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Goodwill Impairment, Earnings Management, and Law System

The influence of earnings management and law system on goodwill impairment

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This thesis is written by Daniela Verdes and Thuy Thi Thanh Nguyen as the final exam for our Master of Accounting and Auditing. In brief, our collaboration started from a mutual interest in financial reporting and particularly in relation to earnings management's origins, consequences, and interaction with various economic, financial and legislative factors. Guided by our academic supervisor, Mattias Hamberg, we have decided to further develop this topic and as a result of it, this thesis takes form. With the aim of reaching an international and wider audience, we have decided to write this thesis in English.

Abstract

This study is conducted in order to investigate the impact that the quality of a national legal system has on accounting/business decisions and to better understand the management's opportunistic behaviors. The research is conducted on 480 publicly listed firms in 4 European countries: Norway, Sweden, Italy, and Greece, in the time period from 2014 to 2017, constituting a total sample of 1,644 firm-years. By using multivariate regressions, this paper finds new evidence in support of the relationship between goodwill impairment and earnings management, as well as its correlation with the quality of the national law system. The findings indicate that earnings management incentives, in form of big bath and income smoothing, are positively and significantly related to goodwill impairment decisions and its magnitude, suggesting that firms use goodwill impairment as a tool for earnings management. Furthermore, the results also support the positive association between the strength of the law system and goodwill impairment, indicating that firms operating in countries with a strong legal system are more likely to report goodwill impairments in a larger amount. This paper contributes to the existing literature by providing a detailed analysis of the newest financial data from 4 European countries, not previously covered together in this context and provides a better understanding on the effects that the national legal system has on goodwill impairment decisions. Finally, our paper is a thorough review of management opportunistic behavior with regards to goodwill accounting treatment.

Keywords: Goodwill impairment, earnings management, legal system, big bath, income smoothing, management behavior.

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We would like, first at all, to express our sincere gratitude to our supervisor Mattias Hamberg, for his guidance and encouragement throughout the entire process.

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Thank you!

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Abbreviations

ASC: Accounting Standards Codification

CEO: Chief Executive Officer

CGU: Cash-Generated Units

EU: European Union

FASB: Financial Accounting Standards Board

GAAP: Generally Accepted Accounting Principles

GDP: Gross Domestic Product

GE: General Electric

IAS: International Accounting Standards

IASB: International Accounting Standards Board

i.e.: id est

IFRS: International Financial Reporting Standards

IPO: Initial Public Offerings

ROA: Return on Assets

SEO: Seasoned Equity Offerings

SFAS: Statement of Financial Accounting Standards

UK: United Kingdom

US: United States

VIF: Variance Inflation Factor

Table of illustrations

"Again it is that time of year
When my goodwill impairment test draws near.
As I turn my mind to the process involved,
Do I recognise an expense, or defer, and be bold?

Now my goodwill balance is high and mighty
But my profit target is steep and flighty.
And so the question to impair
Is not one that I wish to bear.

The accounting standard is quite new.
Goodwill I split between a CGU or two.
Dividing goodwill into parts,
Will help keep my investors in the dark.

If fair value is my preference,
What precedent do I reference?
For there is no liquid market
For my impairment testing target.

So Value in use
Is the preferred method I choose.
Future cash flows I will guess.
Oh, my spreadsheets are a mess!

With a discount rate selected,
(A small number that I invented),
And a growth rate now implied
My auditors will be surprised.

With a recoverable amount so high,
"Impairment expense?" they ask. Not I.
With a write-off once more eluded,
My process is now concluded"

-The CEO's impairment test (Finch, 2009)

1. Introduction

In this chapter, we first introduce the topics of accounting discretion related to goodwill, earnings management, and the institutional setting. This is followed by the purpose of the study and the contribution to previous research. The chapter concludes by presenting the structure of the paper.

In 2018 General Electric (GE), ranked number 21 in the Fortune 500 list, shocked the world with the announcement of the second largest goodwill impairment recognition in history. It amounted to $23 billion, being only exceeded by $25 billion of goodwill impairment recognized in 2009 by ConocoPhillips. The write-off was mainly related to the acquisition of Alstom's power and grid businesses in 2015, worth $10.1 billion. This impairment surprised both the market and the company's stakeholders and it raised the question about how it is possible to impair a greater amount than the cost of the acquisition. GE initially started by writing off $1.2 billion of the power division, followed by a further $2.1 billion after carrying out an interim revision. A new test was carried out three months later, which unexpectedly showed that almost all of the remaining $23 billion of reported power division' goodwill had to be impaired (Crooks, 2018; McCann, 2018). Cases like this raise a familiar question to researchers: how accounting discretion, specifically goodwill accounting discretion, opens up to management opportunistic behaviors.

Discretionary accounting, which is broadly discussed in previous literature, offers great flexibility to the management in choosing the most suitable accounting methods for their businesses, environment, and regulation. As this involves a high degree of professional judgment, this gives management opportunities to choose accounting policies that give the most favorable picture, rather than those which are most relevant for the users of the financial reports. Therefore, this raises opportunities for the management to engage in earnings management (Walker, 2013).

