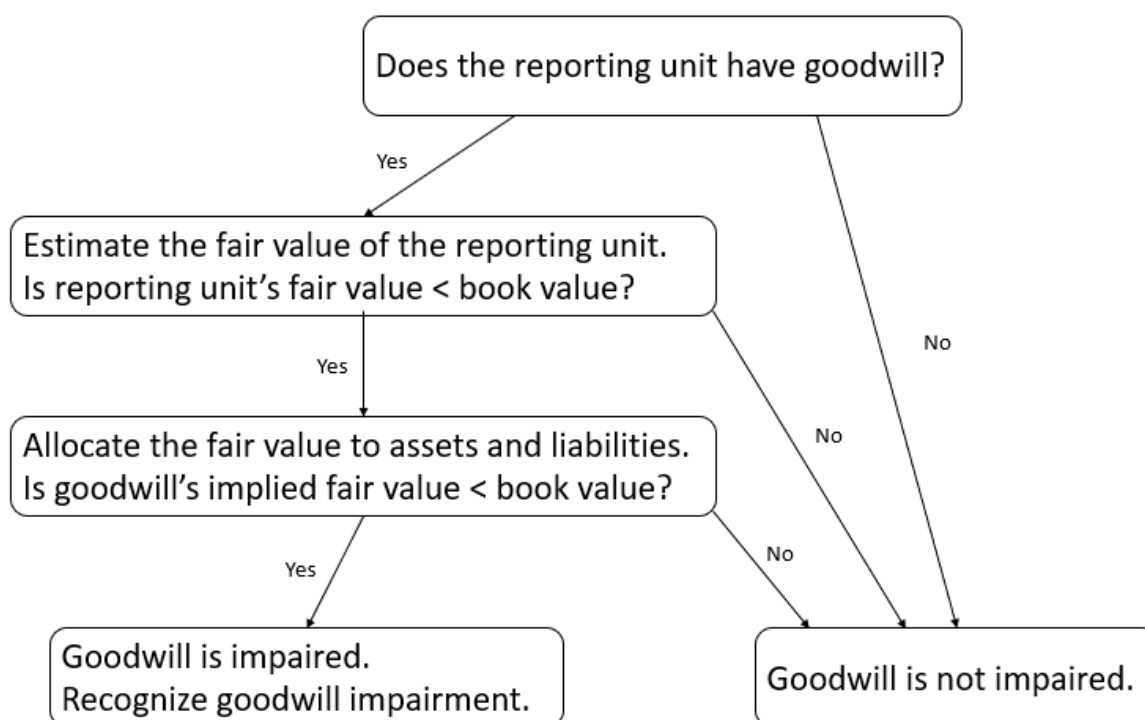
The FASB issued SFAS 142: Goodwill and Other Intangible Assets in June 2001 (FASB, 2001b). The standard introduced changes to the accounting for goodwill. It was mandatory to adopt the standard in fiscal years starting after 15.12.2001.

Before SFAS 142, goodwill accounting was rather different. Acquired goodwill present on the balance sheet had to be amortized periodically, during a time period not to exceed 40 years. SFAS 142 eliminated this periodic amortization of goodwill and introduced a new goodwill impairment testing to be performed. This conceptual change from systematic amortization to impairment testing was remarkable. The FASB itself admitted that SFAS 142 would lead to more volatile earnings because impairments occur irregularly and in varying amounts (FASB, 2001b).

Goodwill impairment testing according to SFAS 142 is conducted for every reporting unit that has goodwill as a two-step process. First, potential impairment is identified. Management has to estimate the fair value of the reporting unit based on the present value of future cash flows, and this fair value is compared to the reporting unit's book value (including goodwill). If fair value is greater than book value, goodwill is not considered impaired. If book value is greater than fair value, management needs to go through the second step.

In the second step, the estimated fair value of the reporting unit is first allocated to the reporting unit's assets and liabilities, including any unrecognized intangible assets. Then, the implied fair value of goodwill is calculated as the difference between the operating unit's (1) total fair value and (2) the fair value of its assets and liabilities that was allocated in the previous step. Finally, if the implied fair value of goodwill is less than its book value, a goodwill impairment loss needs to be recorded as a separate line item on the income statement and goodwill balance needs to be reduced accordingly on the balance sheet. The process of determining whether goodwill is impaired or not is further illustrated in Figure 2.

Figure 2. Goodwill impairment testing according to SFAS 142



The FASB reasoned its goodwill accounting change with two things (FASB, 2001b). First, goodwill had become a vital component of intangible assets on firms' balance sheets. Second, the FASB had received feedback from investors that goodwill amortizations were not useful information in their decision making. The FASB stated that goodwill amortization regime was not "representationally faithful". In addition, the FASB admitted that the ceiling for the goodwill amortization time period (40 years) was "arbitrary".

The FASB argued that SFAS 142 would improve goodwill accounting because SFAS 142 would better reflect the underlying economics of goodwill (FASB, 2001b). It should be easier for investors to understand firms' acquisitions and the subsequent performance of the acquisitions. Increased disclosures should give investors a better understanding of managers' future expectations, which should make predicting future cash flows easier for investors. The FASB's prediction was that managers would share private information about future cash flows via their fair value estimates of goodwill.

Finally, it should be noted that under International Financial Reporting Standards (IFRS), issued by the International Accounting Standards Board (IASB), goodwill is treated very similarly than under U.S. GAAP. IFRS 3 (Business Combinations) regulates goodwill

recognition and IAS 36 (Impairment of Assets) regulates goodwill impairment testing. IFRS standards are not introduced in any more detail here because this study focuses on U.S. companies that follow U.S. GAAP standards.

2.2.1 Critique on SFAS 142

Several researchers have criticized the use of unverifiable fair values in financial statements and SFAS 142 standard specifically. Accounting values are unverifiable if there are not reliable market prices to support them (Holthausen and Watts, 2001). Goodwill is one example of an asset with an unverifiable fair value (Ramanna and Watts, 2012). Kothari et al. (2010) warn that fair value accounting should not be expanded to assets which do not have observable market prices in liquid markets. Unverifiable accounting values might not be useful for investors at all (Holthausen and Watts, 2001; Watts, 2003), which means that unverifiability might make accounting values and stock prices unrelated (Holthausen and Watts, 2001). Holthausen and Watts (2001) argue that managers have more incentives to misrepresent financial reports when unverifiable values are present in financial statements. Caruso et al. (2016) alert that managers can use discretion opportunistically if accounting values are subject to estimates and assumptions.

Ramanna and Watts (2012) describe that a central problem related to SFAS 142 is the fact that the current fair value of goodwill is a function of managers' future actions. This means that the fair value of goodwill depends on how managers understand and implement firm strategy. Ramanna and Watts (2012) illustrate the situation as follows. At the time of goodwill valuation, it is impossible to know what the future actions of managers will be, which means that the estimated fair value of goodwill is unverifiable and thus hard to audit. If the manager's fair value estimate made *ex ante* were not realized *ex post*, it is easy for the manager to blame e.g. macroeconomic factors for the decrease in goodwill's value. If the case went to court, it is hard to prove whether the manager was right or wrong in his estimates *ex ante* (Ramanna and Watts, 2012).

Hayn and Hughes (2006) argue that the key problem related to SFAS 142 standard is that managers do not know how goodwill should be allocated to the reporting units in the first place. They continue that even though the standard clearly instructs that the allocation should be based on the synergies expected, estimating these expected synergies might be difficult

in practice. Hayn and Hughes study empirically whether investors can predict goodwill impairments based on financial disclosures of the operating segments to which the acquired assets are allocated. Their sample consists of 2,852 acquisitions during years 1988-1998. Hayn and Hughes' (2006) findings suggest that even after the adoption of SFAS 142, investors would still need more detailed information about how the acquired businesses perform after the acquisition in order to make proper goodwill valuation themselves. They add that under SFAS 142, investors need to monitor managers' decisions and goodwill balances more carefully (which can be considered as a cost), because there is no longer any systematic way to write down goodwill balance from the balance sheet. Hayn and Hughes conclude that the standard "may not go far enough".

Ramanna (2008) studies SFAS 142 in a related but more politics-focused study. He argues that FASB issued SFAS 142 because of political pressure around FASB's proposal of abandoning Pooling accounting with its SFAS 141 standard proposal. The reason behind issuing SFAS 141 was that both the FASB and the SEC were concerned about the misuse of the Pooling method (Ramanna, 2008). With abandoning Pooling accounting and allowing only Purchase accounting from that on, firms should have amortized all the goodwill they acquire: Firms had strong opposition for this amortization-only approach (Ramanna, 2008). Ramanna argues that this is the reason why the FASB issued SFAS 142: The new standard allowed goodwill impairment testing instead of goodwill amortization. Ramanna (2008) also studies possible lobbying empirically and his findings suggest that SFAS 142 was created, at least partly, because of the lobbying by firms with greater accounting discretion potential under the goodwill impairment testing regime.

Li and Sloan (2017) study the association between goodwill balances and the valuation of firms. They define a list of indicators for goodwill impairment, which they use to find firms with inflated goodwill balances. Their large sample consists of 9,049 firm-year observations before SFAS 142 and 19,290 firm-year observations after SFAS 142, during the years 1996-2011. Li and Sloan's (2017) finding is that inflated goodwill balances lead investors to overvalue these firms with inflated goodwill, which is a serious economic consequence. Their finding is obtained under SFAS 142 standard. Interestingly, they find no evidence of firms with inflated goodwill balances being overvalued before SFAS 142 standard. Thus, Li and Sloan suggest that SFAS 142 has led to worse goodwill accounting with serious economic consequences (overvaluation of firms).

Finally, Ramanna and Watts (2012) argue that SFAS 142 does not provide the right view of goodwill: With no regular goodwill amortization anymore, arbitrary goodwill impairments are the only way managers are responsible for the performance of their past acquisitions via income statement. Li and Sloan (2017) have similar arguments: Goodwill accounting might be worse under SFAS 142 than before it, because the subjective impairment test is now the only way the worn-out synergies from past acquisitions flow through income statement.

2.3 Prior research on goodwill impairments

2.3.1 Goodwill impairments as a dependent variable

This study examines goodwill impairments as a dependent variable, so it is first reviewed what are the explanatory variables that prior studies have found to explain (or not to explain) goodwill impairments.

Hayn and Hughes (2006) study whether it is possible to predict future goodwill impairments under SFAS 142 standard. Specifically, they want to know whether investors can predict goodwill impairments based on firms' financial disclosures about the operating segments to which the acquired assets are allocated. For this purpose, Hayn and Hughes create a predictive model for goodwill impairments. They study both the acquiring firm's performance after the acquisition and the characteristics of the original acquisition with a sample of 2,852 acquisitions during years 1988-1998. Hayn and Hughes' (2006) key finding is that investors cannot predict future goodwill impairments based on financial disclosures of the operating units to which the acquired assets are allocated. Interestingly, the characteristics of the original acquisition (premium paid, the number of bidders, the amount of goodwill relative to purchase price, and potential stock payment) are in fact better predictors of the subsequent goodwill impairments than the financial disclosures that are supposed to provide useful information for investors as expected by SFAS 142.

Godfrey and Koh (2009) study the association between firms' investment opportunities and goodwill impairments. They measure investment opportunities with six indicators: investment intensity before impairments, growth in assets' market value, market-to-book value of assets, R&D expenses, market-to-book value of equity, and earnings-to-price ratio.

They use a sample of 575 firm-year observations on Compustat during 2002-2004. Godfrey and Koh (2009) find that firms' investment opportunities are negatively and significantly related to goodwill impairments. Their interpretation is that firms record goodwill impairments if they have little investment opportunities and do not write off goodwill if they have good opportunities to invest. The finding supports IASB's and FASB's claim that fair value accounting (here goodwill impairments) can better reflect the economic fundamentals (here investment opportunities) of firms (Godfrey and Koh, 2009).

Li et al. (2011) study whether proxied overpayment in the original acquisition can predict subsequent goodwill impairments. Li et al. use following proxies for overpayment: price premium paid (acquisition price relative to both market and book values of the target), stock payments by overvalued acquirers, acquisitions that are unrelated for the acquirer, and possible termination fees. Their sample consists of 1,584 firm-year observations during 1996-2006, thus covering both pre- and post-SFAS 142 periods. Li et al. (2011) find that overpayment can significantly predict subsequent goodwill impairments. They argue that in these cases two things cause goodwill impairments. First, goodwill has been impaired already at the time of the acquisition (because of overpayment). Second, subsequent poor performance of the acquirer has amplified the impairment of goodwill.

Gu and Lev (2011) study whether it is common to make acquisitions with overpriced shares, resulting to subsequent goodwill impairments (because of overpayment). They proxy for share overpricing with price-to-earnings ratio, discretionary accruals, and prior equity issuance, and their empirical sample consists of 7,055 acquisitions during 1990-2006. Gu and Lev (2011) find that a major cause for goodwill impairments is the overvaluation of the acquirer at the time of the acquisition. Gu and Lev argue that overvaluation of the acquirer incentivize its managers to make acquisitions and exploit the overpricing (by paying the acquisition with overvalued shares). This might lead managers paying more than the synergies of the acquisition are worth. It should be noted that an acquisition is not beneficial for the acquirer if overpayment exceeds share overpricing, which will lead to subsequent goodwill impairments (Gu and Lev, 2011). Gu and Lev further find that acquirer's share overpricing is positively associated with the number of acquisitions and the amount of goodwill recorded. They also find that share overpricing is often associated with acquisitions being overpaid and strategically unrelated.

Associations between goodwill impairments and managerial compensation, managerial reputation and debt covenants are predicted by agency theory (Ramanna and Watts, 2012). Ramanna and Watts (2012) test these predictions empirically with a sample of 124 “year t” observations on Compustat during 2003-2006. They find that firms are less likely to write off goodwill if that impairment could violate debt covenant conditions. They also find that firms are less likely to write off goodwill if earnings (including the effect of goodwill impairments) are a basis for managerial compensation. Finally, Ramanna and Watts find that CEOs with longer tenures are less likely to write off goodwill. Longer-tenured CEOs are more likely those responsible for making past acquisitions that created goodwill in the first place (Ramanna and Watts, 2012). Ramanna and Watts argue that managers might end up not writing off goodwill they personally acquired, because these impairments would have negative impact on their reputation.

Guler (2007) studies SFAS 142 goodwill impairments in 260 firms during 2003-2004 and finds that managers are less likely to record goodwill impairments if they possess in-the-money stock options. He also finds that managers are more likely to record goodwill impairments if there is stronger corporate governance. Guler argues there is stronger corporate governance if there are more outside directors on the board, directors own more stock, directors are busier, and CEO and Chair titles are separated. Guler highlights the importance of the board in monitoring whether managers use afforded accounting discretion opportunistically.

Jarva (2014) reports that goodwill impairments are usually recorded in years when impairment firms have very poor economic performance in general. This poor economic performance means low earnings and declining stock prices leading to high book-to-market ratios and high cost of equity. More specifically, Jarva (2014) uses five control variables in his regression setting to explain goodwill impairments: (1) earnings before goodwill impairments scaled with market value of equity, (2) goodwill balance divided by total assets (goodwill percentage), (3) book value of equity divided by market value of equity (book-to-market ratio), (4) market value of equity (measuring the size of the firm), and (5) annual buy-hold stock return. Jarva argues there are also other factors that explain goodwill impairments in addition to poor performance, though. This is because the probability he estimates for writing off goodwill for his sample firms with likely-impaired goodwill is relatively low.

Li and Sloan (2017) report that firms with high goodwill balances, low profitability, and low stock prices are more likely to record goodwill impairments. More specifically, Li and Sloan (2017) use four control variables rather similar to Jarva (2014) to help explain goodwill impairments: (1) goodwill balance divided by total assets (goodwill percentage), (2) operating income after depreciation divided by average total assets (return on assets), (3) book value of equity divided by market value of equity (book-to-market ratio), and (4) cumulative stock return over 12-month period.

Beatty and Weber (2006) suggest that poor accounting and stock price performance make goodwill impairments more likely. Beatty and Weber specifically suggest that if firm's goodwill balance exceeds the difference between its market and book values of equity, goodwill is likely to be impaired. In that case the market would have interpreted the impaired goodwill correctly and priced the firm to its fair value. Elliott and Shaw (1988) also report that low accounting earnings and low stock returns make goodwill impairments more likely. There are also other studies suggesting that a high book-to-market ratio is a market indication of goodwill impairment (Lee, 2011; Ramanna and Watts, 2012). A related hypothesis by Ramanna (2008) is that the higher the market-to-book ratio, the more "room" there is to avoid goodwill impairments.

2.3.2 Managerial discretion and delaying goodwill impairments

Many researchers argue that SFAS 142 standard has led to increased discretion for managers in making goodwill impairment decisions. This discretion arises from the nature of the goodwill impairment testing: Managers can estimate the fair value of their firm's goodwill, which is subjective in nature (Watts, 2003). Previous goodwill amortization rules had substantially less discretion inherent in them because it is hard to manipulate amortization plans (Hayn and Hughes, 2006). Related to the discretion inherent in goodwill impairment decisions, many researchers have studied whether firms record goodwill impairments on time. Interestingly, many of these researchers find that firms record goodwill impairments only years after the impairments should have been recorded, suggesting that goodwill impairments in accounting lag many years behind the economic deterioration of goodwill. As Ramanna (2008) reminds, managerial goodwill impairment decisions include two things

to study: the actual goodwill impairments and those impairments that were avoided by managers.

Agency theory predicts that managers can use unverifiable discretion opportunistically (Ramanna, 2008). According to Ramanna (2008), a factor possibly decreasing the use of managerial opportunism is managerial reputation. Contracts cannot decrease opportunism because it is difficult to prove that unverifiable estimates by managers were wrong in the first place (Ramanna, 2008). Ramanna identifies that an increase in three factors increases the probability of managerial discretion: (1) the size and number of business units, (2) market-to-book ratio, and (3) assets without observable market prices. Ramanna (2008) finds that firms with those three characteristics were more likely to lobby in favor for SFAS 142 standard. Predicted from agency theory, at least some firms will use afforded discretion opportunistically, which will create real costs in these firms. Ramanna reminds that there are two possible consequences of SFAS 142: Some managers will use unverifiable discretion opportunistically, while other managers will avoid opportunism and make financial statements more informative because of reputation concerns. Ramanna cannot rule out that SFAS 142, on average, improves financial reporting. But he reminds that he cannot test that, either.

