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Goodwill impairment losses and accounting quality

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Summary

The chosen topic is the impairment testing and valuation method of goodwill and to what extent it is used for earnings management. There is a natural uncertainty that lies in the nature of goodwill, leaving discretion to managers regarding assessments and estimations that can be used to distort earnings.

The past decade, two major changes have been done to the regulation of goodwill through SFAS 142 in 2001 and IFRS 3 in 2005. These changes involved a shift from the modified historical cost model to a fair value model. The historical cost model used amortization and lacked relevance and timeliness, since it is based on arbitrary amounts. However, the new fair value model might overemphasize relevance and timeliness and may be viewed with skepticism by financial reporting users, due to lack of verifiability.

The reporting of impairment losses in goodwill is a function of economic factors and reporting incentives. Management must report an impairment loss in goodwill, when they recognize that the recoverable amount is lower than the carrying amount of the cash-generating unit to which goodwill is allocated. Furthermore, there is a risk of earnings management, if management has incentives to do so. We will investigate the relationship between the quality of goodwill impairment losses in Norwegian listed firms regarding their link to a set of economic, earnings management and corporate governance parameters.

The method we will use is quantitative and based on Francis, Hanna et al. (1996) and Riedl (2004). They address issues regarding earnings management and impairments in general. Our research is focused on impairments in goodwill and incorporates more corporate governance variables. We establish one tobit and one logit regression, using impairment size in goodwill as our limited dependent variable and goodwill decision as our binary dependent variable.
Introduction

Background and motivation
There is an inherent uncertainty in the nature of goodwill, leaving extensive discretion regarding assessments and estimations. For decades accounting standard setters have tried to develop a theoretically consistent accounting method for goodwill. Prior research has mostly focused on the US-American market e.g. (Francis, Hanna et al. 1996, Riedl 2004, Beatty and Weber 2006, Lapointe-Antunes, Cormier et al. 2009). However, the last years there has been published some studies investigating European countries using IFRS, such as (AbuGhazaleh, Al-Hares et al. 2011, Stenheim 2012, Siggelkow and Zülch 2013).

Standard setters have implemented two major changes the past decade regarding the accounting method of goodwill. FASB changed the regulation of goodwill through SFAS 142 in 2001 and IASB changed the accounting regulation of goodwill through IFRS 3 in 2005. This involved a shift from the modified historical cost model to a fair value model. In the historical cost model goodwill was amortized, but under IFRS 3 this is no longer allowed. A firm must test goodwill annually even when there is no indication of impairment in goodwill (IASB 2004: 36.10b). Amortization does not reflect the true value of goodwill, since it is based on arbitrary amounts. As from 2005 every firm that prepares according to IFRS has to make a yearly impairment test, which shows the underlying value of the asset. This will mostly apply to listed firms. IASB (2004: 36.104) states that an impairment loss has to be recognized if, and only if, the recoverable amount of an asset is less than its carrying amount. According to IAS 36, a yearly impairment test has to be made if there is any indication that any cash-generating unit (CGU), allocated to goodwill may be impaired (IASB 2004: 36.10a). At the end of each reporting period firms are required to consider whether any indicators of potential impairment losses exist (IASB 2004: 36.9).

Further on, Healy and Wahlen (1999 p. 366) states “that standards add value if it enables financial statements to effectively portray differences in firms’ economic positions and performance in a timely and credible manner.” Standard setters
have to consider conflicts between relevance and reliability of accounting information. The modified historical cost model is likely to over-emphasize credibility in accounting data and lead to financial statements that provide less relevant and less timely information on firms performance. However, the fair value model might over-emphasize relevance and timeliness, and might be viewed with skepticism by financial reporting users due to the lack of credibility. The increased discretion and loss of credibility has led to a need for further research on this topic.

Problem statement and purpose of the thesis

Goodwill is an intangible asset and it is therefore hard to prove its true and fair value, because it is valued as a residual and does not have an independent market value.

There exists no good definitions of goodwill, and we prefer to describe it by its distinctive characteristics. Goodwill is an intangible asset, which cannot be addressed to a specific object and therefore lacks separability. Moreover, it lacks transferability and alternative use. Hugdes (1982 p. 187) stated, “The problems associated with its [goodwill’s] transferability and realization might be compared with an attempt to sell the speed of a racehorse apart from the animal itself.”

Due to goodwill’s lack of transferability, there will not exist a separate market price that can justify the reported goodwill amount. Furthermore, it is impossible to accurately allocate net cash inflows generated by goodwill, since the cash inflows are generated in synergy with other assets making the estimation of goodwill difficult.

Impairment losses suffer from significant measurement uncertainty, lack of verifiability and the risk of being managed (Francis, Hanna et al. 1996, Riedl 2004). An impairment loss can be shielded if fair value of goodwill is higher than the carrying amount. Moreover, internally generated goodwill may replace impaired or purchased goodwill. The current standard does not require the firm to distinguish between internally generated goodwill and purchased goodwill, when estimating the recoverable amount. Purchased and internally generated goodwill contribute to the same cash flow and can therefore not be separately identified.
This gives firms right to capitalize goodwill generated internally up to the amount on acquisition (Stenheim 2012).

The test procedure in IFRS is performed on cash-generating units to which goodwill is allocated and not on goodwill itself, meaning that we cannot know if the recognized impairment loss originates from goodwill. As an improvement SFAS 142 requires a two-step test. The first step is equal to IFRS; the second step is to estimate fair value, if an impairment loss is recognized. Estimating fair value is difficult and time-consuming and has led to a lot of criticism (Stenheim 2012).

Motivated by the arguments just mentioned, our dissertation will examine managers’ use of discretion in determining goodwill impairment losses in Norwegian listed firms from the Oslo Stock Exchange. Our sample consists of 420 firm year observations from 2010 to 2013. First, we include a set of economic variables to capture the underlying performance of the firm’s assets. The notion is that reporting of impairment losses in goodwill is a function of economic factors and reporting incentives. Management will report an impairment loss in goodwill, when they recognize that the recoverable amount is lower than the carrying amount of the cash-generating unit (CGU) to which goodwill is allocated. Moreover, management may use goodwill impairment losses to distort earnings if they have incentives to do so; hence we include a set of earnings management variables. Furthermore, we include a set of corporate governance variables; among these we will have special focus on the effect of external auditing.

**Goodwill impairment losses and problems related to earnings management**

The disclosure of goodwill impairment losses is key communication from management to investors. As stated, there exist some problems in terms of discretionary freedom when testing for impairment losses. The impairment only method offers more discretionary freedom than the amortization method (Watts 2003, Ramanna 2008, Ramanna and Watts 2009). The amortization method is easier to audit, since it follows a set schedule of maximum 20 years, giving better verifiability and if changes occur, they have to be reported in additional disclosures. However, the impairment only method allows for more discretion. Managers know more than auditors about the underlying performance of the firm,
making it difficult to question estimates and assumptions, unless they are clearly unreasonable.

Goodwill can be tested for impairment at any date during the year, but has to be the same date henceforth (IASB 2004: 36.96). Managers can smooth earnings in seasonal industries by testing during periods where cash-generating units recoverable amounts are at their highest. In contrast, if managers wish to “take a bath”, they should choose impairment test dates that minimize the recoverable amounts of the cash generating units. However, the requirement that they must do the test at the same date each year has a limiting effect.

To estimate the recoverable amount managers calculate the present value of future net cash flows. Estimating future cash flows involves a lot of uncertainty and leaves discretion to managers, making it reasonable to question the relevance and reliability of the recoverable amounts (Watts 2003). IASB (2004: 36, 33) states that “greater weight shall be given to external evidence”, when estimating future cash flows. This is to ensure greater reliability in the estimates.

Goodwill impairment losses directly affect earnings and net income, suggesting that managers have incentives to manipulate earnings, which affects the usefulness of goodwill numbers. Managers can exploit discretionary freedom by understating impairment losses, which will lead to overstated earnings. Moreover, the discretionary freedom can be used to overstate impairment losses, which will imply an understatement of earnings. This is commonly known as “big bath accounting”, where managers overstate impairment losses to avoid big impairment losses in the forthcoming years. (Ramanna 2008, Ramanna and Watts 2009)
Accounting for Goodwill

What is Goodwill?

For decades, there has been controversy as to how to account for goodwill (Bloom 2009). In the US, goodwill has been an ongoing discussion since the 1960s (Stenheim 2012). There have even been doubts whether goodwill should be recognized as an asset (Johnson and Petrone 1998).

Although there exist no good definition of goodwill, various definitions have been suggested and we think it is more appropriate to describe goodwill by its distinctive characteristics. Due to its lack of physical substance, it is classified as an intangible asset. Bloom (2013, 18) emphasizes that “goodwill is the unidentifiable intangible asset”, implying that intangible assets such as patents and copyrights are omitted from the goodwill definition. Moreover, IASB (2004: 38.11) states “the definition of an intangible asset requires an intangible asset to be identifiable to distinguish it from goodwill”. Stenheim (2012) use Høegh-Krohn and Knivsflå (2000)’s asset characteristics to determine goodwill’s characteristics. “Goodwill has no alternative use, it lacks separability, it is difficult to determine whether initially recognized goodwill is maintained, and finally, future benefits from goodwill are highly uncertain” Stenheim (2012, 39). Also, goodwill lacks transferability, which implies that it’s not possible to sell it separately.

As mentioned, we distinguish between purchased and internally generated goodwill. Purchased goodwill is generated when a firm is acquired. It is measured at the acquisition date as the excess of cost price, which cannot be assigned to identifiable assets in the acquiree (Stenheim 2012).