The new standards, International Financial Reporting Standard 3 (IFRS 3) and International Accounting Standard 36 (IAS 36), applicable to all publicly listed companies that follow IFRS, have a significant effect on the recognition of goodwill and subsequent treatment (Melville,

2009, p. 111). IFRS 3 prohibits the amortization of goodwill over its useful economic life, instead, it requires that the goodwill is tested for impairments at least annually (IFRS 3; IAS 36). IAS 36 gives detailed directions and guidelines with regards to carrying out the impairment test, together with the criteria and valuations that need to be considered at this stage. Both standards permit the management to apply a high degree of accounting discretion and professional judgment when taking goodwill impairment tests. Therefore, they have the opportunity to use subjectivity in the process of deciding whether any goodwill impairment arises. Their decision could be influenced by other reporting incentives, such as meeting quarter targets in order to maximize bonuses and other performance-related executive compensation (AbuGhazaleh, Al-Hares, & Roberts, 2011). Hayn and Hughes (2006) in their study find that the firms delay the recognition of goodwill impairments by three to four years and in more extreme cases, the lag of goodwill impairment written-off can extend up to 10 years. This substantial delay might indicate that management, by using accounting discretion, recognize the goodwill impairment in years when they have to meet certain reporting objectives.

The activities carried out by the management, when opportunistically applying accounting policies that best align with their private interests or the firm's interest to manipulate the financial reports, are called earnings management. The two most relevant practices of earnings management for our research are big bath and income smoothing. By performing income smoothing, the net income volatility is level-out from one period to another (Graham, Harvey, & Rajgopal, 2005; Ronen & Yaari, 2008). On the other hand, the big bath practice reduces the current period's earnings by taking discretionary write-downs (Goel & Thakor, 2003). An example of big bath can be seen in the GE case that, subsequent to a replacement of their Chief Executive Officer (CEO), took a huge goodwill impairment, which allows the company to create hidden reserves to be used when earnings levels are decreasing (McCann, 2018).

As mentioned above, the new procedures for performing goodwill impairment tests allow a high level of discretion. Several researchers suggest that these accounting policies create a "perfect storm", indicating that management, in an opportunistic way, are able to inflate the future earnings by misusing the goodwill impairment test (Hlousek, 2002; Shalev, Zhang, & Zhang, 2013; Watts, 2003). Aligned with this, the study conducted by Li and Sloan (2017)

suggests that management exploit the discretion permitted by the accounting standard[1] to postpone the recognition of goodwill impairments and therefore boost earnings and stock prices. However, Pisano et al. (2015) argue in their study that there is no clear evidence which suggests that goodwill impairment is used to manipulate the accounting records. The contradictory findings on this topic motivate us to research further into the association between goodwill impairment and earnings management, in particular, to investigate whether the goodwill impairment is used as a tool for earnings management. This is the first research question that we tackle in this paper.

Furthermore, we are interested to examine how goodwill impairment decisions differ across countries, specifically, if goodwill impairment decisions are affected by the quality of the national law systems. There are very few studies that focus on the correlation between the strength of a country's legal system and its impact on the goodwill impairment decisions. Van de Poel et al. (2008) study how the legal system affects goodwill impairments. They illustrate that the frequency and magnitude of goodwill impairments are not uniform across countries and that the quality of the national law system plays a role in this context. This captures our attention and it is the trigger to formulate our second and third research questions.

To summarize, the main purpose of this research is to examine whether the quality of the national legal system has an impact on goodwill impairment decisions and to investigate how companies operating in different legal systems react in terms of goodwill impairment decisions when the earnings management incentives rise. Moreover, we aim to empirically analyze if goodwill impairment is used as a tool for earnings management.

This study adds to the existing research in several ways. Firstly, by using the newest financial accounting data, we provide further analysis on to what extent companies misuse the goodwill impairment test procedures for earnings management maneuvers. Secondly, we explore an area that very few researchers investigate and that needs further research. Thus, we contribute to the recent literature by providing further research on the difference between goodwill impairment

[1] Statement of Financial Accounting Standards No. 142 superseded by the Accounting Standards Codification Topic 350

decisions taken by firms operating in countries with different attributes, strengths and weakness of their legal system.

The structure of the remaining part of this thesis is as follows: the next chapter focuses on the theoretical concepts related to earnings management, goodwill impairment, and law system concluding by articulating the research questions. Chapter 3 describes our research method and sample selection. Whilst, the empirical results and their analysis are presented in chapter 4. Finally, the paper concludes with a discussion of our main findings and our recommendations for further research in chapter 5.

Appendices and references are presented at the end of this paper.

2. Theory

This chapter provides an overview of the theoretical concepts related to goodwill impairment, earnings management, and the law system. The beginning of this section covers the agency theory and accounting discretion concepts. It continues by presenting the key theoretical notions regarding earnings management and goodwill. The institutional setting is further discussed, and the chapter concludes with the articulation of the hypotheses.

2.1 Accounting discretion and Agency theory

Besides following the rules in Generally Accepted Accounting Principles (GAAP) and IFRS, the management are allowed to apply professional judgment when taking accounting decisions in preparing financial reports. This is also called accounting discretion. The management have the flexibility to choose the accounting policies that show their businesses, environment, and regulations in the most favorable picture, rather than selecting the accounting procedures that would be most useful for the users of the financial reports (Walker, 2013).

The agency theory can be one of the explanations to the issues arising from the use of subjectivity and accounting discretion as permitted by the accounting standards and can be the reason of their misuse by the management (AbuGhazaleh et al., 2011). The agency problem begins with the separation of ownership and control that results in a conflict of interest between the management (the agents) and the shareholders (the principals) (Berle & Means, 1932). If both parties are utility maximizers, there is a high probability that the agents will not always act in the best interests of the principals (Jensen & Meckling, 1976). When one of the two parties is better informed than the other, information asymmetry arises as the principals do not have a full insight on what the agents do (Thomsen & Conyon, 2012, p. 19). However, by establishing appropriate incentives for the agents, the principals can make an attempt to align their interests with those of the agents and to ensure that the agents will make optimal decisions from shareholders' point of view (Eisenhardt, 1989; Jensen & Meckling, 1976). It is important to note that agency costs cannot be totally eliminated (Jensen & Meckling, 1976).