Jarva (2014) reports that managers use the discretion afforded by SFAS 142 to avoid timely goodwill impairments. Li and Sloan (2017) find that some managers have used discretion to delay goodwill impairments. They highlight that these impairment delays lead to temporarily inflated earnings and stock prices. Li et al. (2011) have indirect evidence that managers may have used discretion in not writing off goodwill when there were economic indications of impairment. First, they fail to find evidence that the market reacts to not writing off goodwill when there were economic indications for goodwill impairment. However, Li et al. are able to predict future goodwill impairments with expected goodwill impairments (that were not made), so they indirectly infer that managers may have used discretion in not writing off goodwill when they should have done so. Riedl (2004) finds that “big bath” asset impairments are more associated with managers’ opportunistic reporting than disseminating managers’ private information. Jarva (2009) reports that there are indications that goodwill impairments lag behind the economic impairment of goodwill. Similarly, Henning et al. (2004) document that U.S. firms delay goodwill impairments in their sample.

Beatty and Weber (2006) report four factors that affect managers' decisions to delay goodwill impairments. First, managers might delay goodwill impairments if debt covenant terms would be affected by the impairments. Second, managers have incentives to delay impairments if their own bonus plans depend on earnings. Third, managers with longer tenures are less likely to make goodwill impairments. Finally, if the impairment would violate stock exchange listing requirements (and possibly lead to exchange delisting in the future), managers might end up delaying impairments. Beatty and Weber argue these four incentives are important to notice because of the managerial discretion afforded by SFAS 142. Beatty and Weber also hypothesize that managers might "roll the dice" and decide not write off goodwill, with the hope that they do not have to record any goodwill impairments at all: It is possible that the value of goodwill increases in the future because of managerial decisions and innovations and better performance of the firm.

Hayn and Hughes (2006) do an important job in estimating the length of the well-known recognition lag between goodwill's economic deterioration and its subsequent accounting impairment. They study a sample of 3,428 acquisitions during 1988-1998. Hayn and Hughes (2006) find that the average lag between goodwill's economic impairment and accounting impairment is 3-4 years. Noticeably, for one third of the companies the estimated lag is 6-10 years. This means that as the performance of the acquired business deteriorates, the actual impairment is performed many, even up to ten years later. Hayn and Hughes argue that this "waiting period" of 3-4 years might be reasonable, with the notion that sometimes a firm recovers from short-term poor performance. However, they claim that the recognition lag of 6-10 years is excessive: It is not acceptable to wait ten years for the firm's performance to improve. They conclude that managers might use discretion to time goodwill impairments in order to meet their personal financial reporting goals.

Ramanna and Watts (2012) identify potential goodwill impairers with the following two-stage identification. First, a potential impairer must have market-to-book ratio over 1 in year t . Second, the same firm must have market-to-book ratio under 1 in year $t+1$ without making a goodwill impairment in year $t+1$. They argue that a market-to-book ratio under 1 is a market indication of goodwill impairment. Ramanna and Watts study a sample of 124 firm-years on Compustat during 2003-2006. Ramanna and Watts (2012) find that 69% of firms that had the above-mentioned indication of goodwill impairment in year $t+1$ do not make the expected goodwill impairment in year $t+1$, suggesting that managers have used discretion afforded by SFAS 142 to avoid or delay these expected goodwill impairments.

Li and Sloan (2017) study a sample of 19,290 firm-years during 1996-2011. They find that goodwill balances are more inflated and goodwill impairments are less timely (more delayed) under SFAS 142 than before it. This they argue being a consequence of the elimination of the periodic amortization regime for goodwill. They continue that managerial incentives have changed with the standard: With no periodic amortization or Pooling method, managers' incentives to delay goodwill impairment have increased. It is plausible that some managers use discretion and delay goodwill impairments because their fair value estimates of goodwill are unverifiable (Li and Sloan, 2017). Because of these delayed impairments, assets and earnings are overstated initially: Subsequently, earnings are understated when managers make large and untimely "big bath" goodwill impairments (Li and Sloan, 2017). Li and Sloan also suggest that investors might be fixated on reported earnings and assets, which would lead investors to overvalue firms with inflated goodwill on their balance sheet and no goodwill impairments on their income statement.

One potential variable easy to manipulate by managers is the discount rate used in the fair value calculations. Carlin and Finch (2009) highlight that there is substantial discretion involved in determining discount rates and continue that managers might use that discretion opportunistically to avoid impairments or to time them in a way they want to. Carlin and Finch risk-adjust for discount rates used in their 105 sample firms in year 2006 and document a large variance in these risk-adjusted discount rates, suggesting managers use the freedom to select the discount rate opportunistically. In a related study, Carlin and Finch (2010) estimate risk-adjusted discount rates for their 124 sample firms from Australia and New Zealand in 2007. Carlin and Finch report that firms use lower than expected discount rates in goodwill fair value calculations in order to avoid goodwill impairments. This they interpret being a sign of managers using goodwill impairment testing discretion opportunistically.

It can also be debated how harmful it is to delay goodwill impairments. Bens (2006) argues that the discretion afforded by SFAS 142 might not have real costs because the underlying information in delayed goodwill impairments might be obtained from other sources before the actual accounting impairment. This argument questions whether accounting goodwill impairments are informative to the market at all. In a related study, Bens et al. (2011) argue that most of the goodwill impairment effect is already priced to stock price before the actual goodwill impairment takes place. Li et al. (2011) and Ramanna and Watts (2012) have similar arguments about goodwill impairments not revealing any new information to the

market, suggesting that the market often knows that goodwill is economically impaired before the impairment takes place in accounting.

3. CEO CHANGES AND CORPORATE GOVERNANCE

Studying corporate governance is of enormous practical importance (Shleifer and Vishny, 1997). On the heart of corporate governance is the separation of ownership (shareholders) and control (managers and directors) (Shleifer and Vishny, 1997). The most important task of corporate governance institutions is to align managers' and shareholders' interests (Roe, 2004), because managers will not act according to the best interests of shareholders unless some governance mechanisms incentivize managers to do so (Jensen and Meckling, 1976). The board of directors has been proposed to be the solution to the agency problem between shareholders and managers (Hermalin and Weisbach, 2003). Good corporate governance is important because investors need to be confident that they can expect a decent return on their investment (Shleifer and Vishny, 1997). As Adam Smith already stated in his famous work *The Wealth of Nations*, managers are not likely to watch over shareholders' money with the same motivation they would watch over their own money (Smith, 1776), at least without further incentives.

3.1 The CEO

The Chief Executive Officer (CEO) is the most senior employee of a company. The CEO usually makes high-level decisions and runs daily operations of the firm, and has the final say over key decisions. The CEO is typically an important communicator both inside and outside the firm (Pincus et al., 1991; Zerfass et al., 2016).

The CEO is hired and fired by the board of directors (Roe, 2004). It is also the board's responsibility to monitor CEO's performance (Weisbach, 1988). According to corporate law, the board of directors is chosen by the firm's shareholders. An issue addressed by several researchers is the fact that the CEO can at least partially control the process of choosing new board members (Hermalin and Weisbach, 1998). In practice, shareholders almost always choose the directors who have been proposed by the management (Hermalin and Weisbach, 1998). Because the CEO has substantial influence over its overseer (the board of directors), it is questionable whether the board can effectively monitor the CEO (Jensen, 1993; Hermalin and Weisbach, 1998). The CEO might also have incentives to "capture the

board” so that he can keep his job and get extra benefits (Hermalin and Weisbach, 2003). Hill and Phan (1991) document that managers get more control over their board over time, which leads their compensation to become more insensitive to stock price performance. Warner et al. (1988) report that in addition to the board, also other top managers and blockholders (large shareholders) monitor the CEO.

Career concerns are also important motivators of managers (Brickley et al., 1999). External labor market provides managers with outside job opportunities, and internal labor market provides managers with inside promotion opportunities (Brickley et al., 1999). Brickley et al. (1999) describe that labor markets follow managers’ performance and adjust its assessment of managers’ ability, which affects managers’ future career prospects. Thus, pressure from labor markets should motivate managers to work hard. Brickley et al. (1999) argue that younger managers have greater career concerns, and late in CEO’s career these concerns are negligible (known as the “horizon problem”). Gibbons and Murphy (1992) argue that employees’ implicit incentives arise from career concerns and explicit incentives arise from compensation contracts. They continue that employees close to retirement need to have strong compensation contract incentives because these employees do not have career concern incentives anymore. Holmstrom (1982) suggests that executives are more motivated to work hard in the early years as executives in order to convince the labor market about their ability. Holmstrom (1999) describes how today’s performance is the basis for future compensation. This is because wage in the future is based on expected output, and expected output is based on assessed ability today.

The CEO is the one ultimately responsible for his firm’s mergers and acquisitions (M&A) (Malmendier and Tate, 2008; Yim, 2013). Several studies document that in the context of acquisitions, shareholders from the acquired firm earn sizable positive returns, while shareholders from the acquiring firm earn around zero adjusted returns (Bruner, 2002). This suggests that targets are the ones who benefit from acquisitions, not the acquirers. Despite these findings, CEOs make acquisitions for various reasons. One reason for acquiring a company is CEO’s overconfidence. Overconfident CEOs overestimate their ability to generate returns, which leads them to overinvest (Malmendier and Tate, 2005), overpay in acquisitions and thus make value-destroying acquisitions (Malmendier and Tate, 2008). Malmendier and Tate (2008) proxy for CEO’s overconfidence with CEO’s share ownership in their own company and CEO’s press portrayal and find that overconfident CEOs make more acquisitions with an increased probability of 65%. They further report that the market

reaction for acquisition announcements is often negative. Brown and Sarma (2007) and Ferris et al. (2013) also measure CEO overconfidence and report that overconfident CEOs are more likely to make acquisitions.

CEOs might also have compensation-based motives for making acquisitions. Yim (2013) reports that acquisitions increase CEO's compensation considerably, which creates incentives for CEOs to make acquisitions, especially early in their career. Yim documents that if the CEO were 20 years older he is 30% less likely to make an acquisition. Seo et al. (2015) find that underpaid CEOs are more likely to make acquisitions, perhaps because they expect to get compensation increases because of successful acquisitions. Halebian and Finkelstein (1999) find an interesting U-shaped relationship between firm's acquisition experience and acquisition performance. Their results suggest that firms pay a lot of attention to their first acquisitions, make somewhat worse acquisitions after those first ones, and subsequently make better acquisitions again with more experience. Because of these several reasons and incentives, managers might make acquisitions that are not in the shareholders' interests (Weisbach, 1995).

3.1.1 CEO and Earnings Management

Healy and Wahlen (1999) define Earnings Management as follows: "Earnings management occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers." Ronen and Yaari (2008) further categorize earnings management as follows: (1) "White earnings management" takes advantage of the accounting flexibility to signal manager's private information about future cash flows, (2) "Grey earnings management" chooses accounting policies that are either opportunistic or economically efficient, and (3) "Black earnings management" uses tricks to misrepresent or reduce transparency of financial reports. Accounting earnings management can be categorized into accounting policy management and accruals management. Goodwill impairments are part of accruals management (Storå, 2013). Managing accruals is one way of managing earnings, either income-increasingly or income-decreasingly (Bergstresser and Philippon, 2006). There is a lot of discretion involved in accruals reporting (Bergstresser and Philippon, 2006).

If accounting standards afford managers with discretion, it is likely that managers use this discretion to manage earnings (Healy and Wahlen, 1999; Nelson et al., 2002).

Earnings management is practiced because of the different incentives between managers and financial statement users: Managers will act according to their own interests, at the expense of shareholders' interests (Watts, 1977). Healy (1985) argues that managers might accelerate write-downs ("take a bath") if it is obvious that earnings targets set by analysts and investors cannot be met. Thus, managers might "sacrifice a year" in order to get a better starting point for the next fiscal years. Jordan and Clark (2004) find that if earnings are already below expectations, the market "punishes" the firm only a little for additional losses (measured with stock returns). Ali and Zhang (2015) argue that higher institutional ownership, greater analyst following, and a greater number of outside directors both on the board and on audit committee are good proxies for better monitoring of CEOs. With this proxy, Ali and Zhang find that better external and internal monitoring decreases CEOs' earnings overstatements and earnings management.

Francis et al. (1996) study the causes and effects of discretionary asset write-offs. They highlight that the lack of explicit accounting guidance for some assets affords managers with substantial discretion to decide the amounts and timing of these assets' write-offs. Francis et al. (1996) argue that there are two possible explanations for managerial asset write-off behavior. First, it is possible that managers use the discretion afforded by loose accounting standards and manage earnings by not making asset write-offs when asset impairment has occurred or by making these asset write-offs only in situations when these write-offs are beneficial from their own viewpoint. Second, it is possible that managers make asset write-offs because of impairment of these assets, with no manipulation intent. Francis et al. (1996) find that both of these explanations, manipulation and impairment, are important determinants of managerial asset write-off behavior. Francis et al. (1996) also study managerial incentives related to asset write-offs. They find that incentives do not play any role in explaining inventory or property, plant & equipment impairments. Interestingly, they find that incentives have a substantial role in explaining goodwill write-offs and restructuring charges, which are more discretionary items in nature. Francis et al. add that the market views asset write-offs as bad news.

Jahmani et al. (2010) study whether managers use SFAS 142 standard for earnings management. They highlight that goodwill does not decrease systematically from the

balance sheet with the impairment testing approach: This makes earnings more volatile because impairments occur irregularly and in varying amounts. They further hypothesize that managers do not like the volatility of earnings and might manipulate the timing of goodwill impairments in order to smooth their firm's earnings. Jahmani et al. study a sample of 117 companies during 2003-2005. Jahmani et al. (2010) find that only an insignificant amount of companies that experience losses or low rates of return on assets impair goodwill, which strongly suggests that firms use SFAS 142 standard to manage the volatility of their firm's earnings. Selenius (2016) similarly hypothesizes that managers might use goodwill impairments as earnings management vehicle. He finds no empirical support for his hypothesis from his sample of Finnish listed companies, however.

3.2 The Board of Directors

The Board of Directors is an important internal control mechanism and part of corporate governance of companies (Weisbach, 1988). The board of directors is the solution for the agency problem between shareholders and managers (Hermalin and Weisbach, 2003). The board represents shareholders and thus the board is shareholders' "first line of defense" against bad management (Weisbach, 1988). The board is especially integral in governing large organizations (Hermalin and Weisbach, 2003). It should be noted, however, that board roles and characteristics might vary widely between different countries and companies (Corbetta and Salvato, 2004).

Members of the board of directors are selected by shareholders, and one of the members is chosen as the chairman of the board. Board work is organized around regular board meetings, and boards typically have several committees. Audit committee (Klein, 2002) and compensation committee (Daily et al., 1998) are among the most important committees of the board. In addition, boards typically have at least a nominating committee (Uzun et al., 2004) and a governance committee (Nolan and McFarlan, 2005). Directors often serve on more than one board, which leads to an "interlocking directorate" situation, in which a relatively small number of directors control many of the most important companies and their key decisions (Mizruchi, 1996).

The board of directors has many important duties. One of the most important tasks of the board is to monitor top management (Weisbach, 1988; Corbetta and Salvato, 2004; Roe,

2004). The board monitors the CEO in order to get information about whether to retain or replace him (Hermalin and Weisbach, 1998). The board is responsible for replacing the CEO in case the CEO performs poorly (Weisbach, 1988; Roe, 2004). Denis and Denis (1995) document that forced CEO resignations are quite rare and are caused more often by external factors (blockholders, shareholders, creditors, or takeovers) than by the board of directors. If the CEO were replaced, the board is responsible for choosing the new CEO for the company (Roe, 2004). The board also sets executive compensation, and the goal of compensation is to make the executives to work hard according to the best interests of shareholders (Hermalin and Weisbach, 1998). Especially equity-based compensation is useful in aligning managers' and shareholders' interests (Roe, 2004). Typically, the CEO has more power to negotiate over his salary if he has performed well in the past (Hermalin and Weisbach, 1998). Furthermore, the board makes key business and strategic decisions regarding the company (Roe, 2004). Directors provide advice for management and might veto for bad managerial decisions (Weisbach, 1988). It has been proposed that directors criticize top managers' policies quite rarely, at least in some settings (Lipton and Lorsch, 1992). The board also provides resources for the management (Corbetta and Salvato, 2004) and decides the dividend policy of the company (Schellenger et al., 1989).

Perhaps two of the most widely studied issues related to boards of directors are board independence and board size. Studies related to board size generally report that board size and firm performance are negatively related, i.e. firms with smaller boards perform better (e.g. Yermack, 1996; Eisenberg et al., 1998; Hermalin and Weisbach, 2003). Both accounting performance and stock performance are used as measures of performance and results are qualitatively similar. Empirical results related to board independence are more mixed, however, with studies generally finding no clear association between board independence and firm performance (Baysinger and Butler, 1985; Bhagat and Black, 2001). Board independence is often proxied with the proportion of outside directors relative to inside directors on the board. Weisbach (1988) defines these two types of directors as follows: (1) Inside directors are firm's managers who also serve as directors on the board and (2) Outside directors are directors who do not work full-time for the firm. Many researchers argue that outside directors are more effective monitors of managers (e.g. Weisbach, 1988; Hermalin and Weisbach, 1998). Many also argue that outside directors are more likely to replace the CEO (Weisbach, 1988). It should be noted that director's independence greatly depends on whether the director is an insider or outsider, but also other

factors arise, such as director's shareholdings (Hermalin and Weisbach, 1998). Even though many researchers argue that outside directors are more effective in their monitoring work, it might be advisable to have some inside directors on the board as well. Weisbach (1988) and De Andres and Vallelado (2008) discuss some of the reasons behind this in more detail.