Internally generated goodwill is created through processes and synergies within the firm that have been developed over time, making it difficult to measure. Bloom (2009) claims that it is impossible to bring it to account within the accepted accounting rules and historical cost based accounting. Also, according to Bloom (2009), internally generated goodwill was still a major contributor of market capitalization, after the stock markets fall in 2007.
Stenheim (2012, 38) proclaims that goodwill is “the most intangible asset”, since neither purchased or internally generated goodwill can be separately recognized at the balance sheet.

The accounting treatment

Goodwill’s inherent complexity also makes the accounting treatment for it relatively complicated. An entity needs to evaluate an asset in the end of every reporting period, whether there is a need for impairment or not (IASB 2004: 36.09). Irrespective of the latter point, an entity also has to test the intangible assets by comparing the carrying amount over the recoverable amount, (IASB 2004: 36.10a). Moreover, goodwill acquired in a business combination has to be tested annually for impairment in accordance to paragraphs 80 – 99 (IASB 2004: 36.10b).

Goodwill is recognized as the excess of the acquisition-date fair value plus non-controlling interest in the acquiree and the acquirer’s equity interest over the book value on the acquisition date, (IASB 2004: IFRS 3 BC 32).

On the acquisition date the firm has to allocate goodwill into a cash-generating units (CGU), or to a group of CGUs that is expected to benefit form the synergies (IASB 2004: 36.80-81). If the allocation process is not finished during the annual period of the acquisition, the initial allocation has to be completed in the period after (IASB 2004: 36.84). Moreover, if an operation in a CGU that contains goodwill is discontinued, the associated goodwill is measured on the basis of the relative values of the discontinued operation and the part of the preserved unit (IASB 2004 36.86). If the composition of one or more CGU’s containing goodwill is changed through reorganizing of reporting structure, a similar valuation method as for paragraph 86 is used (IASB 2004 36.87).

After goodwill is allocated in its respective CGU(s), an annual impairment test will follow. The annual impairment test of CGU(s) can be conducted whenever the firm prefers, however it has to be the same date from this point forward (IASB, 2004: 36.96). This restriction brings consistency and stability to the testing process. A unit must be tested for impairment loss whenever there is an indication of impairment. This applies regardless whether goodwill has been allocated to a
CGU or not (IASB 2004 36.88). The firm has to carry out the test by comparing the carrying amount of the unit with the recoverable amount (IASB 2004 36.90). Goodwill that is not yet allocated to a CGU is excluded from the carrying amount when conducting the test (IASB 2004 36.88). If the recoverable amount is lower than the carrying amount, an impairment loss has to be recognized by reducing the carrying amount in the CGU where goodwill is allocated (IASB 2004: 36.104). Moreover, it is strictly forbidden to reverse goodwill impairment losses in consecutive periods (IASB 2004: 36.124).

The section above refers to purchased goodwill. The process of how to account for internally generated goodwill is disclosed in IAS 38. Internally generated goodwill is not recognized as an asset, because it is not an identifiable resource, which can be measured reliably at cost (IASB 2004: 38.48-49). In practice, internally generated goodwill is not possible to write-up, but it can indirectly participate by justifying book goodwill’s value and thus shield an impairment loss in goodwill (Stenheim 2012).

**Literature review**

The asset impairment literature is old, however prior research on goodwill impairment losses is not extensive. It started out with Strong and Meyer (1987), Elliott and Shaw (1988) and Zucca and Campbell (1992) focusing solely on manager’s reporting incentives, excluding controls for economic factors. The first to control for economic factors are, Francis, Hanna et al. (1996) and later Riedl (2004). It is natural to assume that goodwill impairment losses are reported to reflect the true economic loss in value of goodwill and that accounting manipulation does not exist. Due to this, reported impairment losses should be associated with variables that reflect the changing economic circumstances. Loh and Tan (2002) studies firm-specific and macroeconomic factors, to see which of these factors that are likely to influence the asset impairment decision. They concluded among other that changes in GDP is an important determinant of impairment.

Both Francis, Hanna et al. (1996) and Riedl (2004) address issues regarding earnings management and impairment losses in general. However, similar to AbuGhazaleh, Al- Hares et al. (2011) our study will in particular be focusing on
impairment losses in goodwill, because they contain a considerable amount of discretion for managers to exercise earnings management. Moreover, as Francis, Hanna et al. (1996, 121) find “goodwill impairments are among the most substantial impairments in our sample; for example, they are the largest impairments in terms of dollars per share and as a percentage of total assets”.

As mentioned, the shift from a historical cost model to a fair value model first happened in US-GAAP through SFAS 142, resulting in several studies from the US, and a lack of studies from European countries. There are substantial differences between Europe and the US both in terms of accounting standards (US-GAAP vs. IFRS) and institutional settings.

Siggelkow and Zülch (2013) and AbuGhazaleh, Al- Hares et al. (2011) differ from prior literature by investigating German and UK listed companies. Siggelkow and Zülch (2013) find that the probability of impairment losses increases when firm performance decreases, suggesting that managers do not exploit the discretion to commit big baths. In contrast to US studies they find evidence of income smoothing and no significant associations between other reporting incentives and reported impairment losses. Keep in mind that the German market has two further arguments for income smoothing. First, there exists high book-tax conformity. Second, they have underdeveloped equity markets. Both are incentives to smooth earnings. Moreover, they do not find a correlation between big baths and impairment losses as in the US studies (Rees, Gill et al. 1996, Riedl 2004) and the UK study (AbuGhazaleh, Al- Hares et al. 2011).

Francis, Hanna et al. (1996) find after controlling for economic effects, that impairment losses are positively associated with changes in management and impairment losses in the past. Moreover, in contrast with Rees, Gill et al. (1996), Riedl (2004) and AbuGhazaleh et al. (2011). Francis, Hanna et al. (1996), Elliott and Hanna (1996) and Beatty and Weber (2006) find contradicting evidence of big bath and smoothing. Thus, impairment losses are decreasing in periods when the firm has unusually poor or good performance, opposite to the income smoothing and big bath theories. However it is important to emphasize that Riedl (2004) and AbuGhazaleh, Al- Hares et al. (2011) use different specification of the
BATH and SMOOTH variables than Siggelkow and Zülch (2013) and Francis, Hanna et al. (1996), and may be the reason to different results. Elliott and Hanna (1996) and Francis, Hanna et al. (1996) also provide evidence that the probability of an impairment loss increases if the firm has a history of impairment losses. To our knowledge the only European study to include this variable is Stenheim (2012).

Another related literature studying the determinants of goodwill impairment losses in the transition period of SFAS 142, were initiated by Beatty and Weber (2006). This type of study is based on the notion that, firms have the opportunity to report goodwill impairment losses either as an operating loss or as an effect of change in accounting principles. Managers can either report impairment losses conservatively “below-the-line” or take the chance that they will not face goodwill impairment charges in the future “above-the-line”. Beatty and Weber (2006) expect that a firm’s preference for “above-the-line” vs. “below-the-line” accounting to be affected by the firm's debt contracting, equity market, bonus schemes, delisting incentives and turnover. They find that firms are less likely to take impairment losses, when there is less slack in their net worth covenant and the covenant is affected by accounting changes. Furthermore, they find that the probability of taking impairment losses is smaller for firms that have bonus schemes that do not exclude unusual items. Moreover, firms that report an impairment loss, which would cause them to break the listing requirements, are less likely to take impairment losses.

Both Beatty and Weber (2006) and AbuGhazaleh, Al- Hares et al. (2011) find evidence that CEO turnover is likely to be associated with goodwill impairment losses. In our management variable we only include changes in CEO, however studies such as Francis, Hanna et al. (1996) Riedl (2004) and Siggelkow and Zülch (2013) include a variable measuring a change in key management instead of only a change in CEO. Moreover, Murphy and Zimmerman (1993) find insufficient proof regarding the hypothesis that CEO’s use their discretion two years prior to the change. After controlling for firm performance and endogenous CEO turnover, Murphy and Zimmerman (1993) find little evidence to support the hypothesis that outgoing CEO’s exercise their discretion over accounting or investment variables to increase their earnings based compensation in years t-1.
and t. Thus a better variable might also include CFO and other key management positions. Jiang, Petroni et al. (2010) find that earnings management is more increasing in CFO equity incentives than CEO equity incentives. This is an interesting variable we leave to future impairment research.

Furthermore, AbuGhazaleh, Al- Hares et al. (2011) state that managers want to convey their private information about the firm value when facing effective governance mechanisms. Hence, the risk of opportunistic behavior may be lower under these strict mechanisms. AbuGhazaleh, Al- Hares et al. (2011) also find that more active boards and audit committees are associated with a lower level of earnings management.

Another type of literature studies the value relevance of goodwill impairment losses. These studies are coinciding in their conclusions that the fair value approach to goodwill impairment losses has improved the standard. All of them find a negative association between goodwill impairment losses and stock returns (Lapointe-Antunes, Cormier et al. 2009, Li, Shroff et al. 2011, AbuGhazaleh, Al-Hares et al. 2012).

We believe there exists a knowledge gap in the current literature on auditor related corporate governance variables. Hope and Langli (2010) study auditor independence among private firms in Norway, a low litigation- and reputation risk setting. They find no evidence, which indicates that auditor’s compromise, their independence through fee dependence. Further, Francis and Wang (2008) focus on earnings quality and how it is affected by a country’s legal system in relation to a firm’s choice of using a Big 4 versus non-Big 4 auditors. Francis and Wang (2008) find that earnings quality for firms using Big 4 auditors is greater as investor protection becomes stronger. Results show that firms using non-Big 4 auditors are unaffected. Siggelkow and Zülch (2013) include this variable, but their models obtain inconclusive results. In the extension of this we have also tried to implement a Big 5 variable (KPMG, E&Y, Deloitte, BDO and PWC), however it was not possible as 98,2% of our sample used a big 5 auditor.