The information asymmetry between the agent and the principal, and the high degree of accounting discretion permitted by the accounting standards in performing goodwill impairment tests, can lead to an exploitation of those by the management in order to maximize their personal gains at the expense of the market and of the shareholders' interests (Jarva, 2009; Watts, 2003). Kothari et al. (2009) argue that management tend to delay disclosure of bad news compared to the prompt disclosure of good news and this can be related to the fact the management's own incentives are not aligned with those of shareholders, which is consistent with agency theory.

2.2 Earnings management

2.2.1 Definitions of earnings management

Agency conflicts and information asymmetry shape the motives for earnings management. Manipulating earnings has been discussed to a great extent in various news articles, and professional and academic studies. However, the introduction of new international accounting standards by IASB (IFRS 3 and IAS 36) and by FASB (ASC 805 and ASC 350), which gives management more flexibility in financial reporting (Hamberg, Paananen, & Novak, 2011) attracts a higher level of interest from researchers around the world to conduct further studies on this topic and to attempt to better define this concept. The two most frequently encountered and relevant definitions of earnings management are illustrated below.

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

Healy and Wahlen (1999, p. 368) gives the following definition: *"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"*.

Whereas there are considerable efforts to define and explain earnings management, there seems to be a common pattern in various studies, commonly agreeing that earnings management is mainly driven by the management's incentive to achieve some sort of income targets, contractual benefits or personal benefits (Healy & Wahlen, 1999; Mulford & Comiskey, 2002; Schipper, 1989).

Earnings management is a concept that still gets confused with fraud (Dechow & Skinner, 2000). Earnings management is performed by legally applying conservative or aggressive accounting, in order to affect cash flows; an example is adopting accounting policies to sales recognition (delay or anticipate them) which will increase or decrease the reported earnings levels based on management's discretion (Diri, 2017). Nonetheless, earnings management is not considered to be a violation of GAAP/IFRS. Fraud, on the other hand, involves violating the regulations, which is punishable by law; an example of such a violation is the recording of fictitious sales or expenditure in the financial statements (Dechow & Skinner, 2000; Ronen & Yaari, 2008).

2.2.2 Earnings management incentives

Several earnings management incentives are explained in the existing literature. Diri (2017) distinguishes among three main motives for earnings management: contracting, capital market and external motives, all of which are detailed below.

Contracting motives are based on internal and external contract terms agreed on by firms and their stakeholders. These terms are strongly related to the firm's performance, hence, it is expected to influence the management's decisions on whether to perform earnings management (Ronen & Yaari, 2008). Under the agency theory discussed in section 2.1, the contracting terms can be perceived as incentives for the management to seek private gains, including management compensation (Healy, 1985). We can also encounter this attitude towards the use of contracting terms where the executives may act on their best interest when the successor CEO deflates earnings in order to lower market expectations that make the firm's future performance look better (Geiger & North, 2006; Ronen & Yaari, 2008). The second area where contracting motives can be encountered is mainly regarding the firm's financial situation and

characteristics. An example can be that of the need for obtaining external finance. The management can be motivated to perform earnings management and report a better performance prior to taking a bank loan in order to maximize the chances of getting favorable loan contract terms and to minimize their borrowing cost by obtaining an optimal interest rate (Das & Shroff, 2002).

Capital market motives arise from information asymmetry and market inefficiency, where stock prices do not reflect the true value of the firm (Ronen & Yaari, 2008). Investors and other stakeholders use accounting information to value firms in order to make their decisions. Thus, management is motivated to manipulate accounting information to influence the short-term stock prices (Healy & Wahlen, 1999). On top of that, initial public offerings (IPO) and seasoned equity offerings (SEO) can incentivize management to perform earnings management (Diri, 2017, p. 78) as the investors may require earnings information prior to purchasing any stocks and subsequently to benchmark it with other companies' earnings levels (Ronen & Yaari, 2008).

Third-party motives exist when other parties in the market, which have current or future interests in the firm, affect the way the firm presents its financial information to stakeholders (Ronen & Yaari, 2008; Walker, 2013). The third-party can be the firm's peer group in the same industry, with whom the firm benchmarks its activities, performance and behavior (Kallunki & Martikainen, 1999; Othman & Zeghal, 2006; Popp, Toms, & Wilson, 2003). As a result, the company may inflate its earnings, as its expectation is that the other ones will do the same. Moreover, firm's management may experience higher pressure to improve earnings levels, when comparing these to their competitors' performance (Datta, Iskandar-Datta, & Singh, 2013; Karuna, Subramanyam, & Tian, 2012). Regulation and state protection maneuvers can also be considered to be third parties; these have an important role in limiting earnings management in regulated and unregulated industries. Gu et al. (2005) document that firms operating in highly regulated industries are expected to have lower levels of earnings management compared to those active in unregulated industries. Moreover, the emphasis of these regulations on the auditors' role can also help mitigate earnings management. However, this may lead to conservative management behavior and hence, result in reducing the firm's overall value (Goldman & Slezak, 2006).

2.2.3 Forms of earnings management

Earnings management can be performed in various ways; for example, by applying a particular accounting treatment on specific business transactions or by taking economic decisions which may affect the accounting data and the reported earnings. Consequently, these affect the external financial reports end-users' decisions (Mohanram, 2003). The two most important practices of earnings management for our study are big bath and income smoothing, which are further detailed below.