Vafeas (2003) argues that outside directors' longer tenure might either support the "expertise hypothesis" or the "management friendliness hypothesis", i.e. directors with longer tenures are either more talented or more affiliated with the management. Vafeas studies senior directors (directors with over 20 years of board service), and his findings are more in line with the "management friendliness hypothesis". Senior directors are e.g. more often members in compensation committees, leading to a higher pay for the CEO. Vafeas' findings suggest that term limits for directors could be beneficial.

Finally, it should be noted that studying boards of directors is rather difficult in practice because many of the board's actions are unobservable for the researcher (Weisbach, 1988) and almost all the variables related to boards are endogenous (Hermalin and Weisbach, 2003). For example, it is difficult to study how board independence affects firm performance, because firm performance also affects board independence (Hermalin and Weisbach, 1998). On the other hand, the board's decision to replace the CEO can be directly observed.

3.3 Prior research on CEO changes

Pourciau (1993) categorizes executive changes into (1) routine executive changes and (2) non-routine executive changes. First, in routine executive changes the turnover process is orderly and well-planned (Pourciau, 1993). Pourciau notes that in routine changes the top executive often departs because of retirement. It is also typical that the departing top executive remains as a member of the board (Pourciau, 1993). Second, in non-routine executive changes the turnover process cannot be planned orderly (Pourciau, 1993). This is usually because there is not enough time for planning or there is not an opportunity to first select the incoming executive and then train him with the help of the departing executive (Pourciau, 1993). Pourciau notes that non-routine executive changes are usually resignations (both voluntary and non-voluntary).

CEO changes can also be categorized into inside successions (new CEO comes from inside the firm) and into outside successions (new CEO comes from outside the firm) (Beatty and Zajac, 1987). Shen and Cannella (2002) further categorize inside successors into “contenders” who are appointed because of the dismissal of their predecessor and “followers” who are appointed because of the ordinary retirement of their predecessor.

Several studies document that poor stock returns and poor earnings lead the CEO to be changed (Coughlan and Schmidt, 1985; Warner et al., 1988; Weisbach, 1988; Jensen and Murphy, 1990). Gilson (1989) finds that 52% of financially distressed firms (either in default, bankruptcy, or restructuring) change their management. He illustrates how many management changes are initiated by the distressed firm’s bank lenders. He also shows that the replaced managers are not employed by exchange-listed firms in the next three years after getting fired, suggesting that managers face large costs for defaulting their firm. Some studies document that poor earnings performance better predicts CEO changes than poor stock performance (Weisbach, 1988; Murphy and Zimmerman, 1993). Intuitively, this might be because earnings depend on current management only, but stock prices reflect the market’s assessment of both the current management and the expected future management (Hermalin and Weisbach, 1998). Consistent with this intuition, DeAngelo (1988) finds that shareholders tend to justify a proxy contest with earnings being poor and not with stock returns being poor. This is because in her sample, pre-contest earnings are below average but pre-contest stock returns are not. Concluded from the above studies, if poor earnings indeed better predict CEO changes, managers would be incentivized to manage their firm’s earnings in order not to get fired.

Brickley (2003) argues that also alternative factors in addition to firm performance need to be studied when examining factors leading to CEO turnover. He suggests age as one factor affecting CEO turnover. Lehn and Makhija (1997) find that Economic Value Added (EVA) is a better predictor of CEO turnover than traditional accounting measures. DeFond and Park (1999) find that CEO turnover is more frequent in more competitive industries. Walsh (1988) finds that management turnover is much more common in acquired firms than in other firms. Lehn and Zhao (2006) confirm this with their finding that 47% of CEOs in acquiring firms are replaced within 5 years. Earnings management might also be another factor to consider: Hazarika et al. (2012) find that earnings management (measured with absolute discretionary accruals) increases the likelihood of a forced CEO turnover. This finding is robust for both good and bad performance firms and for both income-increasing and income-decreasing

accruals. Hazarika et al. argue this is because the board takes action (fires the CEO) before the consequences of CEO's aggressive earnings management become public and costly. In their empirical tests they find that stock price performance is still 2-3 times more important factor in explaining forced CEO changes than earnings management, though.

Many studies document that new CEOs tend to overstate expenses in their first year as CEO, i.e. tend to take an immediate "earnings bath" (Moore, 1973; Strong and Meyer, 1987; DeAngelo, 1988; Elliott and Shaw, 1988; Pourciau, 1993; Weisbach, 1995; Ali and Zhang, 2015; Pan et al., 2016). New CEOs can attribute these poor initial earnings to previous CEOs' bad decisions and take credit for the higher earnings in the following years as it should be easy to improve from the "earnings bath" year's low earnings (Pourciau, 1993).

Pourciau (1993) studies earnings management via discretionary accounting choices in the context of non-routine top executive changes. She argues that executives have incentives to manage earnings before, during, and after the executive change takes place. Specifically, Pourciau argues that incoming executives have incentives to take an initial "earnings bath". In that case the new executive can attribute poor earnings to the previous executive's bad decisions, and it should be easy for the new executive to report improved earnings in subsequent years (Pourciau, 1993). Pourciau (1993) studies a sample of 73 non-routine executive changes during 1985-1988. Pourciau (1993) finds that incoming executives manage accruals income-decreasingly in the year of the executive change and income-increasingly one year later. Pourciau reports that incoming executives record large write-offs and special items in the year of the executive change. A bit surprisingly, Pourciau finds that departing executives record accruals and write-offs income-decreasingly during their last year in charge.

Ali and Zhang (2015) study how CEO's tenure affects earnings management. They hypothesize that because of career concerns, CEOs have more incentives to overstate earnings in their early years as CEOs rather than in the later years as CEOs. Ali and Zhang argue that it is more important for the new CEO to convince the labor market about his ability in the early years as CEO because the market does not yet know what his ability is: By reporting high earnings the market should become convinced about his talent (Ali and Zhang, 2015). It is important that the market thinks the CEO is talented because this might lead to higher compensation, reappointments, and managerial autonomy for the CEO (Ali and Zhang, 2015). Ali and Zhang proxy for abnormal discretionary expenses with R&D,

advertising, and SG&A expenses and study discretionary accruals with 20,206 firm-year observations and abnormal discretionary expenses with 24,161 firm-year observations during 1992-2010. Ali and Zhang (2015) find that discretionary accruals are significantly higher and abnormal discretionary expenses are significantly lower in the first three years of CEO's service compared to later years. They report that overstating return on assets in the early years is also significant. Thus, Ali and Zhang infer that CEOs are more likely to overstate earnings in the early years of their service compared to later years and this is because of the new CEOs' career concerns. Consistent with other studies, Ali and Zhang report that CEOs record asset write-offs significantly more often in their first year as CEO than in the other years. In their sensitivity checks Ali and Zhang test whether only low ability CEOs overstate earnings. They proxy for ability with the number of years as CEO and interestingly find that both low ability and high ability CEOs overstate earnings in their early years as CEO.

Pan et al. (2016) argue that there exists a "CEO investment cycle". They study a sample of 4,219 CEO turnovers in 2,991 firms during 1992-2009. Pan et al. (2016) find that new CEOs tend to divest poorly performing assets that were acquired by the former CEO. They also find that CEOs tend to overinvest in later years when they have gained more control over their board. The two findings imply that firms' assets grow and decline in cycles. Pan et al. document that the CEO investment cycle has consequences as large as a normal business cycle, political uncertainty, or financial constraints. Pan et al. (2016) argue that the CEO investment cycle is caused by agency problems and suggest that the CEO can invest more freely over time as he has achieved more control over his board. Specifically, they proxy for CEO's control over his board with the number of directors appointed during the CEO's service and find that the increase in CEO's control over his board over time explains the positive association between CEO's tenure and investments. The increase in investments might also be because CEO's overconfidence increases over time and he wants to "build empires" (Pan et al., 2016). Furthermore, Pan et al. proxy for the quality of investments with the market reaction to acquisition announcements and find that the quality of investments is negatively related to CEO's tenure. The quality of investments becomes even negative (as measured with stock returns) in the later years of CEO's service. Pan et al. argue that the increase in CEO's control over his board also explains this deteriorating investment quality as the CEO has more discretion to invest. Overall, Pan et al. suggest that the increasing quantity and decreasing quality of investments over CEO's tenure are most likely driven by

CEO's preference for growth. Pan et al. show that poor investments are reversed only if the CEO who made these investments is changed. They argue that CEOs are reluctant to divest assets that they have personally acquired, even if the divestment would be beneficial from an economic point of view. Pan et al. suggest that the initial divestment might occur because the incoming CEO has no "emotional bonds" for the assets and those assets might have been better suited for the outgoing CEO's skills. Pan et al. conclude that regular CEO turnover is one of the institutions that allow firms to correct for managerial mistakes and even suggest that a policy requiring regular management turnover could be beneficial.

Weisbach (1995) argues that management changes are important events because they might lead to changes in corporate decisions, e.g. reversals of past errors or establishments of new policies. Weisbach studies the association between management changes and acquisition divestments with a sample of 270 large acquisitions during 1971-1982. Weisbach (1995) finds that management changes lead to an increased probability of divesting unprofitable acquisitions or acquisitions that are considered poor by the press. Weisbach notes that the effect is qualitatively similar for both "age-65 retirements" and resignations. Weisbach suggests that management changes are important events because they lead to reversals of prior poor acquisitions.

Denis and Denis (1995) study 908 CEO changes not related to takeovers during 1985-1988. Denis and Denis (1995) find that forced CEO changes are preceded by declining operating performance and followed by large performance improvements. Interestingly, they find that unforced CEO changes are not preceded by declining performance and are followed by only a small performance improvement. Denis and Denis (1995) further find that book values of firms' assets, number of employees, and capital expenditures all decrease after non-routine CEO changes. They document that these restructurings are associated with cost-cutting measures, plant closings, and other corporate refocusing activities.

Murphy and Zimmerman (1993) want to know whether it is poor firm performance or managerial discretion which explains changes in discretionary financial variables surrounding CEO changes. As discretionary financial variables they study R&D, advertising, capital expenditures, and accruals. Murphy and Zimmerman point that both firm performance and CEO changes can cause changes in these discretionary financial variables, and because CEO changes can partly depend on firm performance, CEO change is an endogenous variable in their analysis. They study a sample of 1,063 executive changes in

599 firms during 1971-1989. Murphy and Zimmerman (1993) find that changes in discretionary financial variables surrounding CEO changes can mostly be explained by poor firm performance. Specifically, they detect managerial discretion affecting these discretionary financials only in cases when the CEO is changed because of poor past performance. They find no evidence on the exercise of managerial discretion if the firm has performed well and the CEO retires according to a plan.

Finally, Strong and Meyer (1987) state that analysts tend to advocate for big “earnings baths” because “cleaning the balance sheet” and reducing equity will boost future profits and increase earnings per share. In addition, Strong and Meyer (1987) suggest that a single large asset write-down informs the market that the management has dealt with problematic assets aggressively which should lead to improved profits in the future.

3.3.1 Prior research on the type of the CEO change

In addition to studying what are the causes of CEO changes, some researchers have studied how the type of the CEO change affects CEO change outcomes. Pourciau (1993) extends her analysis on the consequences of CEO changes. On the one hand, Pourciau (1993) argues that the nature of routine CEO changes reduces the incentives and opportunities for earnings management. On the other hand, Pourciau (1993) argues that the nature of non-routine CEO changes increases incentives and opportunities for earnings management. Pourciau argues this is because in non-routine changes (which are often unplanned), it is hard for directors and stockholders to structure the executive change in a way that incentives and opportunities for earnings management would be minimized.

Wells (2002) hypothesizes that new CEOs have a greater opportunity to attribute poor initial earnings to prior management after non-routine CEO changes rather than after routine ones: Thus, they have a greater opportunity to manage earnings. Wells categorizes CEO retirements into routine CEO changes and all other changes being non-routine and studies a sample of 91 CEO changes during 1984-1994. Wells (2002) reports that incoming CEOs tend to record “earnings baths” after non-routine CEO changes. He finds no evidence of “earnings baths” after routine CEO changes. “Earnings baths” are achieved with abnormal charges and extraordinary items rather than with unexpected accruals. Wells further reports

that after a routine CEO change the new CEO often comes from inside the firm, while after a non-routine CEO change the new CEO often comes from outside the firm.

Godfrey et al. (2003) hypothesize that new CEOs have more incentives to manage earnings opportunistically in firms where the CEO was changed because of resignation rather than retirement. They study 63 CEO changes during 1992-1998. Godfrey et al. (2003) find evidence of income-decreasing earnings management in the years in which CEOs are changed. Interestingly, their results are driven by CEO resignations, and not by CEO retirements. Mather and Ramsay (2006) hypothesize that unplanned CEO changes (resignations) provide incoming CEOs with greater incentives and opportunities for earnings management than orderly and planned changes (retirements). They study a sample of 87 CEO changes during 1992-1999. Mather and Ramsay (2006) interestingly find that CEO resignations lead the new CEO to record negative unexpected accruals, while CEO retirements lead the new CEO to record positive unexpected accruals in the year of the CEO change.

3.4 Prior research on CEO's board service

The CEO might also be a member of the Board of Directors of his company. There is relatively little past research on CEO's board service, which is also one of the main motivations for this study. Despite this, some of the few studies related to CEO's board service are introduced in this section.

Brickley et al. (1999) study CEO's board service after retirement. Brickley et al. hypothesize that managers might still have career concerns after retiring, because retired CEOs might continue working for corporate boards, in politics, or as consultants. Brickley et al. indeed document that many CEOs continue working on corporate boards after retiring as CEOs. Brickley et al. (1999) study CEO retirements at ages 64-66 and document that retired CEOs hold on average 2.48 board seats two years after retirement. They document that 88% of retired CEOs hold at least one board seat, 42% hold at least three seats, and 28% hold over four seats. Around 16% of retired CEOs continue working as the chairman of their own firm's board after retirement. Brickley et al.'s findings suggest that retired CEOs care about these relatively high-paying, high-status board seats. Brickley et al. (1999) further find that CEO's performance is positively related to CEO retaining on the own board after retirement.

CEOs who retain on their own board have had 10.9% higher abnormal stock returns and 2.0% higher accounting returns (both in annual terms) than those CEOs who do not retain on their own board, suggesting that stock returns especially play a major role in determining whether CEO is offered a board seat after retirement. In addition, Brickley et al. document that CEO's performance is positively related to him serving on other firms' boards after retirement. Interestingly, they document that only accounting returns predict whether CEO serves on other firms' boards after retirement, not stock returns. Brickley et al.'s findings suggest that CEOs have concerns about post-retirement board service and CEO's poor performance might lead to both getting fired and not getting offered any board seats afterwards. Their findings also suggest that firms screen prior performance carefully when choosing new members to the board. Vancil (1987) and Dechow and Sloan (1991) also report that departing CEOs often stay on their own boards. The type of the CEO change might also determine whether the outgoing CEO is offered a board seat: Hazarika et al. (2012) find that fired CEOs are less likely to stay on the firm's board and more likely to lose board seats in other firms as well.

In addition to the board's decision of whether to retain or replace the CEO, Evans et al. (2010) introduce a third option: The CEO can be replaced but retained on the board of directors. Evans et al. call this CEO retaining on the board as "Retention Light". Evans et al. argue that firms can benefit from Retention Light because of the retaining CEO's monitoring and advising abilities. In addition, if the CEO knows that he will retain on the board after retirement, he has incentives to work hard in the final years as CEO as well. On the other hand, former CEOs on boards can use afforded decision rights for their own benefit and e.g. prevent potentially valuable changes to firm strategy (Evans et al., 2010). Evans et al. (2010) study a sample of 358 CEO turnovers with a control sample of 2,733 firm-year observations without CEO turnovers during 1998-2001. First, Evans et al. find that CEOs reaching retirement age are more likely to retain on the board. They find that as CEOs reach retirement age, they are less likely to just exit the firm but also less likely to be retained as a CEO. These old-aged CEOs are thus more likely to retain on the board. Second, Evans et al. find that if the retiring CEO has been the board's chairman or the firm's founder, he is more likely to retain on the board. They further find that firms with retained ex-CEOs on boards are more likely to select new CEOs who are younger and have no prior CEO experience. In that situation, it might be easier for the retained CEO to influence the decisions of the incoming CEO (Evans et al., 2010). Third, Evans et al. find that if the retiring CEO retains on the board

as a chairman, the firm's future stock returns are likely to be lower. If that CEO is also a founder, the association disappears. Furthermore, they find moderate evidence that if the retiring CEO retains on the board as a non-chairman, future stock returns are likely to be higher. Finally, Evans et al. report that if the firm has performed well, the CEO is more likely to retain on the board after retiring as CEO. An alternative view is given by Sonnenfeld (1988), who argues that the exiting CEO himself decides whether to stay on the board. He hypothesizes that poorly performing CEOs are most likely to stay on the board, because their visions for the company remain unfulfilled.

Quigley and Hambrick (2012) study exiting CEOs who retain on the board. Quigley and Hambrick argue that if the outgoing CEO retains on the board, incoming CEOs are restricted to make changes. They argue that the outgoing CEO is likely to favor strategies and policies that he has personally put in place and may use his power on the board to constraint change initiatives. Thus, it might be harder for the incoming CEO to make strategic changes or deliver performance that is notably different (either better or worse) from prior performance (Quigley and Hambrick, 2012). Quigley and Hambrick posit that it is the outgoing CEO's continuing presence that suppresses the incoming CEO's influence. Quigley and Hambrick study a sample of 181 CEO successions from three industries during 1994-2006. Quigley and Hambrick (2012) find considerable support for their hypotheses in their empirical tests: The relation between old CEO retaining on the board and post-succession strategic change is negative. Also, the association between old CEO retaining on the board and post-succession performance change (either positive or negative) is negative. In addition, they find that the association between firm performance and retiring CEO retaining on the board is positive. In the final analyses they find that retention has a more powerful effect on preventing the incoming CEO from making performance improvements than on preventing performance declines.

In line with Quigley and Hambrick's (2012) arguments, Berenbeim (1995) concludes from a large survey sent to U.S. directors that it might be difficult to reverse a past decision or action with a board that includes the person who made the original decision and consists of directors whom the decision-maker has appointed. Daily and Dalton (1997) also argue that the presence of the former CEO on the board may inhibit the ability of the new CEO to initiate changes. Daily and Dalton continue that the new CEO might fear that any major changes would offend the old CEO. Brickley et al. (1997) also have similar arguments:

Keeping the old CEO on the board restricts the new CEO and obstructs the new CEO from making major changes.