Jarva (2014) studies SFAS 142 and the economic consequences of goodwill impairment losses. He provides evidence that impairment-firms pay higher fees
and this might be due to the higher fees charged by the auditor firms in response to extra audit effort and audit risk. However, he concludes that higher fees are more consistent with the additional effort required by auditors. Moreover, he finds that impairment firms tend to perform poorer in the impairment year, by showing lower stock return, higher cost of equity, book-to-market ratios and lower earnings even in years without impairment losses.

We distinguish ourselves from prior research by introducing new corporate governance variables. To our knowledge this type of research has not been conducted in Norway. Similar to Germany where Siggelkow and Zülch (2013) conduct their study, Norway is more dependent on debt financing. Also, Norway might be of particular interest as it is structurally different in terms that it is a code of law country and use IFRS. Most prior research originates from the US, which is “a common law country with high shareholder protection, low creditor protection, low ownership concentration and developed equity markets “ (Siggelkow and Zülch 2013, 738) . Moreover Norway is a low litigation risk country, hence it is not that easy to sue auditors for negligence and misconduct (Francis 2004). Our dissertation may also be of interest for Norwegian auditors who may increase their knowledge and understanding of goodwill valuation and especially their consecutive impairment losses. Furthermore, our study is of interest to IASB as the regulation gives room for earnings management. Prior research has been inconclusive suggesting a need for more research in this area. Moreover, the standards and economic climate and procedures might have caused different results. In general, goodwill observations and other data related to these types of studies must be handpicked. This is of course time-consuming and leading to small sample sizes with low internal and external validity, thus further research from more countries is needed.

**Research Methodology**

Our analysis is quantitative and based on the method from Francis, Hanna et al. (1996) and Riedl (2004). We establish two regressions, measuring different dependent variables, with the same independent variables. As mentioned, the independent variables consist of three different sets of variables (economic variables, earnings management variables and auditor related corporate governance variables).
The first regression is established using goodwill decision (GW_DEC) as dependent variable. Goodwill decision is a binary variable defined as 1 if the firm has a goodwill impairment loss in year t and 0 otherwise, thus we are required to run a logit or probit regression. Similar to Stenheim (2012) and contrary to Siggelkow and Zülch (2013) we establish a logit regression. Maddala (1991, cited from Stenheim 2012, 262) claims that the logit regression model is better suited for samples that have different sampling rates. Our sample clearly has unequal sampling rates as it consists of 86 impairment observations and 333 non-impairment observations.

The second regression use goodwill size (GW_SIZE) as the dependent variable and is based on firm i’s goodwill impairment loss deflated by firm i’s total assets at the end of the prior year if, firm i has an impairment loss and zero otherwise. GW_SIZE is a continuous limited dependent variable; hence we are required to establish a tobit regression. The lower limit will be 0, since we express the impairment losses in positive values. We have chosen not to adjust for tax effects, because they cannot under any circumstances lead to a tax deduction in the impairment year.

The following tobit and logit random effects models are employed for the analysis:
\[ GW_{\text{SIZE}} = + \gamma_1 GDP + \gamma_2 \text{winRET} + \gamma_3 \text{winBTM} + \gamma_4 \text{winREV} + \gamma_5 E + \gamma_6 \text{OFC} + \gamma_7 \text{CEO} + \gamma_8 \text{SMOOTH} + \gamma_9 \text{DEBT} + \gamma_{10} \text{HISTORY} + \gamma_{11} \text{AUD\_FIRM} + \gamma_{12} \text{STAT\_AUD} + \gamma_{13} \text{STAT\_FEE} + \gamma_{14} \text{SIZE} + \epsilon \]

\[ GW_{\text{DEC}} = + \gamma_1 GDP + \gamma_2 \text{winRET} + \gamma_3 \text{winBTM} + \gamma_4 \text{winREV} + \gamma_5 E + \gamma_6 \text{OFC} + \gamma_7 \text{CEO} + \gamma_8 \text{SMOOTH} + \gamma_9 \text{DEBT} + \gamma_{10} \text{HISTORY} + \gamma_{11} \text{AUD\_FIRM} + \gamma_{12} \text{STAT\_AUD} + \gamma_{13} \text{STAT\_FEE} + \gamma_{14} \text{SIZE} + \epsilon \]

Where:

- \( GW_{\text{DEC}} \) = an indicator variable equal to 1 if the company recognized an impairment loss in year t and 0 otherwise.
- \( GW_{\text{SIZE}} \) = firm i’s reported goodwill impairment loss (expressed as a positive number), divided by total assets at the end of t-1.
- \( \Delta GDP \) = the percentage change in Norwegian Gross Domestic Product from period t-1 to t.
- \( \text{winRET} \) = the stock price of firm i in year t minus stock price of firm i in year t-1, plus dividend in year t, divided by stock price in year t-1.
- \( \text{winBTM} \) = firm i’s book value in year t, divided by market value in year t.
- \( \text{winREV} \) = the percentage change in sales for firm i from period t-1 to t.
- \( \Delta E \) = firm i’s change in EBITDA from period t-1 to t, divided by total assets at the end of t-1.
- \( \Delta OFC \) = firm i’s change in operating cash flows from period t-1 to t, divided by total assets at the end of t-1.
- \( \Delta CEO \) = an indicator variable equal to 1 if firm i experiences a change CEO from year t-1 to t, and 0 otherwise.
- \( \text{SMOOTH} \) = 1 if \( UE - GW_{\text{SIZE}} > 0 \) and 0 otherwise. UE = operating earnings in year t minus operating earnings in year t-1 divided by total assets at the end of t-1.
- \( \text{DEBT} \) = firm i’s total debt from period t-1, divided on total assets from period t-1.
- \( \text{HISTORY} \) = an indicator variable equal to 1 if the firm had an impairment loss in goodwill the previous year and 0 otherwise.
- \( \Delta AUD\_FIRM \) = an indicator variable equal to 1 if the firm changed auditor firm from year t-1 to year t, and 0 otherwise.
- \( \Delta STAT\_AUD \) = an indicator variable equal to 1 if the firm changed statutory auditor from year t-1 to year t, and 0 otherwise.
- \( \Delta STAT\_FEE \) = firm i’s change in statutory audit fee from period t-1 to t, divided by statutory audit fee in t-1.
- \( \text{SIZE} \) = the natural logarithm of total assets at t-1

Notes: The variables "\text{winRET}"", "\text{winBTM}" and "\text{winREV}" are Winsorized.
Economic variables

Similar to Francis, Hanna et al. (1996), Riedl (2004), AbuGhazaleh, Al- Hares et al. (2011), Siggelkow and Zülch (2013) we include economic variables to capture the underlying performance of the firm to which goodwill is associated. An optimal economic variable would include the managers’ honest opinion about goodwill’s future performance. However, these expectations are not directly observable and instead we construct a set of economic variables that should to some degree reflect the manager’s beliefs about goodwill’s future performance.

Our first economic variable is included to capture macro-economic effects and is the changes in gross domestic product (ΔGDP), defined as the percentage change in Norwegian GDP from period t-1 to t. We include this variable due to the recent financial crisis and the fact that all of our firms are publicly traded and exposed to international competition. It is important to keep in mind the differences between the economic downturn in Europe and Norway during these years. GDP has increased through all of our sample years. Loh and Tan (2002) find that the GDP growth rate is an important determinant of a firm’s impairment decision. We predict a positive association since; a positive change in GDP is a sign of overall economic improvement.

The second variable we include is book-to-market ratio (BTM). Similar to AbuGhazaleh, Al- Hares et al. (2011) we expect that firms with high BTM are more likely to report goodwill impairment losses, hence a positive association is to be expected.

Similar to Francis, Hanna et al. (1996), Riedl (2004), Lapointe-Antunes, Cormier et al. (2009), AbuGhazaleh, Al- Hares et al. (2011) we include three economic variables controlling for firm-specific changes in asset value (ΔREV, ΔE, ΔOFC). These are designed to capture both firm level performance and the varying nature of the firm’s performance (Riedl 2004). The first proxy ΔREV is the percentage change in revenue in year t-1 to t, measuring gross firm performance. The second proxy ΔE is the changes in EBITDA from period t-1 to period t divided by total assets from year t-1. Our EBITDA includes impairment losses, depreciation and
amortization. The third proxy $\Delta OFC$ is calculated the same way as $\Delta E$ using the firm’s operating cash flow instead of EBITDA. $\Delta E$ and $\Delta OFC$ are meant to reflect the return on asset investments and are divided by total assets. Moreover, $\Delta REV$ and $\Delta E$ reflect accrual related performance attributes, while $\Delta OFC$ captures cash related attributes (Riedl 2004). We predict that the poorer performance in any of these three variables will give a greater probability of impairment i.e. we expect a negative association.

Elliott and Hanna (1996) and Francis, Hanna et al. (1996) suggest that market participants use impairment information in their investment decision. In line with Francis, Hanna et al. (1996) and Riedl (2004) we include stock return (RET), as a market-based measure. This measure may reflect the firm’s economics in a more coherent manner and pick up the market’s expectations about the firm’s future performance. We predict that poor stock performance increases the probability of goodwill impairment loss; hence a negative correlation is expected.