Big bath

The big bath theory indicates that firms may take discretionary write-downs to reduce the current period's earnings, in order to overstate future earnings (Giroux, 2004, p. 6). According to Zucca and Campbell (1992), big bath is more likely to happen when pre-impairment earnings are lower than expected earnings. In line with this, Mohanram (2003) argues that big bath is adopted by firms that cannot achieve their pre-established targets. Furthermore, this earnings management practice is more likely to be adopted when there is a change in the top management, as the successor CEOs often are willing to take big bath in order to establish a lower benchmark for their future performances (Geiger & North, 2006; Ronen & Yaari, 2008).

Notably, managers whose bonus schemes fall into a range of earnings, are motivated to recognize large write-offs in the fourth quarter of the accounting year, when they realize that the expected earnings level will not be reached (Mendenhall & Nichols, 1988). Nikolai et al. (2009, p. 513) argue that most of the expense charges written-off in a big bath strategy are impairment losses on long-term assets.

Income smoothing

Income smoothing usually takes place when management aim to level-out the net income volatility from one period to another. It is well known that investors are mainly attracted by stable and predictable earnings when making their financing choices, due to the fact that the firm is perceived to be less risky. Hence, investors are willing to pay higher premiums for its shares (Graham et al., 2005; Hepworth, 1953). Furthermore, Gordon (1964) suggests that shareholders' satisfaction increases when the firm's income and the income's stability

increases and therefore, management should, within the accounting framework, smooth the reported income over various periods.

Income smoothing behavior is also affected by the management compensation mechanisms. Many studies assert that management are incentivized to shift income from periods with good performances, when they expect to receive a high remuneration, to weaker financial periods, in order to improve an unexpected low-performance period, which will consequently, affect their performance-related compensation. By doing so, they ensure a constant flow of higher pay-offs even during periods of lower performances (Demski, 1998; Oyer, 1998). Due to their connection, external parties such as suppliers and competitors may also influence earnings smoothing behavior by exerting pressure on firms, as firms are motivated to reassure these parties that their businesses are stable (Graham et al., 2005).

2.3 Goodwill and goodwill impairment

Goodwill is an asset that arises from a business combination. According to the Accounting Standards Codification Topic 350 (ASC 350), goodwill represents the excess of the purchase price over the fair value of acquired net assets. IFRS 3 defines it as "*an asset representing the future economic benefits arising from other assets acquired in a business combination that are not individually identified and separately recognized"*.

Accounting for goodwill has always been one of the most controversial topics in financial accounting. Developing a theoretical accounting method for goodwill has been a struggle for generations of accounting academics and standard setters (Hughes, 1982). Prior to the introduction of IFRS 3 in 2004, it was required that goodwill to be amortized over its useful economic life (IAS 22), which many academics argued that this method was not providing high accounting quality of the financial reports, as it would not provide an accurate and relevant value of this asset (AbuGhazaleh et al., 2011; Lapointe-Antunes, Cormier, & Magnan, 2009; K. Li, Amel-Zadeh, & Meeks, 2010). With the purpose of developing a high-quality accounting standard with a higher relevance, international institutions such as the Financial Accounting Standards Board (FASB), and International Accounting Standards Board (IASB), have decided that companies should perform a goodwill impairment test at least annually instead of the

previous method of goodwill amortization (FASB: ASC 805, IASB: IFRS 3). However, many researchers have a contradictory opinion of the value relevance of the impairment-only approach. Van Hulzen et al. (2012) argue that the impairment of goodwill is actually less value relevant than amortization, whilst Laghi et al. (2013) find that impairment-only approach is relevant only in periods experiencing significant economic recessions.

According to IAS 36, an impairment loss arises, and it is recognized when *"the asset's recoverable amount is less than its carrying amount".* The standard refers to the recoverable amount as being the higher value of value in use and fair value after the cost of sales deduction. However, since goodwill is not an asset that can be sold separately and considering that its value in use cannot be assessed independently, it is allocated to the acquirer's cash-generated units (CGU) that are expected to benefit from the business combination. Moreover, once goodwill impairment losses are recognized, they cannot be reversed (IAS 36).

The goodwill impairment test involves complex procedures, that includes a significant level of estimates and requires a great professional judgment, involving a high level of subjectivity (FASB: ASC 350, IASB: IAS 36). Plenborg and Petersen (2007) reveal in their study that some of the methods for defining CGUs used by the companies listed in the Copenhagen Stock Exchange are not in line with the requirements of IAS 36. Furthermore, they find that several firms adopt the value in use as being the recoverable amount. In establishing the value in use the management use estimations and assumptions which might be subjective, hence an opportunity for the management to perform earnings management arises (Plenborg & Petersen, 2007).

2.3.1 Goodwill impairment as a tool for earnings management

Subsequent to the introduction of the new international accounting standards, several researchers focused their attention on how opportunistic behaviors arise from goodwill impairment decisions. Below, we summarize some of the most relevant and important studies that we consider to be fundamental to our research.

Jahmani et al. (2010) document the relationship between goodwill impairment and earnings management, by focusing their study on companies which had goodwill reported in their balance sheets from 2003 to 2005. They find that several companies in the United States (US) have been misusing the requirements related to the goodwill impairment tests in order to smooth income across periods of time.