Several researchers document that exiting CEOs tend to manage earnings income-increasingly during their final year(s) in office (Dechow and Sloan, 1991; Murphy and Zimmerman, 1993; Kalyta, 2009; Ali and Zhang, 2015). Dechow and Sloan (1991) find that the exiting CEO does not cut R&D expenditures as much if he retains on the board after exiting as a CEO. Cutting R&D expenditures increases earnings and can be considered as an increase in earnings management. Reitenga and Tearney (2003) study only mandatory CEO retirements and find that departing CEOs tend to manage earnings in their final two years if they retain on their board after retiring as CEO. Brickley et al.'s (1999) arguments are in line with Reitenga and Tearney's (2003), as CEOs might have incentives to increase earnings in order to secure a board seat after retirement.

One avenue of research has focused on CEO duality, which is a situation in which the same person is both the CEO and the chairman of the board. On the one hand, CEO duality compromises an essential task of the board, namely that of monitoring the performance of the CEO (Rechner and Dalton, 1991; Finkelstein and D'aveni, 1994). On the other hand, leadership should be strong and unambiguous under CEO duality (Finkelstein and D'aveni, 1994). In general, it is not clear how CEO duality and firm performance are related (Donaldson and Davis, 1991; Boyd, 1995). On the one hand, Baliga et al. (1996) report that the market does not respond to changes in CEO duality and that CEO duality is only weakly related to short-term and long-term firm performance. Rechner and Dalton (1991), on the other hand, find that non-CEO duality firms outperform CEO duality firms.

4. HYPOTHESES DEVELOPMENT

Many studies document that new CEOs tend to overstate expenses in their first year as CEO, i.e. they tend to take an immediate “earnings bath” (Strong and Meyer, 1987; Pourciau, 1993; Weisbach, 1995; Ali and Zhang, 2015; Pan et al., 2016). There exist many accounting items executives can use to decrease earnings in their first year in charge. Past research shows that asset write-offs are one way that new executives have used to decrease initial earnings (Weisbach, 1995; Denis and Denis, 1995; Pan et al., 2016).

New CEOs like to perform initial “earnings baths” because they can attribute these poor initial earnings to previous CEOs’ bad decisions and take credit for the higher earnings in the following years, as it should be easy to improve from the “earnings bath” year’s low earnings (Pourciau, 1993). Strong and Meyer (1987) suggest that a single large asset write-off informs the market that the management has dealt with problematic assets aggressively, which should lead to improved profits in the future. In addition, many analysts advocate for big “earnings baths” because they improve financial ratios (Strong and Meyer, 1987).

There are several reasons why the incoming CEO might be willing to make asset write-offs that the outgoing CEO did not want to make. Francis et al. (1996) argue that managers might end up recording asset write-offs only in situations in which these write-offs are beneficial to them. Hayn and Hughes (2006) continue that managers might use discretion and time write-offs in a way that meets their personal financial reporting goals. Writing off personally-acquired assets might not be in the managers’ interests because the impairment would prove those investments to have been mistakes and harm managers’ reputation (Weisbach, 1995; Ramanna and Watts, 2012). A new CEO, however, can freely write off assets and blame (explicitly or implicitly) the former CEO for the bad performance of those assets.

Pan et al. (2016) show that poor investments are reversed only if the CEO who made these investments is changed. Pan et al. suggest that the incoming CEO can freely make write-offs or divestments because he has no “emotional bonds” for the assets and those assets might have been better suited for the outgoing CEO’s skills. Pan et al. (2016) also find that CEOs tend to overinvest in the later years of their service, which leads to decreased investment quality. This overinvestment and decreased investment quality leads to subsequent asset impairments and according to Pan et al.’s (2016) findings these low-quality investments are

most probable in the years before the CEO change. Similarly, Weisbach (1995) argues that management changes are important events because they might signal changes in corporate decisions, e.g. reversals of past errors or establishments of new policies.

Greiner and Bhambri (1989) state that incoming CEOs tend to introduce strategic changes in the beginning of their service. Musteen et al. (2006) find that CEOs are more open to strategic change early in their tenure but become more conservative over time. Strategic changes introduced by the new CEO might lead to writing off assets that were part of the former CEO's strategy. Because CEOs with longer tenures are less likely to make strategic changes, they are also less likely to make asset impairments that result from changed strategy.

Whether new CEOs use goodwill impairments specifically instead of some other asset write-offs or accounting items to decrease earnings in their first year as CEO can be studied empirically. Several factors support the hypothesis that new CEOs might use goodwill impairments specifically in their "earnings baths".

Goodwill and goodwill impairments arise from past acquisitions, and several factors might lead to impaired goodwill. One possible reason for making bad acquisitions is CEO's overconfidence. Overconfident CEOs overestimate their ability to generate returns which leads them to overinvest (Malmendier and Tate, 2005) and overpay in acquisitions (Malmendier and Tate, 2008). Overinvesting and overpayment both lead to subsequent goodwill impairments. Acquisitions often increase CEO's compensation which might incentivize managers to engage in M&A activity (Yim, 2013). Underpaid CEOs are more likely to make acquisitions (Seo et al., 2015). Thus, managers might make value-destroying acquisitions just to increase their compensation, which would lead to subsequent goodwill impairments.

As introduced in chapter 2.2, SFAS 142 standard affords managers with substantial discretion: Goodwill impairments are based on impairment tests, which are subjective and unverifiable in nature (Watts, 2003). Several researchers document that managers have used discretion inherent in SFAS 142 opportunistically (Li et al., 2011; Jarva, 2014; Li and Sloan, 2017). One possible way of managing the fair value of goodwill is using a lower discount rate than expected (Carlin and Finch, 2010).

Managers' incentives to delay goodwill impairments have increased after the introduction of SFAS 142 (Li and Sloan, 2017). Goodwill impairments can be delayed because managers'

fair value estimates of goodwill are unverifiable (Li and Sloan, 2017). Hayn and Hughes (2006) find that goodwill impairments lag 3-4 years behind the economic impairment of goodwill. For one third of companies the lag is 6-10 years. Managers might also “roll the dice”, i.e. decide not to record any goodwill impairment even if they should and hope that future improved firm performance reverses the need for the goodwill write-off (Beatty and Weber, 2006). Hayn and Hughes (2006) notice that firms sometimes recover from short-term poor performance. These findings imply that under SFAS 142 it is more likely that the outgoing CEO has delayed evident goodwill impairments and the incoming CEO has a trivial task in writing off impaired goodwill.

Finally, Hazarika et al. (2012) find that CEO’s tenure and earnings management are negatively related, which means that shorter-tenured CEOs are more likely to manage earnings. Research also shows that CEOs with longer tenures are less likely to write off goodwill (Beatty and Weber, 2006; Ramanna and Watts, 2012). These findings directly mean that CEOs are less likely to write off goodwill in their final years before the CEO change and more likely to make write-offs in their first years in charge.

Based on the arguments and findings presented above, it is hypothesized that a CEO change increases the likelihood of a goodwill impairment. Thus, the first hypothesis is formulated as follows:

H₁: The association between CEO changes and goodwill impairments is positive.

Brickley et al. (1999) document that retired CEOs hold on average 2.48 board seats two years after retirement. 88% of the retired CEOs hold at least one board seat, 42% hold at least three seats, and 28% hold over four seats. It is likely that at least one of those seats is in the company where the CEO has served. Vancil (1987), Dechow and Sloan (1991), and Evans et al. (2010) also report that departing CEOs often stay on their own boards. Evans et al. (2010) argue that firms can benefit from the outgoing CEO’s retention on the board because of the outgoing CEO’s monitoring and advising abilities. Based on these findings, it is likely that the outgoing CEO does not just leave his company: He might stay on the board of directors after serving as CEO.

It is also possible that the exiting CEO himself can decide whether to stay on the board (Sonnenfeld, 1988). Sonnenfeld (1988) hypothesizes that poorly-performing CEOs are most

likely to stay on the board, because their visions for the company remain unfulfilled. With poorly-performed ex-CEOs on the board, impaired goodwill on the balance sheet should be more likely. With his visions unfulfilled, the ex-CEO might fight against any strategic changes.

There are several reasons why ex-CEOs on boards might prevent the incoming CEOs from making strategic changes and asset write-offs (e.g. goodwill write-offs). Quigley and Hambrick (2012) argue that if the outgoing CEO retains on the board, incoming CEOs are restricted to make changes. They argue that the outgoing CEO is likely to favor strategies and policies he has put in place and may use his power on the board to constraint change initiatives. Thus, it might be harder for the incoming CEO to make strategic changes or deliver performance that is notably different (either better or worse) from prior performance (Quigley and Hambrick, 2012). In their empirical tests, Quigley and Hambrick (2012) find that the association between ex-CEO retaining on the board and post-succession strategic change is negative, suggesting that ex-CEOs on boards prevent strategic changes from happening.

Berenbeim (1995) concludes from a large survey sent to U.S. directors that it might be difficult to reverse a past decision or action with a board that includes the person who made the original decision and consisting of directors whom the decision-maker has appointed. Daily and Dalton (1997) argue that the presence of the former CEO on the board may inhibit the ability of the new CEO to initiate changes. Daily and Dalton continue that the new CEO might fear that any major changes might offend the former CEO. Evans et al. (2010) argue that former CEOs on boards can use afforded decision rights for their own benefit and e.g. prevent potentially valuable changes to firm strategy. Brickley et al. (1997) also have similar arguments: Keeping the old CEO on the board restricts the new CEO and hinders the new CEO in making changes.

Vafeas' (2003) findings support the view that CEOs with longer tenures become friendlier with the directors on his board. If the outgoing CEO stays on the board, it is likely that he has many friendly directors to work with. The ex-CEO might arguably have substantial influence over the decisions of the friendly directors. The CEO can at least partially control the process of choosing new board members (Hermalin and Weisbach, 1998). In practice, shareholders almost always choose the directors who have been proposed by the management (Hermalin and Weisbach, 1998). If the outgoing CEO stays on the board, it is

likely that the board contains many directors he has appointed. The ex-CEO might have influence over those directors because he helped to appoint them.

An interesting finding by Evans et al. (2010) is that firms with retained ex-CEOs on the board are more likely to select new CEOs who are younger and have no prior CEO experience. In these situations it should be easier for the retained CEO to influence the decisions of the incoming CEO, e.g. preventing any goodwill impairments from happening.

Even though the ex-CEO on the board does not work as CEO anymore, he might still be resistant to allow any impairments related to assets he has personally acquired during his service as CEO. The ex-CEO might still have emotional bonds for the assets (Pan et al., 2016). Writing off assets that the ex-CEO has acquired proves those investments to have been mistakes (Weisbach, 1995; Ramanna and Watts, 2012). The impairment also harms ex-CEO's reputation (Weisbach, 1995; Ramanna and Watts, 2012). The ex-CEO might still be concerned over his reputation, e.g. because he wants to continue his career as a board expert.

Based on the arguments and findings presented above, it is further hypothesized that if the outgoing CEO stays on the board, a CEO change is *not* associated with a goodwill impairment. Thus, the second hypothesis is formulated as follows:

H₂: If the departing CEO stays on the board of directors, the association between CEO changes and goodwill impairments is insignificant.

It is further hypothesized in this study that the type of the CEO change might play a major role in determining the association between CEO changes and goodwill impairments. Pourciau (1993) states that routine CEO changes are often retirements, and non-routine CEO changes are often resignations (both voluntary and non-voluntary). Pourciau (1993) argues that the nature of a routine CEO change *reduces* incentives and opportunities for earnings management. Pourciau (1993) further argues that the nature of a non-routine CEO change *increases* incentives and opportunities for earnings management. Pourciau argues this is because in non-routine changes (which are often unplanned), it is difficult for the board to structure the executive change in a way that incentives and opportunities for earnings management would be minimized.

Wells (2002) hypothesizes that incoming CEOs have a greater opportunity to attribute poor initial earnings to prior management after non-routine CEO changes rather than after routine

ones: Thus, they have a greater opportunity to manage earnings. Wells categorizes CEO retirements into routine CEO changes and all other changes being non-routine. Wells (2002) reports that incoming CEOs tend to record “earnings baths” with abnormal charges and extraordinary items after non-routine CEO changes. He finds no evidence of “earnings baths” after routine CEO changes.

Godfrey et al. (2003) hypothesize that new CEOs have more incentives to manage earnings opportunistically in firms where the CEO was changed because of resignation rather than retirement. Godfrey et al. find evidence of income-decreasing earnings management in the years in which CEOs are changed. Interestingly, their results are driven by CEO resignations, and not by CEO retirements. Mather and Ramsay (2006) hypothesize that unplanned CEO changes (resignations) provide incoming CEOs with greater incentives and opportunities for earnings management than orderly and planned changes (retirements). Mather and Ramsay interestingly find that CEO resignations lead the new CEO to record negative unexpected accruals, while CEO retirements lead the new CEO to record positive unexpected accruals in the year of the CEO change.

Finally, Murphy and Zimmerman (1993) study changes in discretionary financial variables surrounding CEO changes and detect that managerial discretion affects these discretionary financials only if the CEO is changed because of poor past performance. They find no evidence on the exercise of managerial discretion when the firm has performed well in the past and the CEO retires according to a plan.

Because of the arguments and findings presented above, it is hypothesized that CEO changes and goodwill impairments are positively associated because of CEO resignations and not because of CEO retirements. Thus, the third hypotheses are formulated as follows:

H_{3a}: The association between CEO resignations and goodwill impairments is positive.

H_{3b}: The association between CEO retirements and goodwill impairments is insignificant.

The type of the CEO change might be an important determinant on whether the departing CEO is offered a board seat after quitting as CEO. Pourciau (1993) states that after a routine CEO change, the departing CEO might often stay on the board of directors. Wells (2002) reports that after a non-routine CEO change, the departing CEO rarely has any involvement

with the firm after the CEO change. If the departing CEO stays involved with the firm, he has stayed on the board of directors in all of the cases studied by Wells. Hazarika et al. (2012) find that fired CEOs are less likely to stay on the firm's board and more likely to lose board seats in other firms as well.

Both ex-CEO's board service and the type of the CEO change are likely to have an impact on the incoming CEO's decision of whether or not to impair goodwill in the CEO change year. It can be debated which of the two (ex-CEO's board service or the type of the CEO change) has a greater influence on the goodwill impairment decision. In this study it is hypothesized that ex-CEO's presence on the board of directors has a greater influence on the incoming CEO's decision of whether to record initial goodwill impairments than the type of the CEO change (resignation or retirement). Thus, the fourth hypotheses are formulated as follows:

H_{4a}: If the resigned CEO stays on the board of directors, the association between CEO changes and goodwill impairments is insignificant.

H_{4b}: If the retired CEO stays on the board of directors, the association between CEO changes and goodwill impairments is insignificant.

5. RESEARCH DESIGN

5.1 Developing models

The association between CEO changes and goodwill impairments is studied with a dependent variable indicating (1) the amount of goodwill impairment and (2) whether goodwill impairment has occurred or not (dummy variable). When using a binary (dummy) dependent variable, logistic regression should be used instead of the standard linear regression (Ge and Whitmore, 2009). Thus, logistic regression analysis is used for models with a binary dependent variable and linear regression analysis is used for models with a dependent variable indicating the amount of goodwill impairment.

A model with a dependent variable indicating whether any goodwill impairment is recorded or not (variable which gets a value 1 if any goodwill impairment is recorded, and 0 if no impairment is recorded) explains managerial decisions on whether to *record* a goodwill impairment in a particular year or *not*. A model with a dependent variable indicating the actual goodwill impairment amount is of secondary interest because it explains managerial decisions of *how large* goodwill impairments to record. Before this decision of the amount, they have decided that they *will* record a goodwill impairment in that particular year.

A logistic model for goodwill impairments is more important for the purposes of this study for several reasons. SFAS 142 goodwill accounting standard affords managers with substantial discretion (Ramanna and Watts, 2012). Managers can determine the fair value of their firm's goodwill based on their own estimates and assumptions, making the fair value of goodwill subjective and easy to manipulate (Watts, 2003). In addition, no one can prove what the 'correct' fair value of goodwill for a particular firm is (Ramanna and Watts, 2012). Managers have substantial discretion to decide the *timing* of goodwill impairments: They can always delay goodwill impairments by estimating the fair value of their firm's goodwill to be sufficiently high (Beatty and Weber, 2006; Hayn and Hughes, 2006; Ramanna and Watts, 2012; Li and Sloan, 2017). No one can prove that managerial estimates are wrong because they are just estimates, based on assumptions (Ramanna and Watts, 2012). Despite these issues, it is studied how well the explanatory variables can explain the level of goodwill impairments in addition to the primary logistic models.

To test for the association between CEO changes and goodwill impairments (hypothesis 1), a model with goodwill impairment as the dependent variable and CEO change as the explanatory variable is created. CEO change is a dummy variable indicating whether a CEO change has occurred or not. To test how ex-CEO's board service affects the association between CEO changes and goodwill impairments (hypothesis 2), a dummy variable indicating whether the ex-CEO sits on the board of directors in a particular year is introduced. The interaction term of the variables indicating CEO change and ex-CEO's board services captures the effect of these two conditions at the same time. Furthermore, to test for hypotheses 3a, 3b, 4a, and 4b, a separate model is created where CEO changes are categorized into CEO resignations, CEO retirements, and other CEO changes.