**Earnings Management Variables**

The next group of proxies measured is related to management incentives for reporting goodwill impairment losses. Loh and Tan (2002) find that management change is an important determinant with regards to impairment decisions. Similar to Lapointe-Antunes, Cormier et al. (2009) and AbuGhazaleh, Al- Hares et al. (2011), we include a indicator variable equal to 1 when there has been a change in the CEO position from the prior year. Fields, Lys et al. (2001) claim that managers are driven by their own self-interest and with the belief that higher earnings will increase stock prices and improve their reputation. The new management has incentives to decrease earnings in the year of the change and enhance the perceptions investors have of the firm (Francis, Hanna et al. 1996, Riedl 2004, Beatty and Weber 2006, Lapointe-Antunes, Cormier et al. 2009). Another explanation is that new management might do more thorough investigations of the company’s assets (Francis, Hanna et al. 1996, Riedl 2004). We predict a positive association between a change in CEO and goodwill impairment losses.

It has been proposed that managers in highly leveraged firms will avoid costly violations of debt covenants by selecting income increasing accounting decisions
(Watts and Zimmerman 1990). To proxy for the firms debt we take firm i’s total debt at t-1 divided by total assets at t-1, equivalent to AbuGhazaleh, Al- Hares et al. (2011). We use a debt/asset ratio since the equity levels have a tendency to fluctuate more, depending on their respective industry. Although it would be preferable, we do not control for industry effects. Moreover, Fields, Lys et al. (2001) have been criticizing such ratios. Riedl (2004) and Beatty and Weber (2006) use an alternative debt variable that only distinguishes between public and private debt. Based on Riedl (2004), AbuGhazaleh, Al- Hares et al. (2011), we should expect a negative association between goodwill impairment losses and size of debt. Taken into account that we use the same variable as AbuGhazaleh, Al-Hares et al. (2011), we expect a negative association between goodwill impairment losses and the debt ratio.

Similar to prior literature Francis, Hanna et al. (1996), Riedl (2004), AbuGhazaleh, Al- Hares et al. (2011), Siggelkow and Zülch (2013) we include a variable controlling for big bath accounting and income smoothing. The big bath accounting theory is based on the notion that management has incentives to shift future impairment losses into current periods, when earnings are off target and managers have bonus-plans associated with the firm’s performance. This theory suggests a negative association between impairment losses and economic performance. Another claim is build upon management’s incentives to take impairment losses during periods with unusual increases in operating earnings. This theory suggests a positive association between earnings performance and impairment losses. Our big bath and income smoothing variables are measured the same way as Francis, Hanna et al. (1996) and Siggelkow and Zülch (2013) by first calculating unexpected earnings. Unexpected earnings are calculated by taking operating earnings in year t minus operating earnings in year t-1 and divide by total assets at t-1. The variable BATH is 1 if unexpected earnings are negative and 0 otherwise. The variable SMOOTH is calculated by deducting the impairment amount from unexpected earnings. If we obtain a positive value, SMOOTH is 1 and 0 otherwise. In line with the income smoothing theory we predict a positive association between SMOOTH and goodwill impairment losses.

Elliott and Hanna (1996) find evidence that firms are more likely to report impairment losses if they have a history of impairment losses. Similar to Francis,
Hanna et al. (1996), we are including a proxy that control for the firm’s goodwill impairment loss history, however we specify our variable differently. They find that firms, which have reported impairment losses, are more likely to report impairment losses in the future. We measure this as an indicator variable equal to 1 if the firm had goodwill impairment the previous year and 0 otherwise. In line with prior research we predict a positive association between this variable and goodwill impairment losses. This is not an exhaustive list of economic variables.

**Corporate Governance Variables**

Unlike prior impairment literature we are including auditor related corporate governance variables. Our first auditor variable control for when a firm is changing their auditor firm. The variable is 1 if the firm changes auditor firm from year $t-1$ to year $t$, and 0 otherwise. Prior research on auditor change is mostly related to studies about auditor price and auditor independence. There exists little research investigating the association between auditor changes and impairment losses and in our case goodwill impairment losses.

In contrast to prior impairment literature we include a proxy for when there is a change in statutory auditor. This is to control for the potential effects of attaining less informed auditors who do not retain the same information as their predecessors. A possibility is that the managers will exploit this lack of knowledge to engage in earnings management. When there is a change in statutory auditor from year $t-1$ to year $t$, the variable is 1 and 0 otherwise. We think that a change in auditor will increase the probability of a goodwill impairment; hence a positive association.

The next proxy measures the size of the statutory audit fee. Bell, Landsman et al. (2001) suggest that high business risk increases the number of audit hours, thus raising the fee size. However, they also find evidence that the audit price is the same for high- and low-risk firms. Goncharov, Riedl et al. (2014) find evidence that impairment losses is an important contributor for higher audit fees. Moreover, Jarva (2014) find evidence suggesting that impairment-firms pay higher audit fees to compensate for the additional effort. Furthermore, an explanation might be that auditors charge a risk premium, due to the additional litigation risk associated with goodwill impairment losses. Recall that Jarva (2014) is based on SFAS 142
which has a more comprehensive test procedure than IAS 36 implying that we may attain different results. In line with the results of Jarva (2014) we expect a positive association between goodwill impairment losses and statutory audit fees.

Our last variable is size, measured as the natural logarithm of total assets at t-1. It is natural to assume that larger firms have more goodwill. Furthermore, it is reasonable to believe that more goodwill will lead to larger and more frequent impairment losses. Zang (2008) argues that large firms generally have a higher number of mergers and acquisitions, which can result in more purchased goodwill. In contrast with the latter arguments he mentions that large firms may receive more public attention, leading to fewer manipulation incentives. Based on the discussion above, we predict a positive association for size and goodwill impairment losses.

**Empirical Results**

**Sample Selection and Construction, Year and Industry Composition**

All of our data is secondary data. The data is collected from DataStream, Proff Forvalt, CCGR, Factiva and financial reports. Our sample consists of Norwegian companies on the Oslo Stock Exchange, where little research has been conducted to our knowledge. We choose listed firms, as it is easier to find necessary information, due to size and public information. Furthermore, it can be expected that they have more goodwill on their balance sheets than non-listed firms. Moreover, it is reasonable to separate listed and non-listed firms, since they have systematical differences, especially in terms of acquisitions and ownership structure. For example listed firms may have stronger incentives to take accounting actions as they could risk to be delisted. Beatty and Weber (2006) find that even the propensity for taking impairment losses varies between exchanges, due to their different economic listing requirements.

When gathering the data, we faced certain challenges throughout the process. First of all, a handful of the companies had all their accounting information and their annual reports in other currencies. This made it necessary to recalculate every observation. Further on, due to a use of various sources mentioned above, we saw the need to adjust the data gathered to integers. Both in the annual reports and the
databases the numbers are displayed in for example million NOK or thousand NOK. All of this made it even more time-consuming and complex.

The sample construction is shown in the table 1. First, we identified all the companies that where listed in a consecutive period as of 2009 – 2013. We started with 127 OSEBX-listed companies that were listed through the years 2010 – 2013. Further on, we omitted the national commercial banks and ended up with 105 firms. Our final sample of unbalanced data consists of 420 firm-year observations, where we have 86 (20.5 percent of the sample) impairment loss observations and 334 (79.5 percent of the sample) non-impairment loss observations. The impairment observations were hand-collected from the annual reports.

Table 1. Sample Construction

<table>
<thead>
<tr>
<th>Description</th>
<th>Firm-year observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>All firms from 2009 - 2013 including firms with incomplete values or firm years on Oslo Stock exchange</td>
<td>1135</td>
</tr>
<tr>
<td>All firms listed on Oslo Stock exchange having all firm years available for study from 2009 - 2013</td>
<td>635</td>
</tr>
<tr>
<td>Observations from 2009 removed</td>
<td>127</td>
</tr>
<tr>
<td>Observations belonging to the National Financial Commercial Bank Industry</td>
<td>88</td>
</tr>
<tr>
<td>Observations with no positive goodwill balances</td>
<td>Not removed</td>
</tr>
<tr>
<td>Observations with outliers</td>
<td>Winsorized</td>
</tr>
<tr>
<td>Final Sample (2010-2013)</td>
<td>420</td>
</tr>
<tr>
<td>Goodwill impairment loss observations</td>
<td>86</td>
</tr>
<tr>
<td>Non-impairment loss observations in goodwill</td>
<td>333</td>
</tr>
</tbody>
</table>

Notes: This table presents the sample construction process used to find our final sample.

**Disclosure of goodwill**

After going through the time-consuming process of collecting goodwill impairment loss observations, we feel the need to express ourselves about the current disclosure practices. In our work we have gone through all annual reports of listed firms on Oslo Stock exchange from 2009 – 2013.

Goodwill is always elaborated separately in the notes, however the treatment and quality of disclosure in the notes varies. Often goodwill amortization and impairment losses are disclosed on the same line, making them difficult to separate from each other. Moreover, sometimes the accumulated goodwill impairment losses are disclosed, making it necessary to look at prior years to
calculate the current year’s impairment loss. As we have stated in the introduction, goodwill impairment losses are key information for investors and the impaired amount for the current year should be stated explicitly. Furthermore, the impairment losses are often only disclosed in small text, as notes to the table were goodwill is elaborated.

Almost all firms included the accounting treatment of goodwill under “general accounting principles”, even though they did not report to have any in the balance sheet or in the notes. This was confusing and made it difficult to determine if the firm had goodwill reported on the balance sheet at all. This is also the reason why firms without goodwill are not excluded from our final sample.