In agreement with Jahmani et al.'s study, the research conducted by Stenheim and Madsen (2016) finds that there is an association between goodwill impairment losses and earnings management incentives, according to their analysis for the period from 2005 to 2009 which covers 288 large listed firms in the United Kingdom (UK). Specifically, they confirm that goodwill impairment losses are smaller and less likely to be reported when companies are issuing CEOs cash-bonus payments. They also argue that firms which experience negative fluctuations in their earnings are more likely to recognize goodwill impairment losses, in line with the big bath theory covered in paragraph 2.2.3 of this paper. Finally, their study, supported by strong evidence, reports that goodwill impairment losses are more likely to be reported in companies with a higher pre-impairment book value of goodwill compared to its market value.

Another interesting study on this matter is carried out by Van de Poel et al. (2008), which includes publicly listed firms from 15 Western European countries in their sample analysis for the period from 2005 to 2006, to examine the role of earnings management and the legal system in the accounting for goodwill under IFRS. They find evidence that firms tend to declare more frequently impairment losses when achieving unexpectedly high earnings or when they are performing unexpectedly poorly, which is consistent with income smoothing and big bath theories covered in paragraph 2.2.3 of this paper.

Pisano et al. (2015) investigate in their study whether listed firm's managers also use goodwill impairments for earnings management and, if so, which kind of earnings management practices they adopt more frequently. The study is conducted on various Italian publicly listed firms that completed merger or acquisition operations during the 2006 to 2010 time frame. They consider for sampling only those firms that have a goodwill ratio (goodwill over total assets) higher than 10% in at least one of the five years under observation. Their study shows that it is quite difficult to determine whether a firm's financial reports are affected by opportunistic behaviors as there is no clear evidence in support of goodwill impairment being used to manipulate the accounting records. However, the study highlights how the management's behaviors have significantly changed during the period analyzed. The authors conclude that despite the fact that every company has its own methods and strategies when it comes to earnings management, the most frequently used practices are income smoothing, income maximization, and big bath, consistent with previous research findings.

Pajunen and Saastamoinen (2013) also conduct relevant research on the auditors' perceptions in relation to the possible interaction between goodwill accounting and opportunistic behaviors. They surveyed 123 Finnish auditors in 2011. A high percentage of these agreed on the fact that IFRS' current goodwill accounting policies give various opportunities for earnings management. However, the authors found mixed opinions in relation to most of the other issues covered by their research. In particular, they highlight two lines of thought among the auditors surveyed: the first line of thought believes that opportunistic behaviors with regards to goodwill impairments under IFRS exist and these are negatively perceived. Whilst, the second one is in favor of the new IFRS policies in relation to goodwill accounting.

The study carried out by Masters-Stout et al. (2008) examines the tenure of CEOs and their goodwill impairment decisions. The study is conducted on 296 firms in 2003, 343 firms in 2004 and 351 firms in 2005, following the Forbes 500 firms list. The results present strong evidence that the senior CEOs impair less than their new counterparts. Furthermore, the authors conclude that there is a relationship between the company's net income and the amount of goodwill impairment recognized by both new and senior CEOs, which is again consistent with the big bath theory. On the other hand, according to Jordan and Clark's research (2015), there is no evidence that new CEOs are willing to perform big bath through goodwill impairment

losses, instead, goodwill impairments are reported based on the firms' declining performance over the years.

Aligned with Masters-Stout et al.'s study, the research conducted by Muller et al. (2012) investigates whether the top management possess important inside information in relation to eventual goodwill impairments and consequently, if they use this in an opportunistic way to maximize their personal gains. The authors find that, in this case, the corporate insiders sell their shares more frequently during the two-year period prior to the announcement of the goodwill impairment suggesting that they use information asymmetry for their personal gains. Moreover, consistent with these results, they find a positive relationship between insider selling and subsequent price drops (Muller et al., 2012).

As already mentioned, the new accounting standards allow managers to use a high degree of discretion and professional judgment in performing goodwill impairment tests, therefore, along with all the arguments discussed so far, we expect the managers to actively use goodwill impairment as a tool for earnings management.

Based on the previous research and our above arguments, our first hypothesis is that:

H1: Goodwill impairment is used as a tool for earnings management, mainly in the forms of big bath and income smoothing.

2.4 Institutional setting

The legal system varies across countries, due to differences in their historical origins. Some national legal systems are similar enough to allow a classification of the national framework into major families of law. Two broad legal families have been identified as civil law and common law (La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 1998). The civil law system is the oldest and the most influential, and it uses statutes and comprehensive codes as the primary source of law (Merryman & Pérez-Perdomo, 2007). The three common frameworks categorized as civil law are the French, German and Scandinavian systems (La Porta, Lopez-de-Silanes, & Shleifer, 2008). The common law system uses instead the intellectual framework

deriving from judge-made decisional law, using therefore the precedents from judicial decisions to shape the law. The main common law framework is the one used in Great Britain and those countries whose laws fundamentals have been modeled on English law (Apple & Deyling, 1995).

Investor, shareholder and creditor protection are important aspects that need to be considered when determining the strength of the legal system. It has been observed that in many countries, the expropriation of minority shareholders by controlling shareholders, is extensive. When outside investors choose to finance firms they face a high risk, that the returns on their investments will never materialize, as a consequence of the controlling shareholders or managers expropriating these (La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 2000). Common law countries give the strongest protection for shareholders and creditors, followed by German-civil-law and Scandinavian-civil-law countries, while French-civil-law countries provide the weakest protection (La Porta et al., 1998).

Law enforcement is also a component that determines the quality of the legal system. In theory, a weak legal system could be improved and supported by a strong legal enforcement system, as well-functioning courts could step in and protect a party's rights, such as investors' rights (La Porta et al., 1998). A study conducted by La Porta et al. (1998) investigates the strength of the law enforcement system for 49 countries by using several proxies for the quality of enforcement. According to their study, in the context of law enforcement, Scandinavian countries are on top, German-civil law countries are close behind, followed by the common law countries, and at the bottom, we find the French-civil-law countries.