For the purposes of this study, there are three variables of interest on the Compustat ExecuComp -database. "Date Left as CEO" (LEFTOFC) tells directly when a particular CEO has quit working as CEO. This means that the CEO change (explanatory) variable used in this study is constructed straight from the Compustat variable LEFTOFC. "Date Left Company" (LEFTCO) is used to proxy for ex-CEO's board service. The key assumption made in this study is that if "Date Left Company" (LEFTCO) is after "Date Left as CEO" (LEFTOFC), *the departing CEO has stayed on the board of directors*. This means that the dummy variable indicating ex-CEO's board service equals 1 if $LEFTCO > LEFTOFC$, and 0 otherwise. This key assumption should be reasonable as it is hard to imagine any other position a departing CEO would accept to hold in the same company than a place on the board after quitting from the CEO position. It is highly unlikely that the departing CEO would accept to continue working as a subordinate executive for example. As Brickley et al. (1999) suggest, retired CEOs care about relatively high-paying, high-status board seats. Thus, it is assumed that if a CEO quits working as the CEO but stays on the company, he is a member of the board. Third variable of interest on Compustat ExecuComp is "Reason Left Company" (REASON). With this variable CEO changes are categorized into resignations, retirements, and other changes.

Based on prior literature, several control variables are included in the models. First, goodwill relative to total assets (goodwill percentage) is a characteristic of the original acquisition(s), and acquisition indicators are powerful predictors of subsequent goodwill impairments (Hayn and Hughes, 2006). Goodwill percentage is retrieved from the beginning balance sheet (Jarva, 2014; Li and Sloan, 2017), as a firm should not be able to record a goodwill impairment if it has no goodwill on the balance sheet to begin with. Second, earnings level

and a variable indicating whether earnings are below zero (loss) before goodwill impairments are natural accounting performance indicators (Jarva, 2009). Third, both book-to-market ratio and a variable indicating whether book-to-market ratio is over one are added, as a high book-to-market ratio is a market indication of goodwill impairment (Beatty and Weber, 2006; Ramanna and Watts, 2012; Jarva, 2014; Li and Sloan, 2017). Fourth, firm size is added to the model, because larger firms are more likely to record “big bath” asset write-offs (Elliott and Shaw, 1988). Fifth, stock return, a dummy variable indicating negative stock return, and an interaction term of the two are added to the model (Jarva, 2014). Finally, an interaction variable between goodwill percentage and negative earnings is added because it signals that goodwill is materially impaired (Li and Sloan, 2017), and an interaction variable between goodwill percentage and book-to-market ratio over one is added because it significantly predicts impairments (Jarva, 2014).

First, a logistic regression model is formulated to test for the effects of the explanatory variables on the managerial decisions of whether to record a goodwill impairment during a particular year or not. Thus, Model 1 is formulated as follows:

$$p = E(GWIMPdum_{it} | \mathbf{X}\boldsymbol{\beta}) = [1 + \exp(-\mathbf{X}\boldsymbol{\beta})]^{-1}$$

where,

(1)

$$\begin{aligned} \mathbf{X}\boldsymbol{\beta} = & \alpha_0 + \beta_1 CEOchange_{it} + \beta_2 exCEOonBOARD_{it} \\ & + \beta_3 CEOchange_{it} exCEOonBOARD_{it} + \beta_4 GW\%_{it-1} + \beta_5 ROA_{it} \\ & + \beta_6 ROABO_{it} + \beta_7 GW\%_{it-1} ROABO_{it} + \beta_8 BTM_{it} + \beta_9 BTMO1_{it} \\ & + \beta_{10} GW\%_{it-1} BTMO1_{it} + \beta_{11} SIZE_{it} + \beta_{12} RET_{it} + \beta_{13} RETBO_{it} \\ & + \beta_{14} RET_{it} RETBO_{it} \end{aligned}$$

where,

$GWIMPdum_{it}$ = a dummy variable equal to 1 if firm i records a goodwill impairment in year t, and 0 otherwise,

$CEOchange_{it}$ = a dummy variable equal to 1 if firm i’s CEO is changed in year t, and 0 otherwise,

$exCEOonBOARD_{it}$ = a dummy variable equal to 1 if firm i’s ex-CEO sits on the board in year t, and 0 otherwise,

$GW\%_{it-1}$ = goodwill divided by total assets (goodwill percentage) for firm i in year t-1,

ROA_{it} = operating income after depreciation divided by total assets (return on assets) for firm i in year t ,

$ROABO_{it}$ = a dummy variable equal to 1 if firm i has ROA_{it} below zero in year t , and 0 otherwise,

BTM_{it} = book-to-market ratio for firm i in year t ,

$BTMOI_{it}$ = a dummy variable equal to 1 if firm i has BTM_{it} over one in year t , and 0 otherwise,

$SIZE_{it}$ = natural logarithm of the market value of equity for firm i in year t ,

RET_{it} = annual buy-hold stock return for firm i in year t , and

$RETB0_{it}$ = a dummy variable equal to 1 if firm i has RET_{it} below zero in year t , and 0 otherwise.

To test for hypotheses 3 and 4, CEO changes are further categorized into (1) CEO resignations, (2) CEO retirements, and (3) other CEO changes. This is possible because on Compustat ExecuComp -database, CEO changes are categorized into these categories. To be precise, there are four categories CEO changes are categorized into: (1) resignations, (2) retirements, (3) deceases, and (4) unknowns. Because there are only a few deceases, and we cannot know whether “unknown CEO changes” are resignations, retirements, deceases, or something else, both deceases and unknowns are categorized into “other CEO changes” in this study. Only the difference between CEO resignations and CEO retirements is of interest for the purposes of hypotheses 3 and 4, and any other CEO changes are additional observations not specifically examined. It should be noted, however, that “other CEO changes” must also be included in the models to *control* for the effect of these uncategorized CEO changes on goodwill impairments. Thus, it does not matter what kind of changes these unknown CEO changes are: The effect of these changes on goodwill impairments is controlled for, and the difference between the coefficients on CEO resignations and CEO retirements measures the different impact of CEO resignations and CEO retirements on goodwill impairments.

The following Model 2 is very similar to Model 1. The only difference between these models is that in Model 2 the variable *CEOchange* is further divided into three new subvariables: (1) *CEOresigned*, (2) *CEOretired*, and (3) *OtherChange*. Model 2 is formulated as follows:

$$p = E(GWIMP_{it} | \mathbf{X}\boldsymbol{\beta}) = [1 + \exp(-\mathbf{X}\boldsymbol{\beta})]^{-1}$$

where,

(2)

$$\begin{aligned} \mathbf{X}\boldsymbol{\beta} = & \alpha_0 + \beta_1 CEOresigned_{it} + \beta_2 CEOretired_{it} + \beta_3 OtherChange_{it} \\ & + \beta_4 exCEOonBOARD_{it} + \beta_5 CEOresigned_{it} exCEOonBOARD_{it} \\ & + \beta_6 CEOretired_{it} exCEOonBOARD_{it} \\ & + \beta_7 OtherChange_{it} exCEOonBOARD_{it} + \beta_8 GW\%_{it-1} + \beta_9 ROA_{it} \\ & + \beta_{10} ROABO_{it} + \beta_{11} GW\%_{it-1} ROABO_{it} + \beta_{12} BTM_{it} + \beta_{13} BTMO1_{it} \\ & + \beta_{14} GW\%_{it-1} BTMO1_{it} + \beta_{15} SIZE_{it} + \beta_{16} RET_{it} + \beta_{17} RETBO_{it} \\ & + \beta_{18} RET_{it} RETBO_{it} \end{aligned}$$

where,

CEOresigned_{it} = a dummy variable equal to 1 if firm i's CEO has changed in year t because of resignation, and 0 otherwise,

CEOretired_{it} = a dummy variable equal to 1 if firm i's CEO has changed in year t because of retirement, and 0 otherwise, and

OtherChange_{it} = a dummy variable equal to 1 if firm i's CEO has changed in year t but the change reason is not resignation or retirement, and 0 otherwise.

All the other variables in Model 2 are defined as in Model 1.

In addition to the logistic models, a linear model with actual goodwill impairment amount as the dependent variable is constructed to test for the effects of the explanatory variables on the level of goodwill impairment. Model 3 is the following:

$$\begin{aligned} GWIMP_{it} = & \alpha_0 + \beta_1 CEOchange_{it} + \beta_2 exCEOonBOARD_{it} \\ & + \beta_3 CEOchange_{it} exCEOonBOARD_{it} + \beta_4 GW\%_{it-1} + \beta_5 ROA_{it} \\ & + \beta_6 ROABO_{it} + \beta_7 GW\%_{it-1} ROABO_{it} + \beta_8 BTM_{it} + \beta_9 BTMO1_{it} \\ & + \beta_{10} GW\%_{it-1} BTMO1_{it} + \beta_{11} SIZE_{it} + \beta_{12} RET_{it} + \beta_{13} RETBO_{it} \\ & + \beta_{14} RET_{it} RETBO_{it} + e_{it} \end{aligned} \quad (3)$$

where,

$GWIMP_{it}$ = the amount of goodwill impairment in year t divided by total assets in year t-1 for firm i, and

e_{it} = error term for firm i in year t.

All the other variables in Model 3 are defined as in Model 1.

Finally, the corresponding linear version of the logistic Model 2 is Model 4:

$$\begin{aligned} GWIMP_{it} = & \alpha_0 + \beta_1 CEOresigned_{it} + \beta_2 CEOretired_{it} + \beta_3 OtherChange_{it} \\ & + \beta_4 exCEOonBOARD_{it} + \beta_5 CEOresigned_{it} exCEOonBOARD_{it} \\ & + \beta_6 CEOretired_{it} exCEOonBOARD_{it} \\ & + \beta_7 OtherChange_{it} exCEOonBOARD_{it} + \beta_8 GW\%_{0it-1} + \beta_9 ROA_{it} \quad (4) \\ & + \beta_{10} ROABO_{it} + \beta_{11} GW\%_{0it-1} ROABO_{it} + \beta_{12} BTM_{it} \\ & + \beta_{13} BTMO1_{it} + \beta_{14} GW\%_{0it-1} BTMO1_{it} + \beta_{15} SIZE_{it} + \beta_{16} RET_{it} \\ & + \beta_{17} RETBO_{it} + \beta_{18} RET_{it} RETBO_{it} + e_{it} \end{aligned}$$

All the variables in Model 4 are defined as in Models 1, 2, and 3.

The value of the goodwill impairment dummy variable $GWIMPdum_{it}$ is either 1 or 0. As a firm decides to record a goodwill impairment, the value of goodwill impairment dummy increases (from 0 to 1), i.e. increasing goodwill impairments increases the value of the goodwill impairment dummy. Next, the predicted signs of the coefficients on the explanatory variables in Model 1 are discussed.

Reasons behind the expected signs of the coefficients on the explanatory variables of primary interest ($CEOchange_{it}$ and $CEOchange_{it} * exCEOonBOARD_{it}$) are thoroughly discussed in chapter 4 in this study. The coefficient on $CEOchange_{it}$ is expected to be positive. It is expected that the coefficient on $CEOchange_{it} * exCEOonBOARD_{it}$ is negative.

The expected signs of the coefficients on the control variables are the following. First, the coefficient on $GW\%_{0it-1}$ is expected to be positive. This is because Hayn and Hughes (2006) report that characteristics of the original acquisition (premium paid, number of bidders, the amount of goodwill relative to purchase price, and stock payment) are significant predictors

of subsequent goodwill impairments, and all these four factors lead to a higher goodwill percentage.

Second, the coefficient on ROA_{it} is expected to be negative, because goodwill impairments are often recorded in years in which the impairment firm has poor earnings, even excluding the effect of the impairment (Jarva, 2014; Li and Sloan, 2017). For the same reason, the coefficient on $ROABO_{it}$ is expected to be positive. The expected sign of the coefficient on $GW\%_{it-1} * ROABO_{it}$ is positive because increases in both of these variables should increase the likelihood of goodwill impairment.

Third, the expected sign of the coefficient on BTM_{it} is positive. This is because many researchers argue that a high book-to-market ratio is a market indication of goodwill impairment (Beatty and Weber, 2006; Ramanna and Watts, 2012; Jarva, 2014; Li and Sloan, 2017). Specifically, if book-to-market ratio is over one, the market's sentiment is that goodwill is impaired (Lee, 2011; Ramanna and Watts, 2012). For this reason, the expected sign of the coefficient on $BTMOI_{it}$ is positive. The sign of the coefficient on $GW\%_{it-1} * BTMOI_{it}$ is positive by expectation because increases in both of these variables should increase the likelihood of goodwill impairment.

Fourth, the sign of the coefficient on $SIZE_{it}$ is expected to be positive, because larger firms are more likely to record asset write-offs (Elliott and Shaw, 1988). Fifth, the coefficient on RET_{it} is expected to be negative consistent with Jarva (2014) and Li and Sloan (2017). In that case, the expected sign of the coefficient on $RETBO_{it}$ will be positive and on $RET_{it} * RETBO_{it}$ negative.

In Model 2 the expected signs of the control variables are the same as in Model 1. The reasons behind the expected signs of the coefficients on the explanatory variables of primary interest are discussed in section 4 of this study. First, it is expected that the sign of the coefficient on $CEOresigned_{it}$ is positive. Second, it is expected that the coefficient on $CEOretired_{it}$ is insignificant. The variable $OtherChange_{it}$ is included in the model solely for controlling purposes and no expectations are formed for it. Because of the reasons discussed in chapter 4, the coefficients on the interaction variables $CEOresigned_{it} * exCEOonBOARD_{it}$ and $CEOretired_{it} * exCEOonBOARD_{it}$ are expected to be negative. No expectation is formed for variable $OtherChange_{it} * exCEOonBOARD_{it}$.

In Model 3 the expected sign for each coefficient is the opposite compared to the corresponding expected sign in Model 1. This is because in the logistic model the decision

to record a goodwill impairment increases the value of the goodwill impairment dummy variable, whereas in Model 3 recording a larger goodwill impairment decreases the value of the goodwill impairment variable (goodwill impairment amounts are negative as in the income statement). In Model 4 the signs of the coefficients on the explanatory variables are expected to be the opposite compared to the corresponding expected signs in Model 2.

5.2 Data collection and sample selection

The time period used in this study, years 2002-2009, is chosen because of the following reasons. First, the new goodwill accounting standard, SFAS 142, became effective in 2001 (FASB, 2001b). Before SFAS 142, goodwill was subject to periodic amortization, i.e. goodwill amortizations were recorded *each* year by firms with goodwill on their balance sheet. SFAS 142 introduced a new goodwill impairment testing to be performed instead of the regular goodwill amortization. Substantial managerial discretion is involved in making these impairment tests (Ramanna and Watts, 2012), and goodwill is likely to be written off irregularly and in varying amounts (FASB, 2001b). For the purposes of this study, it is of interest to study *under which circumstances* goodwill impairments are most likely to be recorded. Thus, observations before goodwill impairment testing regime (before 2001) cannot be used because at that time goodwill was amortized every year, *irrespective of the prevalent circumstances*.

Second, SFAS 142 transition year 2001 is not included in this study. This is because at the transition year managers were able to attribute all goodwill impairments as a result of an accounting change (Beatty and Weber, 2006). If goodwill impairments were not performed at the transition year, those impairments had to be recorded to operating expenses in the subsequent years, as usual (Beatty and Weber, 2006). Thus, managers had incentives to record extra goodwill impairments at the transition year and “hide” these impairments under non-operating expenses under the transitional accounting change explanation (Beatty and Weber, 2006). Because of these extraordinary incentives to record extra goodwill impairments at the transition period, year 2001 is not included in this study.

Third, year 2009 is the final year included in this study because of data availability. Data for the variable “Data Left Company” (LEFTCO) is needed from Compustat ExecuComp - database to proxy for ex-CEO’s board service. For some reason, there is data available for

that variable on Compustat ExecuComp only until 2009, i.e. values for when CEOs have left their companies are missing from 2010 onwards. Because data of this variable is crucial to proxy for ex-CEO's board service, year 2009 is the final year included in this study. However, the eight-year time period (2002-2009) examined in this study is long enough as demonstrated by the large number of goodwill impairments and CEO changes during this time period below.

Data is collected from Compustat-database as follows. First, financial statement data (goodwill impairments, goodwill, total assets, operating income after depreciation, book value of equity, end-of-year stock price, and common shares outstanding) is retrieved from Compustat Fundamentals Annual -database. Second, data of CEO changes (Date Left as CEO, Date Left Company, and Reason Left Company) is retrieved from Compustat ExecuComp -database.

The selection of the final sample used in this study is illustrated in Table 1.

Table 1. Sample selection criteria

Criterion	Total
All firm-year observations on Compustat during 2002-2009	98,050
1. <i>Less:</i> Financial institutions	-10,384
	87,666
2. <i>Less:</i> Firm-years with no goodwill on the beginning balance sheet	-51,686
	35,980
3. <i>Less:</i> Firm-years with a missing value for some of the control variables	-4,702
	31,278
4. <i>Less:</i> Firm-years with no stock price year t-1 available	-653
Final sample	30,625
Firm-years with no goodwill impairment	-26,310
Firm-years with goodwill impairment	4,315

Sample selection starts from all firm-year observations on Compustat during 2002-2009 (98,050 observations). First, financial institutions are excluded because they are highly regulated (Jarva, 2014), which excludes 10,384 observations. Second, firm-years in which there is no goodwill on the beginning balance sheet are excluded because it makes no sense to compare goodwill impairment firms to firms with no possibility to impair goodwill (Jarva, 2014; Li and Sloan, 2017). Firm-years with missing values for total assets on the beginning

balance sheet are also excluded because goodwill percentage needs to be calculated. This two-stage procedure excludes 51,686 observations. Third, firm-years with a missing value for some of the variables needed to calculate the control variables for the models (total assets, operating income after depreciation, book value of equity, end-of-year stock price, and common shares outstanding) are excluded. In addition, total assets, end-of-year stock price, and common shares outstanding cannot be 0 (because they are used as denominators in control variables). Finally, 11 observations when return on assets or book-to-market ratio is *totally* unrealistic are deleted because these observations are most likely errors and these observations would totally dominate the regressions if left to the sample. This deletes 4,702 observations. Fourth, firm-year observations with no stock price in year t-1 available are excluded because annual stock return in year t needs to be calculated (excludes 653 observations). The procedure described above forms the final sample used in this study, consisting of 30,625 firm-year observations.