Our general impression is that the treatment and quality of disclosures vary a lot and that there is a need for more standardization in the treatment and disclosure of goodwill. We think that goodwill balances and goodwill impairment losses should be explicitly disclosed even if the firm does not have goodwill in their closing balance. The latter findings are similar to Kvaal (2005), where he reveals that a number of firms do not fully follow the correct disclosure practices, for impairment losses in the UK.

**Descriptive Statistics**

Table 2 presents descriptive statistics for the continuous variables used in the multivariate tobit and logit regressions. We also include a Wilcoxon rank-sum test and a K sample equality-of median test for our continuous variables and two-tailed Chi-square tests of differences in proportions for our binary variables.
We want to keep as many observations as possible due to a small sample size. The large observations are controlled twice to make sure that values are correct. Comparing mean and median for our continuous variables indicate that winRET, winBTM and winΔREV might suffer from outliers. Detailed descriptive statistics confirms that there exist a few extreme values. However, most of our observations are around the mean. To deal with this issue we try to omit outliers at 99, 95 and 90 percentile. However this do not have a significant impact on the mean in any of our continuous variables. Further on, we Winsorize all continuous variables at 5 percentile and achieve a desired improvement in mean values for winRET, winBTM and winΔREV. Winsorizing does not force us to remove any observations and provide us with a lower mean, especially for ΔREV, which have an improvement in mean from 0.48 to 0.08 (median = 0.04).

The mean and median for goodwill impairment charge for the final sample (N = 420) is NOK 35.3 (NOK 0) million. Also, the mean and median for goodwill

---

Table 2. Descriptive statistics - Continuous Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>All Sample (n = 420)</th>
<th>Non-impairment loss observations (n = 334)</th>
<th>Impairment loss observations (n = 86)</th>
<th>Test of differences (Impairment loss versus non-impairment)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
<td>Median</td>
<td>Mean</td>
</tr>
<tr>
<td>GW_SIZE</td>
<td>0.01</td>
<td>0.03</td>
<td>0.00</td>
<td>-0.00</td>
</tr>
<tr>
<td>ΔGDP</td>
<td>0.06</td>
<td>0.02</td>
<td>0.06</td>
<td>0.06</td>
</tr>
<tr>
<td>ΔE</td>
<td>0.00</td>
<td>0.34</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>ΔOPC</td>
<td>-0.00</td>
<td>0.18</td>
<td>-0.00</td>
<td>-0.00</td>
</tr>
<tr>
<td>DEBT</td>
<td>0.54</td>
<td>0.20</td>
<td>0.58</td>
<td>0.54</td>
</tr>
<tr>
<td>ΔSTAT_FEE</td>
<td>0.10</td>
<td>0.68</td>
<td>0.00</td>
<td>0.14</td>
</tr>
<tr>
<td>SIZE</td>
<td>21.67</td>
<td>1.91</td>
<td>21.75</td>
<td>21.50</td>
</tr>
<tr>
<td>winRET</td>
<td>0.16</td>
<td>0.52</td>
<td>0.07</td>
<td>0.19</td>
</tr>
<tr>
<td>winBTM</td>
<td>0.64</td>
<td>0.71</td>
<td>0.42</td>
<td>0.67</td>
</tr>
<tr>
<td>winAREV</td>
<td>0.08</td>
<td>0.29</td>
<td>0.04</td>
<td>0.08</td>
</tr>
</tbody>
</table>

Notes: The table contains descriptive statistics for the continuous variables used in our multivariate tobit regression examining the determinants of goodwill impairment losses, we also include a Wilcoxon rank-sum test and a K sample equality-of-median tests. The bold values indicate significance at ≤ .1.

Table 3. Descriptive statistics - Dichotomous Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>All Sample (n = 420)</th>
<th>Impairment loss observations (n = 86)</th>
<th>Non-impairment loss observations (n = 333)</th>
<th>Chi-square test of difference (Impairment loss versus non-impairment loss)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>proportion (%)</td>
<td>proportion (%)</td>
<td>proportion (%)</td>
<td></td>
</tr>
<tr>
<td>GW_DEC</td>
<td>.186</td>
<td>.209</td>
<td>.179</td>
<td>.528</td>
</tr>
<tr>
<td>ΔCEO</td>
<td>.536</td>
<td>.396</td>
<td>.572</td>
<td><strong>.003</strong></td>
</tr>
<tr>
<td>SMOOTH</td>
<td>.186</td>
<td>.558</td>
<td>.090</td>
<td><strong>.000</strong></td>
</tr>
<tr>
<td>HISTORY</td>
<td>.074</td>
<td>.035</td>
<td>.084</td>
<td>.122</td>
</tr>
<tr>
<td>ΔAUD_FIRM</td>
<td>.200</td>
<td>.174</td>
<td>.207</td>
<td>.506</td>
</tr>
</tbody>
</table>

Notes: The table contains descriptive statistics for the dichotomous variables used in our multivariate tobit and logit regressions examining the determinants of goodwill impairment losses, as well as the results of the two-tailed Chi-square tests of differences in proportions. The bold values indicate significance at ≤ .1.
impairment charge for the impairment loss observations is calculated exclusively, (N = 86) is NOK 176.5 (NOK 14.8) million. The results reveal that goodwill impairment losses represents 0.01 per cent of total assets at the beginning of the financial year and the median represents 0.27 percent. The means and medians above are calculated for the years 2009 – 2013. We have included goodwill impairment losses for 2009, since some of the calculations for our variables depend on observations from t-1.

The only macroeconomic difference between the impairment firms and non-impairment firms is a marginally higher median for the ΔGDP variable. No conclusion can be drawn from this result. It would be interesting to do more in-depth studies regarding more complex macroeconomic variables that might catch effects that we do not obtain.

Impairment firms have in overall poorer financial performance than non-impairment firms. A lower mean and median for impairment firms are revealed for the variables winRET and winBTM, whereas winΔREV only has a lower mean. ΔE and ΔOFC’s mean and median are marginally higher for the impairment firms, which indicate that there exist only minor differences between the two sample groups for these variables. For the DEBT variable, non-impairment loss firms have a higher median while impairment-firms have a higher mean. ΔSTAT_FEE has a higher mean and median for the non-impairment firms, which implies higher differences for these firms compared to the impairment-firms. Mean and median for SIZE are higher for the impairment-firms, suggesting that our expectations regarding the variable are correct.

Table 3 presents descriptive statistics for our dichotomous variables. Consistent with prior research impairment-firms experience more CEO changes, as seen by the proportions. A tendency of a higher rate of earnings smoothing is observed for the non-impairment firms, which is similar to the findings of Francis, Hanna et al. (1996). As expected, impairment-firms tend to have previous impairment losses as seen be the statistically significant difference when compared to non-impairment firms. Contrary to our expectations both ΔAUD_FIRM and ΔSTAT_AUD are higher for the non-impairment firms. Hence, based on our table impairment-firms
tend to change their statutory auditor and/or auditor firm at a lower frequency than the non-impairment firms.

Table 4: Industry breakdown of goodwill impairments losses

<table>
<thead>
<tr>
<th>Industry</th>
<th>All sample (n = 420) proportion (%)</th>
<th>Goodwill impairment loss observations (n = 86) proportion (%)</th>
<th>Non-goodwill impairment loss observations (n = 333) proportion (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil and Gas Industry</td>
<td>0.124</td>
<td>0.151</td>
<td>0.117</td>
</tr>
<tr>
<td>Chemicals and Related Products</td>
<td>0.038</td>
<td>0.047</td>
<td>0.036</td>
</tr>
<tr>
<td>Industrial Machinery/Equipment</td>
<td>0.076</td>
<td>0.093</td>
<td>0.072</td>
</tr>
<tr>
<td>Electronic Equipment and Services</td>
<td>0.143</td>
<td>0.244</td>
<td>0.117</td>
</tr>
<tr>
<td>Transportation Services</td>
<td>0.219</td>
<td>0.174</td>
<td>0.231</td>
</tr>
<tr>
<td>Communications</td>
<td>0.057</td>
<td>0.093</td>
<td>0.048</td>
</tr>
<tr>
<td>Business Services</td>
<td>0.133</td>
<td>0.128</td>
<td>0.135</td>
</tr>
<tr>
<td>Health Services</td>
<td>0.076</td>
<td>0.023</td>
<td>0.090</td>
</tr>
<tr>
<td>Food and Kindred Products</td>
<td>0.105</td>
<td>0.047</td>
<td>0.120</td>
</tr>
<tr>
<td>Other</td>
<td>0.029</td>
<td>0.000</td>
<td>0.036</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Notes: The table presents the industry classifications and the proportions of goodwill impairment loss observations. We manually categorize the firms into these industries, using SIC-names from Factiva. Our industry classifications are similar to (Riedl 2004).