The use of the same set of standards such as IFRS helps to improve the comparability and the transparency of financial statements and the quality of financial reporting. However, due to differences amongst countries and their institutional settings, the effectiveness of international standards can be restrained (Brown, Preiato, & Targa, 2014). Therefore, the enforcement of accounting standards also plays an important role. Although IFRS is issued by the IASB, they have no power to legally enforce the standards as there is no international uniformized enforcement system; the enforcement of IFRS is managed by each country individually (Cai, Rahman, & Courtenay, 2008). Cai et al. (2008) show in their study that countries with stronger

enforcement system, generally have less earnings management, which reinforce the importance of the efficiency of the enforcement systems at a national level.

Besides those factors mentioned above, extra-legal institutions also have to be considered. They are defined as factors that may lie outside the law but are still important for the overall quality of the judicial system. Dyrk and Zingales (2004) categorize them into product market competition, public opinion pressure, internal policy moral norms, labor as monitor and government as a monitor through tax enforcement. Among them, we would like to highlight the importance of public opinion, specifically of free media. Previous literature has provided evidence on how free press plays the watchdog role in relation to companies' actions that consequently improves companies' level of compliance to accounting standards, as well as their transparency (Bushee, Core, Guay, & Hamm, 2010; Dyck, Morse, & Zingales, 2010). A lack of monitoring from the free press can lead to severe information asymmetry and to weaker market efficiency. In fact, Kim et al. (2017) argue that a lack of press freedom translates into lower firm-level transparency, generating opportunities for firms to modify their financial reporting disclosures and consequently this leads to inaccurate financial and accounting analysis.

2.4.1 The effect of the law system on earnings management and on goodwill impairment

As discussed in the previous sections, goodwill impairment can be used as a tool for earnings management. It appears that there is a tight connection between the legal system, earnings management, and goodwill impairments. Even though some researchers focus their studies on the law system, there is still relatively limited research on its interaction with earnings management and goodwill impairment decisions. Some of the most significant studies are being covered in this section.

The study conducted by Leuz et al. (2003) covers the systematic differences in earnings management across 31 countries worldwide. They find that there are great international differences across several earnings management's measures, including earnings smoothing. Their descriptive evidence suggests that firms operating in countries with developed equity markets, dispersed ownership structures, strong investor rights, and legal enforcement system

engage in less earnings management. The explanation provided for these differences is based on the fact that insiders, in an attempt to protect their personal control benefits, use earnings management to conceal the firm's performance from the outsiders and other stakeholders. Consequently, the study asserts that where there are strong investor protection policies in place, earnings management levels are expected to decrease.

Lang et al. (2006) study a series of US firms and cross-listed non-US firms. Their findings are consistent with Leuz et al. (2003) as the study concludes that weaker-investor-protection firms have a tendency to practice earnings management. Another study that supports this theory, is conducted by Nabar et al. (2007). They examine the impact that investor protection and national culture have on earnings management, across 30 countries that have been sampled. Again, their conclusions are consistent with Leuz et al. (2003) and indicate that earnings management is negatively associated with the level of outside investor rights. Furthermore, they find that earnings management is relatively high in countries with high uncertainty avoidance scores and relatively low in countries where English is the primary language.

The study conducted by Houqe et al. (2012) shows how important investor protection is for reporting quality. They examine the effects of mandatory IFRS adoption and of investor protection on the quality of accounting earnings in 46 countries (around the globe). The authors conclude the study by suggesting that earnings quality increases for mandatory IFRS adoption when a country's investor protection regime provides a stronger protection level. This is supported by several studies which show that companies in countries with strong investor policies are involved in less earnings management maneuvers, than companies in countries with a weaker one (Gopalan & Jayaraman, 2012; Houqe et al., 2012; Lang et al., 2006; Leuz et al., 2003).

According to Gassen et al. (2006) firms operating in civil law countries use earnings smoothing practices more actively than those operating in common law countries. However, Gaio (2010) argues that the earnings quality is not influenced by the differences in legislative policies among countries, as this is attributed to the differences among the characteristics of individual firms.

Another interesting study conducted by Haw et al. (2011), focuses on East Asian countries including Hong Kong, South Korea, Thailand, Taiwan, Singapore, Malaysia, Indonesia, and the Philippines. They find that misclassifying expenses in firms from these countries is a widespread and economically significant phenomenon. Moreover, they argue that well-functioning legal institutions, together with the choice of suitable external auditors play an important role in mitigating expenses misclassification. On top of that, they state that countries with weaker investor protection regulations have more noticeable means of earnings management.

There are few studies that investigate the impact of institutional setting on goodwill impairment decisions. Among them, we would like to highlight the before mentioned study conducted by Van de Poel et al. (2008). Their study examines a sample of listed companies from 15 Western European countries. They find out that the frequency of goodwill impairments depends on the quality of the country's judicial system and that this is not uniform across countries. Mainly, their study concludes that firms active in countries with a weak judicial system tend to take fewer goodwill impairments than the firms operating in countries with a strong judicial system.

The research conducted by Bushman and Piotroski (2006) supports Van de Poel et al.'s results. They empirically explore the connection among key characteristics of economy-level institutions and accounting conservatism. The underlying statement of their research is that a country's law system, securities laws, and the political environment create incentives that affect the stakeholders' behavior. They suggest that the national legal system will lead to a higher degree of conservatism in financial reporting through two channels. Firstly, the authors argue that a low ownership concentration in a stronger legal system results in increasing demand in contracting and monitoring for creditable accounting information. Consequently, firms domiciled in a stronger judicial system will encounter the pressure for the use of conservative reporting. Secondly, a strong legal system can penalize firms overstating economic performance by increasing the potential litigation cost. Therefore, firms in a high judicial system tend to be more careful and hence, be more conservative.