6. EMPIRICAL RESULTS

6.1 Descriptive statistics

Table 2 in the following page provides descriptive statistics for all variables used in this study. Descriptive statistics for the interaction variables of primary interest (not shown in the table) are the following. There are 298 firm-years in which the departing CEO stays on the board after a CEO change. 76 of these CEO changes are resignations and 163 are retirements. From firm-years in which the departing CEO stays on the board 63 are firm-years with a goodwill impairment and 235 are firm-years with no goodwill impairment. The departing CEO stays on the board after a resignation in 22 cases in goodwill impairment firms and in 54 cases in non-goodwill impairment firms, while after a retirement the corresponding figures are 28 and 135 for goodwill impairment firms and non-goodwill impairment firms, respectively.

Table 2. Descriptive statistics from years 2002-2009 for variables used in this study

Variable	All (N=30,625)			GWIMP>0 (N=4,315)			GWIMP=0 (N=26,310)		
	N (<>0)	Mean	Median	N (<>0)	Mean	Median	N (<>0)	Mean	Median
<i>GWIMPdum_{it}</i>	4,315	0.141	0.000	4,315	1.000	1.000	0	0.000	0.000
<i>GWIMP_{it}</i>	4,315	-0.012	0.000	4,315	-0.087	-0.034	0	0.000	0.000
<i>CEOchange_{it}</i>	1,198	0.039	0.000	227	0.053	0.000	971	0.037	0.000
<i>CEOresigned_{it}</i>	233	0.008	0.000	61	0.014	0.000	172	0.007	0.000
<i>CEOretired_{it}</i>	321	0.010	0.000	51	0.012	0.000	270	0.010	0.000
<i>OtherChange_{it}</i>	644	0.021	0.000	115	0.027	0.000	529	0.020	0.000
<i>exCEOonBOARD_{it}</i>	468	0.015	0.000	86	0.020	0.000	382	0.015	0.000
<i>GW%_{it-1}</i>	30,625	0.147	0.090	4,315	0.188	0.146	26,310	0.140	0.082
<i>ROA_{it}</i>	30,620	-0.007	0.054	4,315	-0.154	0.020	26,305	0.017	0.059
<i>ROAB0_{it}</i>	6,357	0.208	0.000	1,747	0.045	0.000	4,610	0.175	0.000
<i>BTM_{it}</i>	30,623	1.475	0.519	4,315	-1.038	0.724	26,308	1.886	0.498
<i>BTMOI_{it}</i>	5,198	0.170	0.000	1,512	0.350	0.000	3,686	0.140	0.000
<i>SIZE_{it}</i>	30,625	6.006	6.051	4,315	5.354	5.256	26,310	6.113	6.152
<i>RET_{it}</i>	30,537	0.844	0.000	4,303	1.144	-0.331	26,234	0.795	0.032
<i>RETBO_{it}</i>	15,260	0.498	0.000	3,042	0.705	1.000	12,218	0.464	0.000

GWIMPdum_{it} is a dummy variable equal to 1 if firm *i* records a goodwill impairment in year *t*, and 0 otherwise, *GWIMP_{it}* is the amount of goodwill impairment in year *t* divided by total assets in year *t-1* for firm *i*, *CEOchange_{it}* is a dummy variable equal to 1 if firm *i*'s CEO is changed in year *t*, and 0 otherwise, *CEOresigned_{it}* is a dummy variable equal to 1 if firm *i*'s CEO has changed in year *t* because of resignation, and 0 otherwise, *CEOretired_{it}* is a dummy variable equal to 1 if firm *i*'s CEO has changed in year *t* because of retirement, and 0 otherwise, *OtherChange_{it}* is a dummy variable equal to 1 if firm *i*'s CEO has changed in year *t* but the change reason is not resignation or retirement, and 0 otherwise, *exCEOonBOARD_{it}* is a dummy variable equal to 1 if firm *i*'s ex-CEO sits on the board in year *t*, and 0 otherwise, *GW%_{it-1}* is goodwill divided by total assets for firm *i* in year *t-1*, *ROA_{it}* is operating income after depreciation divided by total assets for firm *i* in year *t*, *ROAB0_{it}* is a dummy variable equal to 1 if firm *i* has *ROA_{it}* below zero in year *t*, and 0 otherwise, *BTM_{it}* is book-to-market ratio for firm *i* in year *t*, *BTMOI_{it}* is a dummy variable equal to 1 if firm *i* has *BTM_{it}* over one in year *t*, and 0 otherwise, *SIZE_{it}* is natural logarithm of the market value of equity for firm *i* in year *t*, *RET_{it}* is annual buy-hold stock return for firm *i* in year *t*, and *RETBO_{it}* is a dummy variable equal to 1 if firm *i* has *RET_{it}* below zero in year *t*, and 0 otherwise.

There are 4,315 goodwill impairments and 1,198 CEO changes in the sample. 233 of the CEO changes are resignations and 321 are retirements. There are 468 firm-years in which ex-CEO sits on the board, and 298 of those observations are from years in which also the CEO has changed. CEO has stayed on the board after resignation in 76 cases and after retirement in 163 cases. Goodwill impairments are recorded in 14% of firm-years and CEO is changed in 4% of firm-years. Departing CEO stays on the board in 1% of firm-years. An average goodwill impairment is 1.2 % of assets and a median goodwill impairment is 0 during 2002-2009. Goodwill impairment firms have changed their CEO more often than other firms (in 5.3% vs. 3.7% of firm-years). There are more CEO resignations in goodwill impairment firms (1.4% vs. 0.7%), whereas the amount of CEO retirements is almost the same (1.2% vs. 1.0%). A bit surprisingly, departing CEO has stayed on the board more often in goodwill impairment firms (1.5% vs. 0.9%).

An average goodwill percentage in the sample is 14.7% and a median goodwill percentage is 9.0%. Goodwill percentage is higher in goodwill impairment firms (average: 18.8% vs. 14.0%; median: 14.6% vs. 8.2%). Return on assets is somewhat surprisingly negative in the sample (-0.7%). This average value is might be driven by some outlier observations, and the median value 5.4% should better reflect the situation. Return on assets is significantly lower in goodwill impairment firms (-15.4% vs. 1.7%). Return on assets is negative in 20.8% of firm-years in the sample and surprisingly, return on assets is negative significantly more often in non-goodwill impairment firms (17.5% vs. 4.5%). Average book-to-market ratio of 1.48 might also be driven by some outliers, so the median value 0.52 should be looked at. Book value of equity is negative in many of the goodwill impairment firms, making average book-to-market ratio negative in these firms. Median book-to-market ratio is higher in goodwill impairment firms (0.72 vs. 0.50). Book-to-market ratio is over one in 17.0% of observations and as expected, book-to-market ratio is over one significantly more often in goodwill impairment firms (35.0% vs. 14.0%). It can be seen that goodwill impairment firms have a smaller market value on average than non-goodwill impairment firms. Finally, median annual stock return has been 0.0%. Median stock return is significantly lower in goodwill impairment firms (-33.1% vs. 3.2%). Annual stock return is below zero in 49.8% of cases and as expected, annual stock return is below zero significantly more often in goodwill impairment firms (70.5% vs. 46.4%).

Table 3 shows descriptive statistics with respect to years in the sample period (2002-2009).

Table 3. Descriptive statistics with respect to years studied

Year	Firms with GW%>0		Firms with GWIMP>0		
	N	GW%	n	n/N	GWIMP/GW
2002	3,105	0.145	432	0.139	0.422
2003	3,787	0.140	341	0.090	0.362
2004	3,909	0.144	337	0.086	0.366
2005	4,034	0.147	384	0.095	0.370
2006	4,070	0.149	397	0.097	0.315
2007	4,062	0.150	466	0.115	0.402
2008	4,018	0.152	1,202	0.299	0.512
2009	3,640	0.146	756	0.208	0.420
Subtotal	30,625	0.147	4,315	0.141	0.418

GW% and GW are from beginning balance sheet.

The number of firms with goodwill on their balance sheet increased steadily from 2002 until 2006. After that the number has been slightly decreasing. Average goodwill percentage (goodwill divided by total assets) increased slightly during 2003-2008. However, all the observations are between 14.0% and 15.2%, meaning that the relative importance of goodwill on the balance sheet has been stable during the time period studied. The number of goodwill impairments recorded per year has large variation. During years 2002-2007 the number of goodwill impairments per year is between 337-466. However, there were 1,202 goodwill impairments recorded in 2008, in the year when the most recent financial crisis began. It is likely that poor firm performance caused by the financial crisis led to this high number of goodwill impairments. In 2009 there were 756 goodwill impairments recorded, also significantly more than in any year during 2002-2007.

Goodwill impairments are recorded on average in 14% of the cases when there is goodwill on the beginning balance sheet. Again, during 2002-2007 goodwill impairments were recorded in 8.6%-13.9% of firm-years in which there was a possibility to record a goodwill impairment (positive goodwill balance). In the financial crisis year 2008, 29.9% of firms with a positive goodwill balance recorded a goodwill impairment. In 2009 the figure was 20.8%. Recorded goodwill impairment is on average 41.8% of total goodwill from beginning balance sheet, i.e. if goodwill balance is 1,000 on the beginning balance sheet, the recorded goodwill impairment is 418 on average. Firms recorded largest goodwill impairments

relative to goodwill balance in 2008 (average goodwill impairment is 51.2% of goodwill) and smallest in 2006 (31.5%).

Descriptive statistics on how frequently CEO changes have occurred in the years studied is not shown in the table. The number of CEO changes per year is rather stable during the sample period 2002-2009. There are not significantly more CEO changes in the financial crisis year 2008. There are at least three possible explanations for this. First, it is possible that firms understood that poor firm performance was caused by the financial crisis (external factor), not by the firm's CEO. Second, it is possible that firms reacted to poor firm performance after a certain time period and not in 2008. Third, it is possible that Compustat ExecuComp's data on CEO changes is not complete. Finally, the cases when the departing CEO stays on the board are also spread rather evenly among the sample years. There are only 3 observations in 2009 because data of when CEOs have left their firms was stored until 2009 on Compustat ExecuComp.

6.2 Correlation between explanatory variables

Pearson and Spearman correlations between the explanatory variables of this study are shown in Table 4 in the next page.

Table 4. Correlation matrix of explanatory variables

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
1. CEOChange_{it}	1.000	0.434**	0.510**	0.726**	0.384**	0.027**	0.043**	-0.026**	-0.024**	-0.023**	0.113**	-0.021**	0.016**
		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.006
2. CEOresigned_{it}	0.434**	1.000	-0.009	-0.013*	0.222**	0.017**	-0.002	0.012*	-0.009	-0.006	0.031**	-0.020**	0.017**
	< 0.001		0.115	0.025	< 0.001	0.003	0.736	0.040	0.109	0.332	< 0.001	0.001	0.003
3. CEOretired_{it}	0.510**	-0.009	1.000	-0.015**	0.413**	0.010	0.044**	-0.032**	-0.021**	-0.021**	0.081**	-0.011	0.007
	< 0.001	0.115		0.008	< 0.001	0.075	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.063	0.213
4. OtherChange_{it}	0.726**	-0.013*	-0.015**	1.000	0.091**	0.018**	0.028**	-0.020**	-0.012*	-0.012*	0.076**	-0.009	0.006
	< 0.001	0.025	0.008		< 0.001	0.001	< 0.001	0.001	0.040	0.032	< 0.001	0.098	0.330
5. exCEOonBOARD_{it}	0.384**	0.222**	0.413**	0.091**	1.000	0.017**	0.039**	-0.027**	-0.024**	-0.022**	0.092**	-0.012*	0.005
	< 0.001	< 0.001	< 0.001	< 0.001		0.003	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.040	0.408
6. GW%_{it-1}	0.011	0.014*	-0.001	0.007	0.004	1.000	0.111**	0.069**	-0.112**	-0.053**	-0.032**	-0.025**	0.022**
	0.056	0.018	0.863	0.203	0.507		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
7. ROA_{it}	0.011	0.004	0.007	0.007	0.007	-0.041**	1.000	-0.702**	-0.256**	-0.236**	0.445**	0.216**	-0.183**
	0.061	0.534	0.218	0.201	0.197	< 0.001		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
8. ROAB0_{it}	-0.026**	0.012*	-0.032**	-0.020**	-0.027**	0.067**	-0.134**	1.000	0.008	0.135**	-0.415**	-0.211**	0.178**
	< 0.001	0.040	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001		0.178	< 0.001	< 0.001	< 0.001	< 0.001
9. BTM_{it}	-0.004	-0.001	-0.002	-0.003	-0.001	-0.002	0.001	-0.007	1.000	0.650**	-0.233**	-0.263**	0.224**
	0.524	0.843	0.738	0.615	0.816	0.684	0.867	0.213		< 0.001	< 0.001	< 0.001	< 0.001
10. BTMOI_{it}	-0.023**	-0.006	-0.021**	-0.012*	-0.022**	-0.040**	0.001	0.135**	0.040**	1.000	-0.297**	-0.288**	0.234**
	< 0.001	0.332	< 0.001	0.032	< 0.001	< 0.001	0.878	< 0.001	< 0.001		< 0.001	< 0.001	< 0.001
11. SIZE_{it}	0.104**	0.027**	0.078**	0.069**	0.090**	-0.071**	0.018**	-0.417**	-0.036**	-0.288**	1.000	0.210**	-0.190**
	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001		< 0.001	< 0.001
12. RET_{it}	0.002	0.006	-0.003	0.002	0.003	0.015**	-0.004	0.007	0.000	0.006	-0.014*	1.000	-0.866**
	0.701	0.311	0.568	0.756	0.573	0.007	0.441	0.220	0.981	0.277	0.017		< 0.001
13. RETB0_{it}	0.016**	0.017**	0.007	0.006	0.005	0.026**	-0.028**	0.178**	-0.011	0.234**	-0.192**	-0.045**	1.000
	0.006	0.003	0.213	0.330	0.408	< 0.001	< 0.001	< 0.001	0.058	< 0.001	< 0.001	< 0.001	

Notes: n = 30,625. See Table 2 for the definitions of the variables. Pearson (Spearman) correlations below (above) the diagonal.

Correlation between $CEOchange_{it}$ and $exCEOonBOARD_{it}$ is 0.38 according to both Pearson and Spearman correlations. This means that ex-CEO sits on the board in 38% of the years in which the CEO is changed. The previous correlation can be further categorized into correlations between $CEOresigned_{it}$ and $exCEOonBOARD_{it}$ (correlation 0.22), $CEOretired_{it}$ and $exCEOonBOARD_{it}$ (correlation 0.41), and $OtherChange_{it}$ and $exCEOonBOARD_{it}$ (correlation 0.09). This categorization means that departing CEO is two times more likely to stay on the board if he retires compared to if he resigns.

According to Pearson correlations, $CEOchange_{it}$ is positively and significantly correlated with $SIZE_{it}$, and $RETBO_{it}$. This means that CEO changes are more likely to occur when firm size is bigger and stock returns are below zero. Contrary to expectation, $CEOchange_{it}$ is negatively and significantly correlated with $ROABO_{it}$ and $BTMOI_{it}$. This means that CEO changes are more likely to occur when return on assets is not below zero and book-to-market ratio is not over one. According to Spearman correlations, $CEOchange_{it}$ is positively and significantly correlated with $GW\%_{it-1}$, ROA_{it} , $SIZE_{it}$, and $RETBO_{it}$. In addition to Pearson correlations, higher goodwill percentage (according to expectation) and higher return on assets (contrary to expectation) increase the likelihood of a CEO change. $CEOchange_{it}$ is negatively and significantly correlated with $ROABO_{it}$, BTM_{it} , $BTMOI_{it}$, and RET_{it} . In addition to Pearson correlations, a lower stock return increases the likelihood of a CEO change.

CEO resignations are positively and significantly correlated with $GW\%_{it-1}$, $ROABO_{it}$, and $RETBO_{it}$. CEO retirements are negatively and significantly correlated with $ROABO_{it}$ and $BTMOI_{it}$. These correlations mean that CEO resignations tend to happen in years in which goodwill percentages are high, return on assets is negative, and stock return is negative, while CEO retirements tend to happen in years in which return on assets is not negative and book-to-market ratio is not over one. Correlation between $CEOchange_{it}$ and $SIZE_{it}$ is much higher if CEO has retired (Pearson and Spearman correlation 0.08) than if CEO has resigned (Pearson and Spearman correlation 0.03). This means that CEOs are more likely to retire from larger firms. Correlation between $exCEOonBOARD_{it}$ and $SIZE_{it}$ (Pearson and Spearman correlation 0.09) means that departing CEOs are more likely to stay on the board in larger firms. In addition, ex-CEOs are more likely to sit on the board when return on assets is not below zero and book-to-market ratio is not over one.

Finally, it can be seen that larger firms have lower goodwill percentages, higher return on assets, lower book-to-market ratios, and higher stock returns. Goodwill percentage is higher

when return on assets is lower, book-to-market ratio is lower (contrary to expectation), firm size is smaller, and stock returns are lower.

6.3 Regression results

Regression results from Model 1 are shown in Table 5.

Table 5. Regression results from Model 1

Variable	Prediction	Coefficient estimate	p-value	Signif.
<i>Intercept</i>		-3.546	<0.001	***
<i>CEOchange_{it}</i>	+	0.334	<0.001	***
<i>exCEOonBOARD_{it}</i>	-	0.196	0.404	
<i>CEOchange_{it}*exCEOonBOARD_{it}</i>	-	-0.026	0.929	
<i>GW%_{oit-1}</i>	+	2.166	<0.001	***
<i>ROA_{it}</i>	-	-0.016	0.068	*
<i>ROAB0_{it}</i>	+	0.941	<0.001	***
<i>GW%_{oit-1}*ROAB0_{it}</i>	+	-0.712	<0.001	***
<i>BTM_{it}</i>	+	2.54E-4	0.225	
<i>BTMOI_{it}</i>	+	0.894	<0.001	***
<i>GW%_{oit-1}*BTMOI_{it}</i>	+	-0.474	0.045	**
<i>SIZE_{it}</i>	+	0.083	<0.001	***
<i>RET_{it}</i>	-	0.001	0.073	*
<i>RETBO_{it}</i>	+	-0.220	<0.001	***
<i>RET_{it}*RETBO_{it}</i>	-	-2.531	<0.001	***
N	30,625			
Pseudo R ²	13.3 %			

Dependent variable: *GWIMPdum_{it}*.