In table 4 we have divided our sample into 10 different industries. The Oil and Gas, Electronic Equipment and Services industry, Transportation Services industry and Business Services industry constitutes 62 percent of our total sample observations. The table reveals quite different industry compositions for the goodwill impairment loss column and non-goodwill impairment loss column. The Electronic Equipment and Services industry is the industry that really stands out in terms that it only constitute 14 percent of our total observations, but 24 percent of our goodwill impairment loss observations. Also, the Oil and Gas Industry have relatively more goodwill impairment losses than non-goodwill impairment losses. The Transportation Services industry, which represents the biggest industry in our sample, shows an opposite tendency.
Table 5. Pearson Correlations

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
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<th>13</th>
<th>14</th>
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<tbody>
<tr>
<td>1 GW DEC</td>
<td>1</td>
<td></td>
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<td>2 GW SIZE</td>
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<tr>
<td>3 AGDP</td>
<td>0.0381</td>
<td>0.0588</td>
<td>1</td>
<td></td>
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<td></td>
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<tr>
<td>4 ΔE</td>
<td>0.0037</td>
<td>0.0027</td>
<td>-0.042</td>
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<tr>
<td>5 ΔOFCE</td>
<td>0.0191</td>
<td>0.0163</td>
<td>-0.0539</td>
<td>0.7463*</td>
<td>1</td>
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<tr>
<td>6 ΔCBO</td>
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<td>-0.0563</td>
<td>-0.0952</td>
<td>-0.0754</td>
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</tr>
<tr>
<td>7 SMOOTH</td>
<td>-0.1428*</td>
<td>-0.1846*</td>
<td>-0.08</td>
<td>0.1744*</td>
<td>0.1538*</td>
<td>-0.0219</td>
<td>1</td>
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<td></td>
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</tr>
<tr>
<td>8 DEBT</td>
<td>0.0023</td>
<td>-0.0729</td>
<td>-0.0432</td>
<td>0.1217*</td>
<td>0.0985*</td>
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<td>0.0869</td>
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<tr>
<td>9 HISTORY</td>
<td>0.4860*</td>
<td>0.2849*</td>
<td>-0.0469</td>
<td>0.0214</td>
<td>-0.0288</td>
<td>0.0396</td>
<td>0.0272</td>
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</tr>
<tr>
<td>10 ΔAUD FIRM</td>
<td>-0.0755</td>
<td>-0.0158</td>
<td>-0.0872</td>
<td>0.0555</td>
<td>0.0664</td>
<td>0.0037</td>
<td>0.062</td>
<td>-0.0042</td>
<td>-0.088</td>
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<td>11 ΔASTAT AUD</td>
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<td>-0.0938</td>
<td>0.0509</td>
<td>0.0378</td>
<td>0.0827</td>
<td>-0.0119</td>
<td>0.0158</td>
<td>-0.0398</td>
<td>0.4508*</td>
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<tr>
<td>12 ΔASTAT FEE</td>
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<td>-0.0024</td>
<td>0.0194</td>
<td>0.0424</td>
<td>0.0066</td>
<td>0.0242</td>
<td>-0.049</td>
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</tr>
<tr>
<td>13 SIZE</td>
<td>0.1755*</td>
<td>-0.1634*</td>
<td>0.0128</td>
<td>0.063</td>
<td>0.0334</td>
<td>-0.0974*</td>
<td>-0.0751</td>
<td>0.3109*</td>
<td>0.1733*</td>
<td>0.0139</td>
<td>0.065</td>
<td>-0.0386</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14 trimRET</td>
<td>-0.0993*</td>
<td>-0.0301</td>
<td>0.0386</td>
<td>0.0228</td>
<td>-0.0454</td>
<td>0.039</td>
<td>0.0379</td>
<td>-0.0311</td>
<td>-0.0775</td>
<td>0.0545</td>
<td>0.028</td>
<td>0.0634</td>
<td>0.0447</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 winBTM</td>
<td>-0.0901</td>
<td>-0.1228*</td>
<td>-0.0906</td>
<td>0.0394</td>
<td>0.0455</td>
<td>-0.0175</td>
<td>0.0549</td>
<td>0.0793</td>
<td>-0.0359</td>
<td>0.0341</td>
<td>0.0513</td>
<td>0.0769</td>
<td>0.1138*</td>
<td>-0.1567*</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>16 winREV</td>
<td>-0.0007</td>
<td>-0.0465</td>
<td>-0.0177</td>
<td>0.1633*</td>
<td>0.068</td>
<td>-0.0742</td>
<td>0.2637*</td>
<td>-0.0906</td>
<td>-0.0852</td>
<td>0.0248</td>
<td>-0.0589</td>
<td>0.1324*</td>
<td>-0.0968*</td>
<td>0.1173*</td>
<td>-0.1240*</td>
<td>1</td>
</tr>
</tbody>
</table>

Notes: The table contains the Pearson correlations for the variables used in the multivariate tobit and logit regressions. * denotes significance at ≤ .05 level for two-tailed test.
The Pearson correlations for the variables are presented in table 5. As seen in the table, the proxies used in our thesis do not in general reveal a high correlation with each other. The two highest pair-wise correlation coefficients are 0.7463 and 0.4508. The correlation 0.7463 is high and is between our economic variables ΔE and ΔOFC. These variables also have the highest VIF values in our regression, with 2.39 and 2.33 respectively. Even though they are the highest in our regression, they are acceptable. Evans (2013, p 214) states that “conservative guidelines suggest that a maximum VIF of 5 or more suggests too much multicollinearity”. Moreover, our mean VIF is 1.31. The second highest pairwise correlation is 0.4508 implying that multicollinearity might not be a problem for us.

In terms of the economic variables, only winRET and winBTM have significant correlations with our dependent variables. WinRET is negatively correlated in the predicted direction with GW_DEC, while winBTM is negatively correlated in an unpredicted direction with GW_SIZE.

In terms of the earnings management variables, SMOOTH is significantly negatively correlated with GW_SIZE and GW_DEC in the unpredicted direction. HISTORY is significantly correlated with GW_SIZE and GW_DEC in the predicted direction. The corporate governance variable ΔSTAT_FEE are significantly negatively correlated with GW_DEC in the unpredicted direction. SIZE is significantly positively correlated with GW_DEC in the predicted direction and significantly negatively correlated with GW_SIZE.

As seen above, we omit the variable BATH. BATH is significant when running the regression with our sample. However, we are obligated to drop either BATH or SMOOTH, otherwise the regression assumption about absence of perfect multicollinearity will be broken. This is indicated by the high VIF values in the BATH and SMOOTH variables at approximately 22 each, giving a mean VIF of 4.09. After omitting BATH, SMOOTH’s VIF went down to 1.07 resulting in a mean VIF at 1.31. Our BATH and SMOOTH variable is the same that Francis, Hanna et al. (1996) use. However, they include several types of impairment losses, which might result in lower multicollinearity in these variables.
Multivariate Results

The results of the multivariate tobit and logit regressions are shown below in table 5. The first Z-values given in the text are for the tobit model and the second is for the logit model.
Table 6. Multivariate tobit and logit regression analysis of the factors influencing goodwill impairment losses, 2010-2013

<table>
<thead>
<tr>
<th>Variable</th>
<th>Predicted Sign</th>
<th>Coefficient</th>
<th>Bootstrap std. Err</th>
<th>Z-statistic</th>
<th>p-value</th>
<th>Normal-based (95% Conf. Interval)</th>
<th>Coefficient</th>
<th>Bootstrap std. Err</th>
<th>Z-statistic</th>
<th>p-value</th>
<th>Normal-based (95% Conf. Interval)</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td></td>
<td>-0.0739875</td>
<td>0.0661434</td>
<td>-1.12</td>
<td>0.263</td>
<td>-0.2036261 .055651</td>
<td>-5.871645</td>
<td>2.412498</td>
<td>-2.43</td>
<td>0.015</td>
<td>-10.60005 .1143237</td>
<td></td>
</tr>
<tr>
<td>ΔGDP</td>
<td>+</td>
<td>0.1883437</td>
<td>0.2662167</td>
<td>0.71</td>
<td>0.479</td>
<td>-0.3334315 .101189</td>
<td>6.770296</td>
<td>7.997736</td>
<td>3.85</td>
<td>0.397</td>
<td>8.904978 .2744557</td>
<td>1.04</td>
</tr>
<tr>
<td>winBTM</td>
<td>+</td>
<td>-0.0215411</td>
<td>0.0104075</td>
<td>-2.07</td>
<td>0.038</td>
<td>-0.0419395 .0011428</td>
<td>-3.187143</td>
<td>0.296061</td>
<td>-1.08</td>
<td>0.282</td>
<td>-8.989971 .261585</td>
<td>1.09</td>
</tr>
<tr>
<td>winRET</td>
<td>-</td>
<td>-0.0112547</td>
<td>0.0110354</td>
<td>-1.02</td>
<td>0.308</td>
<td>-0.0328836 .0103742</td>
<td>-0.521165</td>
<td>0.332866</td>
<td>-1.55</td>
<td>0.122</td>
<td>-1.182235 .139903</td>
<td>1.07</td>
</tr>
<tr>
<td>winREV</td>
<td>-</td>
<td>0.0182078</td>
<td>0.0167509</td>
<td>1.09</td>
<td>0.277</td>
<td>-0.0146234 .0510391</td>
<td>1.399968</td>
<td>0.417905</td>
<td>3.35</td>
<td>0.001</td>
<td>2.219055 .508881</td>
<td>1.19</td>
</tr>
<tr>
<td>ΔE</td>
<td>-</td>
<td>0.0256972</td>
<td>0.0353301</td>
<td>0.73</td>
<td>0.467</td>
<td>-0.0455485 .0949429</td>
<td>-1.592454</td>
<td>1.191843</td>
<td>-0.13</td>
<td>0.894</td>
<td>-2.495215 .217672</td>
<td>2.39</td>
</tr>
<tr>
<td>ΔOFC</td>
<td>-</td>
<td>0.0373193</td>
<td>0.0404216</td>
<td>0.92</td>
<td>0.356</td>
<td>-0.0419056 .1165441</td>
<td>2.004755</td>
<td>1.571434</td>
<td>1.28</td>
<td>0.202</td>
<td>-1.075199 .508479</td>
<td>2.33</td>
</tr>
<tr>
<td>ΔCEO</td>
<td>+</td>
<td>0.009728</td>
<td>0.0092819</td>
<td>1.05</td>
<td>0.295</td>
<td>-0.0084641 .0279201</td>
<td>3.776348</td>
<td>0.4002293</td>
<td>0.94</td>
<td>0.345</td>
<td>-0.460812 .162071</td>
<td>1.04</td>
</tr>
<tr>
<td>SMOOTH</td>
<td>++</td>
<td>-0.036096</td>
<td>0.0116022</td>
<td>-3.11</td>
<td>0.002</td>
<td>-0.0588359 .0133562</td>
<td>-1.163481</td>
<td>0.3390193</td>
<td>-3.43</td>
<td>0.001</td>
<td>-1.827948 .4901544</td>
<td>1.14</td>
</tr>
<tr>
<td>DEBT</td>
<td>-</td>
<td>-0.0417853</td>
<td>0.0262236</td>
<td>-1.59</td>
<td>0.111</td>
<td>-0.0932004 .0096297</td>
<td>-0.893157</td>
<td>1.035287</td>
<td>-0.86</td>
<td>0.388</td>
<td>-2.922283 .113968</td>
<td>1.15</td>
</tr>
<tr>
<td>HISTORY</td>
<td>++</td>
<td>0.041935</td>
<td>0.0233139</td>
<td>1.85</td>
<td>0.065</td>
<td>-0.002541 .0849279</td>
<td>2.749243</td>
<td>0.524418</td>
<td>5.24</td>
<td>0.000</td>
<td>1.721258 .377728</td>
<td>1.08</td>
</tr>
<tr>
<td>ΔAUD_FIRM</td>
<td>?</td>
<td>-0.019846</td>
<td>0.0251775</td>
<td>-0.48</td>
<td>0.634</td>
<td>-0.0613316 .0373624</td>
<td>-0.727494</td>
<td>0.799085</td>
<td>-0.91</td>
<td>0.363</td>
<td>-2.295347 .8398485</td>
<td>1.29</td>
</tr>
<tr>
<td>ΔSTAT_AUD</td>
<td>+</td>
<td>0.0033593</td>
<td>0.0141265</td>
<td>0.24</td>
<td>0.812</td>
<td>-0.0423282 .103468</td>
<td>0.727494</td>
<td>0.464017</td>
<td>0.62</td>
<td>0.266</td>
<td>1.028098 .7908156</td>
<td>1.30</td>
</tr>
<tr>
<td>ΔSTAT_FEE</td>
<td>++</td>
<td>-0.023627</td>
<td>0.0108464</td>
<td>-2.06</td>
<td>0.039</td>
<td>-0.0436213 .0011041</td>
<td>0.943186</td>
<td>0.479722</td>
<td>-1.97</td>
<td>0.049</td>
<td>1.883917 .0024602</td>
<td>1.04</td>
</tr>
<tr>
<td>SIZE</td>
<td>+</td>
<td>0.0021249</td>
<td>0.0101518</td>
<td>0.68</td>
<td>0.496</td>
<td>-0.0039863 .0023562</td>
<td>0.0021249</td>
<td>1.249643</td>
<td>1.66</td>
<td>0.097</td>
<td>0.375804 .451212</td>
<td>1.19</td>
</tr>
</tbody>
</table>