As illustrated above, several studies also argue that firms in countries with a stronger legal system, in general, are expected to be more conservative, hence the tendency of recording a

goodwill impairment is higher in these countries (Bushman & Piotroski, 2006; Van De Poel et al., 2008). We, therefore, expect the legal system to affect goodwill impairment decisions.

Based on the above-discussed studies and argumentation given, we can formulate our second hypothesis:

H2a: The strength of the legal system positively influences goodwill impairment.

Van de Poel et al. (2008) also argue that in the case of large earnings surprises (earnings management incentives in forms of big bath and income smoothing) in general, firms tend to become more conservative and to report a goodwill impairment. Considering the lower litigation costs of GAAP violations in countries with low-quality law system, firms might accelerate goodwill impairments in years when goodwill is not supposed to be impaired. Moreover, companies in high-quality law system are more conservative in general (Bushman & Piotroski, 2006). Therefore, it is expected that the increase in the likelihood of reporting goodwill impairment losses in countries with a high-quality legal system is lower than that in countries with a low-quality legal system (Van De Poel et al., 2008).

Based on this research and the above-mentioned arguments we formulate our third hypothesis.

H2b: Once earnings management incentives increase, the likelihood of recognizing goodwill impairment will increase less for firms domiciled in countries with a strong legal system than for firms domiciled in countries with a weak legal system.

3. Methodology

This chapter starts by presenting the overall research design. It then continues with the presentation of the empirical models and with the operationalization of the variables chosen in the models. A description of the data and the sample collection is shown in the next section. The discussion of the reliability and the validity of this paper is presented at the end of the chapter.

3.1 Overall research design

As mentioned throughout the paper we focus on the relationship between goodwill impairment and earnings management, as well as the impact of the legal system on goodwill impairment decisions and we choose a quantitative research design to further investigate these. The choice of a quantitative approach enables us to analyze the relationship between two variables and their interaction throughout a wider population, being able to then draw a conclusion for the entire set of data.

We adopt the same approach that is used by Van de Poel et al. (2008) in their study "Implementation of IFRS within Europe: the case of goodwill" described further in this chapter. Our hypotheses are tested on 480 firms publicly listed from 4 different European countries, in the period from 2014 to 2017. We perform multivariate regressions on the data collected, in order to test our hypotheses.

The following generic model is used to test our hypotheses:

Goodwill impairment = Earnings management incentives + Law system + Control variables

3.2 Empirical models

As stated in Chapter 2 the hypotheses we test are:

H1: Goodwill impairment is used as a tool for earnings management, mainly in the forms of big bath and income smoothing.

H2a: The strength of the legal system positively influences goodwill impairment.

H2b: Once earnings management incentives increase, the likelihood of recognizing goodwill impairment will increase less for firms domiciled in countries with a strong legal system than for firms domiciled in countries with a weak legal system.

To be able to do so, as briefly mentioned, we apply the models from Van de Poel et al.'s study. In their research paper, they use 5 different empirical models to test their hypotheses, which are shown below.

Model 1, 2 and 3

$$IMP_{it} = \alpha_0 + \alpha_1 GW_{it-1} + \alpha_2 SIZE_{it} + \alpha_3 \Delta indROA_{it} + \alpha_4 \Delta SALES_{it} + \alpha_5 \Delta CFO_{it} + \alpha_6 BATH_{it} + \alpha_7 SMOOTH_{it} + \alpha_8 BIG4_{it} + \alpha_9 BATH_{it}*BIG4_{it} + \alpha_{10} SMOOTH_{it}*BIG4_{it} + \Sigma \alpha_j Controls_{itj} + \varepsilon_{it}$$

Model 4 and 5

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

We base our models on Van de Poel et al.'s ones adjusting them to the specifications of our study. Therefore, our models have very few and minor differences to the ones used by Van de Poel et al. (2008). First at all, our models do not include the variables related to the Big 4 auditing firms, since we do not have access to this data.

Secondly, our models also exclude the GW_country variable, as it was designed to capture the various differences arising from the transition to IFRS from the national accounting standards used previously in different countries. We assume that the transition differences are trivial as the time frame analyzed in our study (i.e. 2014-2017) is ten years after the transition; therefore, it is unlikely that it will have any influence on our research.

To examine our first hypothesis a multivariate regression analysis (Model 1) is used. We are investigating if there is any relationship between the earnings management incentive's proxies ($Bigbath_{i,t}$,$Smooth_{i,t}$) and goodwill impairment decisions. Control variables are also included as stated above. We expected that there is a positive relationship between goodwill impairment and earnings management.

Model 1:

$$GW\_decision_{i,t} = \beta_0 + \beta_1 Bigbath_{i,t} + \beta_2 Smooth_{i,t} + \beta_3 GW_{i,t-1} + \beta_4 \Delta IndROA_{i,t} + \beta_5 Size_{i,t} + \beta_6 \Delta Revenues_{i,t} + \beta_7 \Delta CFO_{i,t} + \varepsilon_{i,t}$$

For testing our second and third hypotheses we use Model 2 that is illustrated below. Model 2 is an upgrade of Model 1 since it includes three new variables ($Law_{i,t}$, $Bigbath_{i,t}$*$Law_{i,t}$, $Smooth_{i,t}$*$Law_{i,t}$) and a macroeconomic factor ($\Delta GDP_{i,t}$) that reflect the effect of the law system and the influence of the macroeconomic factor on goodwill impairment decisions. We expect that the strength of the law system has a positive impact on goodwill impairment decisions. In particular, firms domiciled in countries categorized as having strong legal systems record more goodwill impairments losses than firms domiciled in countries categorized as having a weak legal system. Specifically, to our research, we expect that firms domiciled in Norway and Sweden, considered as countries with strong legal systems, recognize more goodwill impairment losses than firms domiciled in Italy and Greece, considered as countries with weak legal systems.