CEOchange_{it} is a dummy variable equal to 1 if firm i's CEO is changed in year t, and 0 otherwise, *exCEOonBOARD_{it}* is a dummy variable equal to 1 if firm i's ex-CEO sits on the board in year t, and 0 otherwise, *GW%_{oit-1}* is goodwill divided by total assets for firm i in year t-1, *ROA_{it}* is operating income after depreciation divided by total assets for firm i in year t, *ROAB0_{it}* is a dummy variable equal to 1 if firm i has *ROA_{it}* below zero in year t, and 0 otherwise, *BTM_{it}* is book-to-market ratio for firm i in year t, *BTMOI_{it}* is a dummy variable equal to 1 if firm i has *BTM_{it}* over one in year t, and 0 otherwise, *SIZE_{it}* is natural logarithm of the market value of equity for firm i in year t, *RET_{it}* is annual buy-hold stock return for firm i in year t, and *RETBO_{it}* is a dummy variable equal to 1 if firm i has *RET_{it}* below zero in year t, and 0 otherwise.

Statistical significance (two-tailed) for 1%, 5%, and 10% levels is indicated by ***, **, and *, respectively.

The coefficient on $CEOchange_{it}$ is positive and highly significant (p-value < 0.1%), consistent with expectations. The coefficient on $CEOchange_{it}*exCEOonBOARD_{it}$ is negative, but not statistically significant. The coefficient is negative as expected. Pseudo R-squared of the model is 13.3%. This Pseudo R-squared is somewhat lower than the Pseudo R-squared of 20.4% reported by Jarva (2014) in a similar kind of logistic regression.

Looking at the coefficients on the control variables, $GW\%_{oit-1}$, $ROAB0_{it}$, $BTMOI_{it}$, and $SIZE_{it}$ have positive and highly significant coefficients (p-value < 0.1%), while $GW\%_{oit-1}*ROAB0_{it}$, $RETBO_{it}$ and $RET_{it}*RETBO_{it}$ have negative and highly significant coefficients (p-value < 0.1%). The coefficient on $GW\%_{oit-1}*BTMOI_{it}$ is negative and significant at 5% level. The coefficient on ROA_{it} is negative and on RET_{it} is positive, and these are significant at 10% level. The coefficient on BTM_{it} is positive but not statistically significant. Contrary to expectations, coefficient on RET_{it} is positive and coefficients on $GW\%_{oit-1}*ROAB0_{it}$, $GW\%_{oit-1}*BTMOI_{it}$ and $RETBO_{it}$ are negative. Signs on other coefficients were consistent with expectations.

In Model 2 CEO changes are further categorized into resignations, retirements, and other changes. Regression results from Model 2 are presented in Table 6. Results from the control variables are not shown in the table because the estimates are the same as in Table 5.

Table 6. Regression results from Model 2

Variable	Prediction	Coefficient estimate	p-value	Signif.
<i>Intercept</i>		-3.547	<0.001	***
<i>CEOresigned_{it}</i>	+	0.583	0.004	***
<i>CEOretired_{it}</i>	0	0.107	0.661	
<i>OtherChange_{it}</i>		0.310	0.009	***
<i>exCEOonBOARD_{it}</i>	-	0.196	0.405	
<i>CEOresigned_{it}*exCEOonBOARD_{it}</i>	-	0.061	0.884	
<i>CEOretired_{it}*exCEOonBOARD_{it}</i>	-	0.191	0.633	
<i>OtherChange_{it}*exCEOonBOARD_{it}</i>		-0.465	0.302	
Control variables	Included			
N	30,625			
Pseudo R ²	13.3 %			

Dependent variable: *GWIMPdum_{it}*.

CEOresigned_{it} is a dummy variable equal to 1 if firm *i*'s CEO has changed in year *t* because of resignation, and 0 otherwise, *CEOretired_{it}* is a dummy variable equal to 1 if firm *i*'s CEO has changed in year *t* because of retirement, and 0 otherwise, *OtherChange_{it}* is a dummy variable equal to 1 if firm *i*'s CEO has changed in year *t* but the change reason is not resignation or retirement, and 0 otherwise, and *exCEOonBOARD_{it}* is a dummy variable equal to 1 if firm *i*'s ex-CEO sits on the board in year *t*, and 0 otherwise.

Statistical significance (two-tailed) for 1%, 5%, and 10% levels is indicated by ***, **, and *, respectively.

The coefficient on *CEOresigned_{it}* is positive and highly significant (p-value < 0.1%), while the coefficient on *CEOretired_{it}* is positive but not statistically significant. The positive sign on *CEOresigned_{it}* was expected, while the positive sign on *CEOretired_{it}* is inconsistent with expectations. The coefficient on *OtherChange_{it}* is also positive and highly significant. The coefficients on *CEOresigned_{it}*exCEOonBOARD_{it}* and *CEOretired_{it}*exCEOonBOARD_{it}* are both positive but not statistically significant. The positive signs on both *CEOresigned_{it}*exCEOonBOARD_{it}* and *CEOretired_{it}*exCEOonBOARD_{it}* are contrary to expectations. The coefficient on *OtherChange_{it}*exCEOonBOARD_{it}* is negative but not statistically significant. The coefficients on the control variables are the same as in Model 1, shown in Table 5. Pseudo R-squared of the model is 13.3% (same as in Model 1).

Regression results from Model 3 (where goodwill impairment dummy variable is replaced with goodwill impairment amount) are shown in Table 7. Dependent variable equals goodwill impairment amount divided by lagged total assets. It should be noted that before running regression on Model 3, 13 observations where (goodwill impairment / lagged total assets) > 1 are deleted, because these observations are most probably errors in the data. In

practice, it is not possible that goodwill impairment would be greater than the assets for the goodwill impairment fiscal year to begin with.

Table 7. Regression results from Model 3

Variable	Prediction	Coefficient estimate	p-value	Signif.
<i>Intercept</i>		-0.003	0.008	***
<i>CEOchange_{it}</i>	-	-0.003	0.047	**
<i>exCEOonBOARD_{it}</i>	+	-4.27E-4	0.914	
<i>CEOchange_{it}*exCEOonBOARD_{it}</i>	+	-0.003	0.511	
<i>GW%_{oit-1}</i>	-	-0.040	<0.001	***
<i>ROA_{it}</i>	+	0.001	<0.001	***
<i>ROAB0_{it}</i>	-	0.012	<0.001	***
<i>GW%_{oit-1}*ROAB0_{it}</i>	-	-0.140	<0.001	***
<i>BTM_{it}</i>	-	7.00E-7	0.737	
<i>BTMOI_{it}</i>	-	0.003	0.002	***
<i>GW%_{oit-1}*BTMOI_{it}</i>	-	-0.036	<0.001	***
<i>SIZE_{it}</i>	-	0.001	<0.001	***
<i>RET_{it}</i>	+	-2.97E-5	0.008	***
<i>RETB0_{it}</i>	-	0.010	<0.001	***
<i>RET_{it}*RETB0_{it}</i>	+	0.066	<0.001	***
N	30,612			
Adjusted R ²	18.2 %			

Dependent variable: *GWIMP_{it}*.

CEOchange_{it} is a dummy variable equal to 1 if firm i's CEO is changed in year t, and 0 otherwise, *exCEOonBOARD_{it}* is a dummy variable equal to 1 if firm i's ex-CEO sits on the board in year t, and 0 otherwise, *GW%_{oit-1}* is goodwill divided by total assets for firm i in year t-1, *ROA_{it}* is operating income after depreciation divided by total assets for firm i in year t, *ROAB0_{it}* is a dummy variable equal to 1 if firm i has *ROA_{it}* below zero in year t, and 0 otherwise, *BTM_{it}* is book-to-market ratio for firm i in year t, *BTMOI_{it}* is a dummy variable equal to 1 if firm i has *BTM_{it}* over one in year t, and 0 otherwise, *SIZE_{it}* is natural logarithm of the market value of equity for firm i in year t, *RET_{it}* is annual buy-hold stock return for firm i in year t, and *RETB0_{it}* is a dummy variable equal to 1 if firm i has *RET_{it}* below zero in year t, and 0 otherwise.

Statistical significance (two-tailed) for 1%, 5%, and 10% levels is indicated by ***, **, and *, respectively.

The coefficient on *CEOchange_{it}* is negative as expected and statistically significant at 5% level. The coefficient on *CEOchange_{it}*exCEOonBOARD_{it}* is also negative but not statistically significant. It was expected that the sign on *CEOchange_{it}*exCEOonBOARD_{it}* would be positive. Adjusted R-squared of the model is 18.2%.

Looking at the coefficients on the control variables, ROA_{it} , $ROABO_{it}$, $BTMOI_{it}$, $SIZE_{it}$, $RETBO_{it}$, and $RET_{it} * RETBO_{it}$ have positive and highly significant coefficients (p-value < 1%), while $GW\%_{oit-1}$, $GW\%_{oit-1} * ROABO_{it}$, $GW\%_{oit-1} * BTMOI_{it}$, and RET_{it} , have negative and highly significant coefficients (p-value < 1%). The coefficient on BTM_{it} is positive but not statistically significant. Contrary to expectations, coefficients on $ROABO_{it}$, BTM_{it} , $BTMOI_{it}$, $SIZE_{it}$, $RETBO_{it}$ are positive and coefficient on RET_{it} is negative. Signs of the other coefficients are consistent with expectations.

Finally, regression results from Model 4 are presented in Table 8. Dependent variable equals goodwill impairment amount divided by lagged total assets. Again, the 13 observations where (goodwill impairment / lagged total assets) > 1 are deleted, because these observations are most probably errors in the data. Results from the control variables are not shown in the table because the estimates are the same as in Table 7.

Table 8. Regression results from Model 4

Variable	Prediction	Coefficient estimate	p-value	Signif.
<i>Intercept</i>		-0.003	0.009	***
<i>CEOresigned_{it}</i>	–	-0.009	0.031	**
<i>CEOrtired_{it}</i>	0	0.001	0.775	
<i>OtherChange_{it}</i>		-0.003	0.130	
<i>exCEOonBOARD_{it}</i>	+	-3.97E-4	0.920	
<i>CEOresigned_{it} * exCEOonBOARD_{it}</i>	+	-0.017	0.039	**
<i>CEOrtired_{it} * exCEOonBOARD_{it}</i>	+	0.001	0.882	
<i>OtherChange_{it} * exCEOonBOARD_{it}</i>		-0.005	0.543	
Control variables	Included			
N	30,612			
Adjusted R ²	18.3 %			

Dependent variable: $GWIMP_{it}$.

$CEOresigned_{it}$ is a dummy variable equal to 1 if firm i's CEO has changed in year t because of resignation, and 0 otherwise, $CEOrtired_{it}$ is a dummy variable equal to 1 if firm i's CEO has changed in year t because of retirement, and 0 otherwise, $OtherChange_{it}$ is a dummy variable equal to 1 if firm i's CEO has changed in year t but the change reason is not resignation or retirement, and 0 otherwise, and $exCEOonBOARD_{it}$ is a dummy variable equal to 1 if firm i's ex-CEO sits on the board in year t, and 0 otherwise.

Statistical significance (two-tailed) for 1%, 5%, and 10% levels is indicated by ***, **, and *, respectively.

The coefficient on $CEOresigned_{it}$ is negative as expected and statistically significant at 5% level. The coefficient on $CEOretired_{it}$ is positive but not statistically significant. The coefficient is very close to 0 as expected. The coefficient on $OtherChange_{it}$ is negative but not statistically significant. The coefficient on $CEOresigned_{it}*exCEOonBOARD_{it}$ is negative and significant at 5% level, contrary to expectations. Then, the coefficient on $CEOretired_{it}*exCEOonBOARD_{it}$ is positive as expected but not statistically significant. Finally, the coefficient on $OtherChange_{it}*exCEOonBOARD_{it}$ is negative but not statistically significant. The coefficients on the control variables are the same as in Model 3, shown in Table 7. Adjusted R-squared of the model is 18.3% (same as in Model 3).

6.4 Interpretation of regression results

The coefficient on $CEOchange_{it}$ in Model 1 is estimated to be 0.33 with a p-value of 3.48. This positive and highly significant coefficient is consistent with H₁: CEO changes and goodwill impairments are positively and significantly associated. This means that recording a goodwill impairment is significantly more probable in a year in which the firm's CEO is changed than in other years. The corresponding odds ratio of the estimated coefficient is 1.397. This means that a CEO change increases the odds of a goodwill impairment by 40%.

It can always be debated whether (1) variable x causes variable y, (2) y causes x (reverse causality), or (3) third variable z causes both x and y. It should be noted that CEO changes occur during a given year, while goodwill impairments are recorded at the end of the year. Because goodwill impairments occur after CEO changes, reverse causality is not possible in this case, i.e. it is not possible that goodwill impairments would cause CEO changes. It is of course possible that a third variable causes both CEO changes and goodwill impairments (e.g. poor performance). Poor firm performance is controlled for extensively in this study, so it can be inferred that CEO changes, at least partly, cause goodwill impairments.

The highly significant positive association between CEO changes and goodwill impairments documented in this study is consistent with many prior studies reporting newly-appointed CEOs recording large “earnings baths” in the very beginning of their service (Moore, 1973; Strong and Meyer, 1987; DeAngelo, 1988; Elliott and Shaw, 1988; Pourciau, 1993; Weisbach, 1995; Ali and Zhang, 2015; Pan et al., 2016). The main reason why new CEOs tend to record “earnings baths” with goodwill impairments might be because the new CEO

can (implicitly or explicitly) blame the old CEO for the bad acquisition(s) that created goodwill in the first place (Pourciau, 1993). In addition, new CEOs tend to introduce strategic changes, which might require getting rid of old assets and investing in new assets (Greiner and Bhambri, 1989). Delaying goodwill impairments and timing those impairments to CEO change years should be easy for managers because of the substantial discretion afforded by SFAS 142 goodwill standard (Ramanna and Watts, 2012).

The coefficient on $CEOchange_{it} * exCEOonBOARD_{it}$ in Model 1 is estimated to be -0.03 with a p-value of -0.09. The negative sign of the coefficient is consistent with expectations: If the departing CEO stays on the board, a goodwill impairment is less likely in a CEO change year. However, this negative coefficient is not statistically significant, and thus we must conclude that this finding is inconsistent with H₂. From statistical point of view, the association between CEO changes and goodwill impairments does not depend on ex-CEO's board service. The corresponding odds ratio of the estimated coefficient is 0.974. This means that if the CEO departs but stays on the board, the odds of a goodwill impairment by the new CEO decrease by 3%. This implies that the effect of a CEO change on goodwill impairments is much more powerful than the effect of ex-CEO's board service: According to the regression results, a CEO change increases the odds of a goodwill impairment by 40%, while ex-CEO's board service decreases the odds of a goodwill impairment by 3%.

The previous finding inconsistent with H₂ is interesting, however. Even though a goodwill impairment is less likely after a CEO change if the departing CEO stays on the board, the decrease is not statistically significant. This implies that ex-CEO's presence on the board does not prevent goodwill impairments from the newly-appointed CEO, despite the ex-CEO's various incentives for exercising his power on the board and preventing any goodwill impairments. The ex-CEO is likely to resist any write-offs of personally-acquired assets because the write-off would prove those investments to have been mistakes and would harm ex-CEO's reputation (Weisbach, 1995; Ramanna and Watts, 2012). The ex-CEO is likely to favor strategies and policies he has put in place and may use his power on the board to constraint any change initiatives (Quigley and Hambrick, 2012). It is likely that the ex-CEO has emotional bonds for assets acquired personally (Pan et al., 2016) and it is likely that the ex-CEO has become friendly with other directors during CEO years, meaning the ex-CEO might be able to influence other directors' opinions according to his own view (Vafeas, 2003). The new CEO might fear that any major changes might offend the former CEO (Daily and Dalton, 1997). It might also be difficult to reverse a past decision if the original decision-

maker has a say over the reverse decision (Berenbeim, 1995). To the best of the author's knowledge, this is the first study to document that ex-CEO's presence on the board of directors does not affect the statistical association between CEO changes and goodwill impairments, despite ex-CEO's various incentives for influencing the goodwill impairment decision.

The coefficient on $CEOresigned_{it}$ in Model 2 is estimated to be 0.58 with a p-value of 2.86. This positive and highly significant coefficient is consistent with H_{3a}: CEO resignations and goodwill impairments are positively and significantly associated. This means that recording a goodwill impairment is significantly more probable in a year in which the firm's CEO has changed because of resignation. The corresponding odds ratio of the estimated coefficient is 1.791. This means that a CEO resignation increases the odds of a goodwill impairment by 79%. The coefficient on $CEOretired_{it}$ in Model 2 is estimated to be 0.11 with a p-value of 0.44. This positive but highly insignificant coefficient is consistent with H_{3b}: CEO retirements and goodwill impairments are not statistically associated. This means that goodwill impairments are statistically as probable in years in which the CEO has retired as in other years. The corresponding odds ratio of the estimated coefficient is 1.113. This means that a CEO retirement increases the odds of a goodwill impairment by 11%. However, this increase is not statistically significant.

Pourciau (1993) argues that non-routine CEO changes (resignations) increase incentives and opportunities for earnings management, which is consistent with the positive and highly significant coefficient on $CEOresigned_{it}$ in Model 2. Similarly, the highly insignificant coefficient on $CEOretired_{it}$ in Model 2 is consistent with routine CEO changes (retirements) decreasing incentives and opportunities for earnings management (Pourciau, 1993). Goodwill impairments can be considered as an earnings management vehicle because SFAS 142 allows substantial discretion to decide the timing of goodwill impairments (Ramanna and Watts, 2012). Wells (2002), Godfrey et al. (2003), and Mather and Ramsay (2006) report that new CEOs tend to manage earnings income-decreasingly after CEO resignations, while the association between CEO changes and income-decreasing earnings management disappears if the CEO change is a retirement, consistent with the findings presented in this paper.