Notes: This table presents the results of the multivariate tobit and logit regressions examining the determinants of goodwill impairment losses. The model uses a sample of 420 firm-year observations (86 impairment loss observations and 333 non-impairment loss observations). The significant variables at ≤ 1 are reported in bold font and predicted signs with stars are predictions that are opposite to our results. Since we have panel data, STATA recommends bootstrap or jackknife option. We used bootstrapped standard errors. The bootstrap is a method that does well with smaller samples and/or awkward distributions.
The economic variables

GDP ($Z = 0.71; 0.85$) has positive coefficients and is insignificant at the 10 percent level for both models. This is in accordance with our expectations. The coefficients in both models are notably high compared to the other variables. A similar pattern is to be found in Riedl (2004).

Contrary to our expectations $\Delta OFC (Z = 0.92; 1.28)$ have slightly positive coefficients but are insignificant. These results are opposite of Riedl (2004). Moreover, we achieve insignificant results in $\Delta E (Z = 0.73; -0.13)$ and the coefficients are positive in the tobit model and negative in the logit model.

Also, in contrast with our expectations and Riedl (2004) $\text{win}\Delta \text{REV} (Z = 1.09; 3.35)$, have positive coefficients in both models. In our logistic model we achieve significant results for this variable, however the results are insignificant in our tobit model. The result indicates that firms are more likely to report an impairment loss, when they have an increase in revenue. This result can be seen in context with the income-smoothing theory. Looking at the Pearson correlation matrix, we find a positive and statistically significant correlation between $\text{SMOOTH}$ and $\text{win}\Delta \text{REV}$ of 0.2637. Establishing the same regression without $\text{SMOOTH}$ gives an insignificant result for $\text{win}\Delta \text{REV}$. Moreover, we establish the regression without $\text{win}\Delta \text{REV}$ and with $\text{SMOOTH}$, giving us statistically significant results at the one percent level for $\text{SMOOTH}$. This indicates that multicollinearity might be a problem for these two variables and that $\text{win}\Delta \text{REV}$ should be interpreted with extra caution.

As mentioned, the reason for Winsorizing the percentage change revenue variable was due to a significant improvement in the mean to median comparison. When obtaining this unexpected significant result from our logit model we, felt the need to delve deeper into the variable. First, we establish the regression without Winsorizing and keeping all observations, while holding all other variables equal. We then achieve a very low coefficient and an insignificant result ($p$-value = 0.982). Detailed descriptive statistics reveal a heavy right tail and we remove the four largest observations. Running the regression now, reveals an insignificant
result (p-value = 0.409). Removing additional four observations leads to similar statistically significant results as we do with the Winsorized variable.

In both models winRET (Z = -1.02; -1.55) has a slightly negative coefficient and is insignificant.

Contrary to our expectations winBTM (Z = -2.07; -1.08) is slightly negative and is significant in our tobit model, but insignificant in our logit model. We emphasize that book values are calculated without adjusting for goodwill impairment losses. The results are the same as the German study Ziggelkow and Zülch (2013). Francis et al. (1996) also have a negative association between BTM and goodwill impairment losses. The variable change in BTM, is negative and statistically significant. The other similar variable is industry adjusted BTM, but this is not statistically significant. We do not adjust for industry due to lack of time. Jarva (2014) obtain opposite results for this variable.

WinBTM is the only economic proxy we find to be statistically significant in our tobit model. The result is suggesting that when the share is undervalued there is a lower probability of goodwill impairment loss. This indicates that managers might be more reluctant to take goodwill impairment decisions, when market value is higher since both winRET and winBTM have negative coefficients. Another possible explanation for this result is that firms who have already registered impairment losses might have relatively lower BTM. This can result in a negative association between BTM and the reported impairment losses. Our positive and significant HISTORY variable also indicates that this might be the cause of this result. However, one should be careful about drawing generalizations from this result, since it is only statistically significant in one model.

The earnings management variables DEBT (Z = -1.59; -0.86) has slightly negative coefficients in both models and is close to being statistically significant at a 10 percent level in the tobit model. This result is similar to AbuGhazaleh, Al- Hares et al. (2011) indicating that Norwegian managers are less likely to manipulate earnings using goodwill impairment losses to comply with debt covenants. This can be due to less information asymmetry between the financial institutions and the Norwegian
managers. Also Loh and Tan (2002) find no significant association between DEBT and the asset impairment decision.

HISTORY (Z = 1.85; 5.24) has positive coefficients and is insignificant at 5 percent level but significant at the 10 percent level in the tobit model. Moreover, it is significant at the 1 percent level in the logit model. Hence, when a firm has goodwill impairment in year t-1, the possibility for a new impairment in year t increases.

ΔCEO (Z = 1.05; 0.94) is positive and insignificant in both models at the 10 percent level.

SMOOTH (Z = -3.11; -3.43) is negative and significant at the 1 percent level for both models, which is the opposite of our expectations and the income smoothing theory. Francis et al. (1996) also find a significant negative association for income smoothing. Siggelkow and Zülch (2013) and AbuGhazaleh et al. (2011) on the other hand, find a significant positive association while Riedl (2004) does not find any significant association at all. Our expectations are based on the fact that the German market has structural similarities with Norway, since both are code of law, use IFRS and are in relative terms more dependent on debt financing.

Table 7: Industry break down of the SMOOTHING variable

<table>
<thead>
<tr>
<th>Industry</th>
<th>All sample (n = 420)</th>
<th>Income-smoothing observations (n = 195)</th>
<th>Non-Income Smoothing observations (n = 225)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil and Gas Industry</td>
<td>0.124</td>
<td>0.138</td>
<td>0.108</td>
</tr>
<tr>
<td>Chemicals and Related Products</td>
<td>0.038</td>
<td>0.031</td>
<td>0.046</td>
</tr>
<tr>
<td>Industrial Machinery/Equipment</td>
<td>0.076</td>
<td>0.071</td>
<td>0.082</td>
</tr>
<tr>
<td>Electronic Equipment and Services</td>
<td>0.143</td>
<td>0.142</td>
<td>0.144</td>
</tr>
<tr>
<td>Transportation Services</td>
<td>0.219</td>
<td>0.209</td>
<td>0.231</td>
</tr>
<tr>
<td>Communications</td>
<td>0.057</td>
<td>0.053</td>
<td>0.062</td>
</tr>
<tr>
<td>Business Services</td>
<td>0.133</td>
<td>0.133</td>
<td>0.133</td>
</tr>
<tr>
<td>Health Services</td>
<td>0.076</td>
<td>0.076</td>
<td>0.077</td>
</tr>
<tr>
<td>Food and Kindered Products</td>
<td>0.105</td>
<td>0.116</td>
<td>0.092</td>
</tr>
<tr>
<td>Other</td>
<td>0.029</td>
<td>0.031</td>
<td>0.026</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Notes: The table presents the industry classifications and the proportions of income-smoothing observations. We manually categorize the firms into these industries, using SIC-names from Factiva. Our industry classifications are similar to (Riedl 2004).
To provide a more in depth analysis of this result, we divide our sample into ten industry groups based on their SIC-name, similar to Riedl (2004). Looking at proportions among income smoothing and non-income smoothing observations, we observe that most of the industry groups attain almost the exact same percentages for both groups. However, we see that the Oil and Gas industry and Health services industry have relatively more income smoothing observations than non-income smoothing observations. Similar, Ronen and Sadan (1981) found a high degree of smoothing in these industries and emphasizes that they are industries under much public scrutiny. Moreover, SMOOTH has positive and significant correlations at ≤ .05, with ΔE, ΔOFC and winREV.