There are several possible explanations why CEO resignations are associated with goodwill impairments while CEO retirements are not. CEO resignations can be initiated both by the

firm and by the CEO himself. If the firm initiates the CEO change, it is likely that the CEO has performed poorly and made bad decisions, for example bad acquisitions, in which case the incoming CEO needs to write impaired goodwill off. If the CEO himself initiates the CEO change, it is not self-evident how the CEO has performed. If the CEO retires, it is likely that he has performed well in the past (otherwise the firm would have fired him), meaning it is less likely that the retiring CEO would have made bad decisions, for example bad acquisitions, creating impaired goodwill.

The coefficient on $CEOresigned_{it} * exCEOonBOARD_{it}$ in Model 2 is estimated to be 0.06 with a p-value of 0.15. This highly insignificant coefficient is inconsistent with H_{4a}: Ex-CEO's presence on the board does not statistically decrease the likelihood of a goodwill impairment in a CEO change year. This means that the new CEO still records the expected goodwill impairment after a CEO resignation, even if the resigned CEO sits on the board. The corresponding odds ratio of 1.063 even implies that the odds of a goodwill impairment increase slightly if the CEO resigns but stays on the board. However, this increase is not statistically significant. The coefficient on $CEOretired_{it} * exCEOonBOARD_{it}$ in Model 2 is estimated to be 0.19 with a p-value of 0.48. This highly insignificant coefficient is inconsistent with H_{4b}: Ex-CEO's presence on the board does not statistically decrease the likelihood of a goodwill impairment in a CEO change year. This means that the new CEO still records the expected goodwill impairment after a CEO retirement, even if the retired CEO sits on the board. The corresponding odds ratio of 1.210 even implies that the likelihood of a goodwill impairment increases if the CEO retires but stays on the board. However, this increase is not statistically significant.

It can be concluded from these findings that ex-CEO's presence on the board does not affect the probability of a goodwill impairment in a CEO change year. It does not matter whether the ex-CEO has resigned or retired, the new CEO still records the expected goodwill impairments after a CEO change, even if the ex-CEO is still present in the firm, as a director on the board.

The estimated coefficients on the control variables in Model 1 are also of interest. As expected, goodwill impairment firms are likely to have higher goodwill percentages, lower earnings, more often negative earnings, more often book-to-market ratio over one, and those firms are likely to be larger. Contrary to expectation, goodwill impairment firms are likely

to have higher stock returns and less often negative stock returns. Book-to-market ratio as such cannot explain goodwill impairment decisions.

Checking the regression results from Models 3-4 (which are of secondary interest in this study), we can see that goodwill impairments are also larger after CEO changes. This is because the coefficient on $CEOchange_{it}$ is negative and statistically significant. Goodwill impairments are on average 0.3 percentage points larger (relative to total assets) after a CEO change than in other years. This might be because it is easy for the new CEO to totally “clean the balance sheet” and record a large impairment at once. It is likely that the ex-CEO has recorded only small impairments in the previous years if he has been obliged to record some amount of impairment. The ex-CEO might have thought that recording a small impairment will not harm his reputation, while the new CEO is free to record any amount of goodwill impairment because he can attribute this whole impairment to the previous CEO.

The coefficient on $CEOchange_{it}*exCEOonBOARD_{it}$ is negative but not statistically significant. This means that from statistical point of view, ex-CEO’s presence on the board does not affect the size of goodwill impairments after a CEO change. This is consistent with findings from the logistic regressions that ex-CEO’s board service does not affect the association between CEO changes and goodwill impairments, despite ex-CEO’s various incentives for exercising power on the board and preventing goodwill impairments.

From the regression results of Model 4, we can see that after CEO resignations firms record on average 0.9 percentage points larger goodwill impairments, while after CEO retirements firms record 0.1 percentage points smaller goodwill impairments. The coefficient on $CEOresigned_{it}$ is statistically significant, while the coefficient on $CEOretired_{it}$ is not. This is consistent with previous reasoning: A resigned CEO has probably recorded only small (if any) goodwill impairments during CEO years in order to defend his reputation, even though it is likely that he has performed badly and made bad decisions (because he resigned). It is easy for the new CEO to record a large goodwill impairment (clean the balance sheet) because of the bad decisions by the ex-CEO. A retired CEO did not have a reason to record goodwill impairments during CEO years because it is likely that he has performed well and made good decisions (otherwise the firm would have fired him). Thus, there is no reason for the new CEO to record any goodwill impairment because the ex-CEO made good decisions.

If the departing CEO stays on the board, 1.7 percentage points larger goodwill impairments are recorded after CEO resignations, whereas 0.1 percentage points smaller goodwill

impairments are recorded after CEO retirements. Surprisingly, the coefficient on $CEOresigned_{it} * exCEOonBOARD_{it}$ is statistically significant. This means that goodwill impairments are even larger after CEO changes if the resigned CEO stays on the board, which is contrary to the hypotheses of this paper. In practice, it might be rare that a CEO who resigns is offered a board seat (because either he has performed badly or he wants to leave the company), so this finding might be driven by a few outlier observations. The coefficient on $CEOretired_{it} * exCEOonBOARD_{it}$ is not statistically significant, again consistent with ex-CEO's board service not affecting the association between CEO changes and goodwill impairments.

6.5 Sensitivity analyses

To test for the validity of the findings of this paper, a few sensitivity analyses are performed. First, it is possible that the regression results from Models 3 and 4 are driven by a few outlier observations (regression results from Models 1 and 2 cannot be driven by outliers because all the variables of primary interest are dummy variables equal to either 0 or 1). The firm-years in which the goodwill impairment amount belongs to the largest 5% of all goodwill impairment observations are deleted (Jarva, 2014) and regressions for Models 3 and 4 are rerun.

The rerun regression results from Model 3 confirm previous findings. The coefficient on $CEOchange_{it}$ becomes -0.003 with a p-value of 0.005. The coefficient estimate is exactly the same as before, whereas its p-value is now lower: Before the coefficient was statistically significant at 5% level, now it is significant at 1% level. This means that in the original sample there were some outlier observations which blurred the statistical association to some extent. This sensitivity test confirms that goodwill impairments are significantly larger after CEO changes. The coefficient on $CEOchange_{it} * exCEOonBOARD_{it}$ becomes positive and statistically insignificant (estimate 0.001, p-value 0.691). Thus, there were some large goodwill impairment outlier observations in the original sample. Even though the coefficient estimate changes from negative to positive, this finding confirms that goodwill impairments are not larger after a CEO change if the departing CEO stays on the board, because the coefficients are statistically insignificant both before and after sensitivity tests.

The rerun regression results from Model 4 also confirm previous findings. The coefficient on $CEOresigned_{it}$ becomes -0.009 with a p-value of 0.001. The estimate is again exactly the same as before, but p-value is lower: Now the estimate is statistically significant at 1% level, while before it was significant at only 5% level. This confirms that goodwill impairments are larger after CEO resignations. The coefficient on $CEOretired_{it}$ becomes 0.002 with a p-value of 0.585. The estimate is approximately the same as before and again statistically insignificant, which confirms that goodwill impairments are not larger after CEO retirements. The coefficients on $CEOresigned_{it}*exCEOonBOARD_{it}$ and $CEOretired_{it}*exCEOonBOARD_{it}$ both become statistically insignificant with coefficient estimates of -0.004 and 0.001 and p-values of 0.480 and 0.856 for CEO resignations and CEO retirements, respectively. This implies that the previous finding about statistically significant and negative association between CEO changes and goodwill impairments in case the resigned ex-CEO sits on the board was driven by a few outlier observations. It seems that goodwill impairments are not larger or smaller after a CEO change if the departing CEO stays on the board, irrespective of the type of the CEO change (resignation or retirement).

Second, it is possible that the primary results of this paper (from Models 1 and 2) are driven by the most recent financial crisis, which started in year 2008. There might be something systematic in the financial crisis which affects both CEO changes and goodwill impairments (poor firm performance cannot be the reason because it is controlled for extensively in this study). Regressions for Models 1 and 2 are rerun with observations from the financial crisis years excluded (years 2008 and 2009).

The rerun regression results are qualitatively similar to the main findings of this paper. The estimate of the coefficient on $CEOchange_{it}$ is 0.395 with a p-value of 0.001, and the estimate of the coefficient on $CEOchange_{it}*exCEOonBOARD_{it}$ is 0.084 with a p-value of 0.825. The coefficient on $CEOchange_{it}$ becomes even larger and the coefficient on $CEOchange_{it}*exCEOonBOARD_{it}$ becomes positive. However, the coefficient on $CEOchange_{it}$ is still statistically significant and the coefficient on $CEOchange_{it}*exCEOonBOARD_{it}$ is still statistically insignificant. This confirms the primary findings of this paper, namely that CEO changes and goodwill impairments are positively and significantly associated, and that CEO changes and goodwill impairments are positively and significantly associated even if the ex-CEO sits on the board of directors with incentives to prevent goodwill impairments.

After rerunning, the coefficient on $CEOresigned_{it}$ is estimated to be 0.770 (p-value 0.001) and the coefficient on $CEOretired_{it}$ is estimated to be -0.108 (p-value 0.742). The coefficient on $CEOresigned_{it}$ becomes larger (still statistically significant), while the coefficient on $CEOretired_{it}$ changes from positive to negative. However, the coefficient is still statistically insignificant. This confirms that CEO resignations and goodwill impairments are positively and significantly associated, while CEO retirements and goodwill impairments are not statistically associated. The estimate of the coefficient on $CEOresigned_{it}*exCEOonBOARD_{it}$ is -0.048 with a p-value of 0.926, and the estimate of the coefficient on $CEOretired_{it}*exCEOonBOARD_{it}$ is 0.579 with a p-value of 0.256. The first coefficient estimate changes from positive to negative and the second coefficient estimate becomes larger. However, neither of the coefficients is statistically significant. Thus, if the departing CEO stays on the board, CEO changes and goodwill impairments are positively and significantly associated, irrespective of the type of the CEO change (resignation or retirement). The results from the second sensitivity analysis imply that the primary results of this paper are valid and are not driven by the observations from the recent financial crisis.

In the third sensitivity analysis it is tested how the absolutely largest and smallest observations affect the associations between explanatory variables and goodwill impairments. It can be seen from Table 2 in chapter 6.1 that the mean values of the explanatory variables differ to large extent from the median values for some variables, implying there exist a few very large or small outlier observations (e.g. book-to-market ratio and stock return have mean values much higher than median values). These outliers affect the coefficient estimates in regressions. Thus, 1% largest and 1% smallest observations for non-dummy explanatory variables ($GW\%_{oit-1}$, ROA_{it} , BTM_{it} , $SIZE_{it}$, and RET_{it}) are deleted and regression for Model 1 is rerun.

The coefficient estimates for $GW\%_{oit-1}$ (2.22, p-value <0.001) and $SIZE_{it}$ (0.12, p-value <0.001) do not change much. The change is largest for ROA_{it} , as the coefficient estimate decreases from -0.02 to -0.94 (highly significant statistically). This suggests that low earnings are highly correlated with goodwill impairments, which is expected. It is easier for a manager to record also a goodwill impairment if earnings are below expectations already. The coefficient on RET_{it} increases from 0.001 to 0.08 (significant at 10% level). This is contrary to expectations, because this suggests that high stock return companies are more likely to record goodwill impairments. Another alternative is to infer that stock return is not a good predictor of goodwill impairments after all. The coefficient on BTM_{it} increases from

0 to 0.05 (however, not statistically significant). This is consistent with expectations, as high book-to-market ratio firms are expected to record more goodwill impairments (because high BTM-ratio is a market indication of goodwill impairment).

7. CONCLUSION

The purpose of this study is to examine the association between CEO changes and goodwill impairments. It is also examined how ex-CEO's board service affects the association between CEO changes and goodwill impairments. Furthermore, CEO changes are categorized into resignations and retirements, and it is further studied how different types of CEO changes are associated with goodwill impairments.

The FASB introduced new goodwill accounting standard SFAS 142 in 2001 (FASB, 2001b). According to the standard, goodwill can be tested for impairment based on fair value estimates of managers. This means that managers are afforded with substantial discretion to decide whether goodwill is impaired or not during a given year and time goodwill impairments according to their own interests (Ramanna and Watts, 2012). Many studies find that new CEOs tend to record "earnings baths" in the very beginning of their service (e.g. Strong and Meyer, 1987; Pourciau, 1993; Weisbach, 1995). Thus, it is important to study whether new CEOs engage in "earnings baths" with goodwill impairments because of the new CEOs' "earnings bath" incentives and the possibility to time goodwill impairments according to their interests. Furthermore, ex-CEO's presence on the board might hinder the new CEO from making major changes (Quigley and Hambrick, 2012), and "earnings baths" are usually recorded after CEO resignations but not after CEO retirements (Wells, 2002). Thus, it is also important to study whether the ex-CEO on the board prevents the new CEO from making goodwill impairments and whether the association between CEO changes and goodwill impairments is different for CEO resignations and CEO retirements.

This study contributes to prior accounting literature in at least three ways. First, even though extensive evidence of newly-appointed CEOs' "earnings bath" behavior exists (Pourciau, 1993), this study provides further empirical evidence on whether goodwill impairments specifically (instead of some other accounting items) are used by newly-appointed CEOs in their "earnings baths". Second, to the best of the author's knowledge, this is the first study to provide empirical evidence on how ex-CEO's board service affects the association between CEO changes and goodwill impairments. Third, even though there exists some evidence on how the CEO change type (resignation or retirement) affects "earnings baths" by newly-appointed CEOs (Wells, 2002), this study provides further empirical evidence on how CEO resignations and CEO retirements are associated with goodwill impairments

specifically. The findings presented in this paper should be of interest for financial statement users, standard setters, and people working in the industry.

Data used in this study is obtained from Compustat-database: Financial statement data is obtained from Compustat Fundamentals Annual and CEO change data is obtained from Compustat ExecuComp. The time period studied in this paper (years 2002-2009) is chosen because year 2002 was the first full year following SFAS 142 was mandatory and year 2009 was the last year when data on the dates when CEOs have left their companies was stored on Compustat. Only firm-years with a positive goodwill balance on the beginning balance sheet are studied because there is no point to compare goodwill impairment firms to firms with no possibility to impair goodwill (Jarva, 2014). Some other restrictions on firm-years are also introduced, and the final sample used in this study consists of 30,625 firm-year observations. To test for the four hypotheses of this paper, four goodwill impairment models are developed. Associations between variables of interest are studied using both logistic and linear regression analysis. Decisions of whether or not to impair goodwill during a given year are of primary interest and the actual goodwill impairment amounts are of secondary interest in this study.

The main findings of this paper are the following. First, it is shown that CEO changes and goodwill impairments are positively and significantly associated. This implies that new CEOs use goodwill impairments specifically in their “earnings baths”. Second, it is shown that ex-CEO’s board service does not affect the positive association between CEO changes and goodwill impairments, despite the incentives for preventing impairment. To the best of the author’s knowledge, this is the first study to show that ex-CEO’s presence on the board does not prevent goodwill impairments by the new CEO. Third, it is shown that the positive association between CEO changes and goodwill impairments is driven by CEO resignations and not by CEO retirements. This implies that different types of CEO changes have different implications for goodwill impairment behavior by newly-appointed CEOs. Fourth, it is shown that neither resigned nor retired ex-CEOs on the board prevent goodwill impairments by the new CEO. In addition, it is shown that goodwill impairments after CEO changes are also larger. This is also driven by CEO resignations and not by CEO retirements. Finally, it is shown that goodwill impairments are not larger after CEO changes if the departing CEO stays on the board.

The findings of this study have important implications for several parties. It is presented that goodwill impairments are often recorded in years in which the firm's CEO is changed. This is because managers are most likely reluctant to impair personally-acquired goodwill and it is fairly easy for managers to time goodwill impairments according to their interests. Financial statement users should realize that goodwill balances might often be inflated and expected goodwill impairments might be missing from income statement because of the managerial incentives to delay goodwill impairments. Standard setters should reconsider whether the costs of increased discretion afforded by SFAS 142 and changed managerial incentives are too extensive. On the other hand, changing the firm's CEO seems to be a good way to "clean the table" and e.g. write off impaired goodwill and initiate new firm strategy. It is also presented that ex-CEO's board service does not prevent goodwill impairments by the new CEO. This means that even though the ex-CEO has various incentives for trying to prevent goodwill impairments (Ramanna and Watts, 2012; Quigley and Hambrick, 2012), the new CEO seems to have free hands to write off any impaired goodwill. Thus, it might be advisable to offer the departing CEO a board seat because pros (experience and advising abilities) seem to dominate the cons (influencing decision-making and being a barrier for change).

This study has some limitations. First, the data on CEO changes on Compustat ExecuComp seems not to be perfect. There occurs a CEO change in around 5% of the firm-years in the sample, which seems like a small figure. Second, ex-CEO's board service is proxied with the situation in which the date when the CEO left his company is after the date when the CEO left as CEO. In addition, the data on when CEOs have left their companies is not perfect, as around half of the observations are missing (in these cases it is assumed that the departing CEO does not stay on the board). Third, data on the types of the CEO changes (resignation or retirement) is not perfect either, as around half of the CEO changes cannot be categorized into resignations and retirements. This is not a problem, though, because these uncategorized CEO changes can be controlled for in the models. Finally, the findings of this paper are obtained from U.S. data during 2002-2009, and the results could be different if different countries or different time periods were studied.

There is a plethora of avenues to continue research beyond this study. First, it would be interesting to study whether there are any other events in addition to CEO changes that trigger goodwill impairments. Second, it could be studied what other accounting items in addition to goodwill impairments are used by newly-appointed CEOs in their "earnings

baths”. Third, prior research on CEO’s board service is still in its infancy, and it would be interesting to study several things: Does the ex-CEO on the board prevent the new CEO from making major strategic changes? Is the performance of the firm different if the departing CEO stays on the board? What are the causes of CEO serving as a non-chair director? If data on CEO’s board service is somehow obtained for a time period after 2009, it would be interesting to know whether the findings of this paper also hold for a more recent time period. Finally, an examination similar with the one presented in this paper could be conducted on a sample in which the firms follow IFRS standards. This kind of examination would be interesting because accounting treatment for goodwill is very similar under both U.S. GAAP and IFRS standards (FASB, 2001b; IASB, 1998). It would be extremely interesting to know whether the findings presented in this paper also hold for firms which follow IFRS standards.

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