The corporate governance variables

ΔAUD_FIRM (Z = -0.48; -0.91) is negative and insignificant at the 10 percent level in both models. Contrary to our results, we expect a positive association with goodwill impairment losses. Previous studies indicate that systematic price-cutting among firms changing their auditors occurs, both in the initial year and over the next two years. This might impact our results for the years where firms have changed the auditor company (Simon & Francis 1998).

ΔSTAT_AUD (Z = 0.24; -0.26) is positive in our tobit model and negative in the logit model, however it is also insignificant in both models.

Opposed to our expectations, ΔSTAT_FEE (Z = -2.06; -1.97) is negative and significant at the 5 percent level in both models. Implying that an increase in the statutory auditor fee is decreasing the probability of goodwill impairment loss. These results are opposite to Jarva (2014) and might be due to the more comprehensive testing procedure in SFAS 142. Our result might indicate that firms are paying for risk premiums associated with increased litigation, for not reporting goodwill impairment losses.

In line with our predictions, SIZE (Z = 0.68; 1.66) is positive for both models and statistically significant for the logit model at the 10 percent level, but not for the tobit model. Our expectations are based on the notion that large sized firms have more goodwill and thus more impairment losses in goodwill relative to smaller firms. AbuGhazaleh, Al-Hares et al. (2011), who use the exact same variable also
achieve positive and insignificant results in the tobit model, however he do not employ a logit model. The empirical evidence from our logit model indicates that large sized firms have more frequently goodwill impairment losses.

Overall, we obtain three variables, which are statistically significant in both models (HISTORY, SMOOTH, ΔSTAT_FEE). In our models they constitute 21.5 percent of our total number of independent variables. In general, the explanatory powers for all the proxies are low. Additionally, we obtain three statistical significant variables, which are only statistically significant in one of the models. The variable winBTM is only significant in our tobit model. Its coefficient indicates that listed firms emphasize the market’s expectations when reporting goodwill impairment losses. However, as elaborated another possible reason is that firms who have reported impairment losses might have relatively lower BTM than non-impairment firms. This is also indicated by our positive and significant HISTORY variable. WinΔREV is only statistically significant in the logit model. The result indicates that firms make impairment losses, when they have had an increase in revenue, which can be seen in context with the income smoothing theory. However, further inspection of this result indicates that there might exist multicollinearity between these two variables. Also, the SIZE variable achieved statistically significant results implying that firms with relatively more total assets have more impairment losses in goodwill. This result is in accordance with our predictions.

In general our results suggest that managers do not exploit goodwill’s inherent discretion to distort earnings. We find contradicting evidence of the income smoothing theory saying that managers tend to smooth earnings when they are unexpectedly high. Moreover, the variable ΔSTAT_FEE indicate that firms do not pay for extra work related to the impairment. These results also indicate that firms might pay risk-premiums to auditors for accepting higher litigation risk associated with not reporting a statutory impairment loss in goodwill. In line with prior literature the HISTORY variable is positive and significant in both models. All of this taken into consideration suggest that managers do not use goodwill impairment losses to manage earnings. However, as elaborated we are forced to exclude the BATH variable from our models to not break with the assumption about perfect multicollinearity. That being said we achieve positive and
significant results for the BATH variable when excluding the SMOOTH variable. This indicates that managers exaggerate impairment losses in years were earnings are low to avoid impairment losses in years to come. Our model might suffer from omitted variable bias, because we omitted the BATH variable and one should be careful about drawing inferences from this study. Thus we cannot conclude that Norwegian managers do not use goodwill impairment losses to manage earnings.

**Summary and Conclusions**

In 2005, IFRS 3 was introduced involving a shift in the valuation method of goodwill from a historical cost based model to a fair value based model. Standard setters intention was to create more value relevant information about goodwill’s underlying economic value. However, the standard requires more assessment and judgment by top management and still receives criticism due to the inherent discretion. The postulated claim is that managers, when incentives are right, use the discretion to act opportunistically and distort earnings. Thus, the focus of our study is to examine if managers use goodwill impairment losses for this purpose. Our sample consists of 105 firms listed on the Oslo Stock Exchange in the years from 2010 to 2013 (n = 420). In line with prior literature, a set of earnings management variables is included, while controlling for economic variables. As our main contribution to the asset impairment literature, we also include a set of auditor related corporate governance variables.

Among our economic variables, the only variable we find to be statistically significant in the tobit regression is winBTM. Contrary to our expectations, but similar to Francis, Hanna et al. (1996) and Siggelkow and Zülch (2013) we find that an increase in this ratio decreases the probability of an impairment in goodwill. Indicating that undervalued firms are more likely of having goodwill impairment losses than overvalued firms. Moreover, another cause for this result might be that firms who have a history of goodwill impairment losses may have relatively lower BTM, resulting in a negative association. The only statistically significant economic variable in the logit regression is winΔREV. Indicating that an increase in revenue will more likely lead to an impairment loss in goodwill. However, as elaborated this variable should be interpreted with caution as it might suffer from multicollinearity.
After controlling for economic variables, we find contrary to our prediction, statistically significant evidence against the income smoothing theory. This is in line with prior US studies (Francis, Hanna et al. 1996, Riedl 2004). However, it is in strong contrast with the empirical evidence from (Zucca and Campbell 1992, AbuGhazaleh, Al- Hares et al. 2011, Siggelkow and Zülch 2013). Not according to our expectations, we obtain opposite results of Siggelkow and Zülch (2013) who provide evidence from Germany, which are in some ways structurally similar to Norway. AbuGhazaleh, Al- Hares et al. (2011) provide evidence from the UK and differ in terms that it is a common law country. Moreover, we confirm the evidence found in Francis, Hanna et al. (1996) and Elliott and Hanna (1996) that the probability of impairment losses increases when the firm has a history of impairment losses.

Among our corporate governance variables, we find ΔSTAT_FEE to be negative and statistically significant in both models. The result indicates that increasing statutory audit fee increases the probability of goodwill impairment losses. This implies that firms do not pay for additional work related to the impairment. A possible cause for this result may be that firms are paying auditors risk-premiums associated with increased litigation, when not reporting an impairment loss in goodwill. For future research it would be interesting to include remuneration for other services conducted by the auditor.

Finally, in line with our predictions the variable SIZE is also statistically significant in our logit model. The result indicates the firms with more total assets report goodwill impairment losses more frequently.

As mentioned earlier, we omit our big bath variable. However, when running the exact same regression and dropping SMOOTH we obtain positive statistical significant results, providing evidence for the Big Bath theory. Due to lack of time we are not doing any further analyses to include and measure this variable.

The results of our dissertation should be of interest for accounting standard setters as we examine the use of earnings management under the current accounting standards. Further, auditors should find our study of extra interest as we set focus on auditor related corporate governance variables.
Limitations and Problems

Our study is subject to several limitations and caution should be taken in drawing generalizations from it. First, the sample size in this paper is kept rather small (n = 420) due to the labor-intensive manual collection of collecting goodwill impairment losses, CEO, statutory auditor, auditor firm, adjusting currency to NOK and making sure that all numbers are given in integer. Moreover, some of the information given from the databases was incomplete and a lot of information concerning other variables also had to be extracted from the annual reports.

Second, only firms listed on the Oslo stock Exchange are included in the sample. An idea for future research would be to conduct a cross-country study to achieve greater external validity.

Third, our data is from the post financial crisis period. It would be interesting to examine the macroeconomic impact of this event. However, it is too labor intensive to also include this period. Moreover, it might be difficult to obtain enough observations, as firms in Norway are only required by law to disclose their annual reports for at least five years, The Law of 29.06.2007 nr. 75 Law on Norwegian Securities Trading (Verdipapirhandelloven, vphl.). Future research could examine the years before and after the global financial crisis. This type of study would be more appropriate to conduct in a country that was more affected by the financial crisis.

Fourth, we do not include industry adjusted variables like Francis, Hanna et al. (1996) and Riedl (2004).

Fifth, due to bad disclosure practices in the annual reports, we are not excluding firms that do not have goodwill in their balance sheet.

Sixth, as Stenheim (2012) mentions, self selection bias might be a problem in this type of study, since observations of impairers and non-impairers might self-select into discrete groups. One can try to control for this problem by establishing a two stage Heckman-selection model (Heckman 1979, referred from Stenheim 2012, 262).
Seventh, the fact that we exclude the BATH variable might cause omitted variable bias. However, we emphasize that we were obligated to exclude the variable, due to perfect multicollinearity. Moreover, we see that multicollinearity might be a problem for SMOOTH and more so for winΔREV.
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