Model 2:

$$GW\_decision_{i,t} = \beta_0 + \beta_1 Bigbath_{i,t} + \beta_2 Smooth_{i,t} + \beta_3 Law_{i,t} + \beta_4 Bigbath_{i,t}*Law_{i,t} + \beta_5 Smooth_{i,t}*Law_{i,t} + \beta_6 GW_{i,t-1} + \beta_7 \Delta GDP_{i,t} + \beta_8 \Delta IndROA_{i,t} + \beta_9 Size_{i,t} + \beta_{10} \Delta Revenues_{i,t} + \beta_{11} \Delta CFO_{i,t} + \varepsilon_{i,t}$$

Table 1: Variable definitions

Dependent variables	
$\mathbf{GW\_decision_{i,t}}$	a dummy variable of goodwill impairment, (equal to 1 when the firm reports goodwill impairment, otherwise equal to 0)
$\mathbf{GWI_{i,t} / (GW_{i,t}+GWI_{i,t})}$	the closing balance of goodwill impairment at year t, divided by the sum of the closing balance of goodwill and goodwill impairment of firm i at year t
Variables of interest	
$\mathbf{Bigbath_{i,t}}$	a dummy variable, (equal to 1 if the change in firm i's pre-impaired earnings from year t-1 to year t, divided by total asset at year t-1, is less than the median non-zero negative values of the industry, and equal 0 otherwise). This is a proxy for the big bath.
$\mathbf{Smooth_{i,t}}$	a dummy variable, (equal to 1 if the change in firm i's pre-impaired earnings from year t-1 to year t, divided by the closing balance of the total asset at year t-1, is larger than the median of non - zero positive value of its industry, and equal 0 otherwise"). This is a proxy for the income smoothing.
$\mathbf{Law_{i,t}}$	estimates of "rule of law" for the country where firm i is domiciled, following Kaufmann et al. (2008)
Economic Factors	
$\mathbf{\Delta IndROA_{i,t}}$	the median change in firm i's industry Return on Assets (ROA) from period t-1 to t
$\mathbf{\Delta Revenues_{i,t}}$	the change in the revenues of firm i from year t-1 to year t, scaled by firm i's total assets at the end of year t-1
$\mathbf{\Delta CFO_{i,t}}$	the ratio of the change in firm i's operating cash flow from period t-1 to t, to the firm i's total assets at the end of year t-1
$\mathbf{\Delta GDP_{i,t}}$	the percentage change in Gross Domestic Product (GDP) of the country where firm i is domiciled from period t-1 to t.
Control variables	
$\mathbf{GW_{i,t-1}}$	the ratio of the closing balance of firm i's previous year (t-1) goodwill on the total assets
$\mathbf{Size_{i,t}}$	the natural logarithm of the total asset at time t of the firm i

3.3 Operationalization

3.3.1 Dependent variables: Goodwill impairment

This paper studies whether the management use opportunistic behavior in performing goodwill impairment tests and whether the national law system influences goodwill impairment decisions. The hypotheses are tested with regards to two main groups of goodwill impairment variables. The first group relates to the decision of whether recognizing goodwill impairment losses. Whilst, the second group relates to the size of the impairment losses reported.

The logit model is widely used in various previous studies by Van de Poel et al. (2008) and by Stenheim and Madsen (2016), to test for the decisions to report impairment losses. On this basis, we therefore apply the logit model in our study, and formulate the impairment of goodwill variable as follows: $GW\_decision_{i,t}$, "i" represents the firm i, while "t" represents the year t. Hence, $GW\_decision_{i,t}$ will take the value of "1" if the company i recognizes an impairment loss in the year t, otherwise, it will take the value of "0".

In regard to the size of the impairment losses, we investigate if the management take into consideration the magnitude of the goodwill balance when deciding the amount of goodwill to be impaired. We choose $GWI_{i,t} / (GW_{i,t} + GWI_{i,t})$ as a variable that represents the ratio of goodwill impairment to the sum of the closing balance of goodwill and goodwill impairment. The choice of this new dependent variable is made based on the fact that the goodwill value tends to be more stable during the years compared to other measures.

3.3.2 Independent variables

Test variables

As discussed in Chapter 2, the two most important practices of earnings management for our study are big bath and income smoothing. According to previous literature, a cause for these practices can be unexpectedly low or high pre-impairment earnings levels (Francis, Hanna, & Vincent, 1996; Riedl, 2004; Van De Poel et al., 2008; Zucca & Campbell, 1992).

Zuca and Campbell (1992) discuss that big bath impairment losses are likely to be recognized in firm-years when expected earnings are above pre-impaired earnings. Furthermore, management may be tempted to take big bath in these particular situations, in order to boost future earnings and to picture a better performance for the following years, whilst income smoothing may occur when the pre-impaired earnings are higher than expected. On this basis, together with evidence provided by Van de Poel et al. (2008) and Reidl (2004) research, we formulate $Bigbath_{i,t}$ and $Smooth_{i,t}$ as proxies for big bath and income smoothing incentives, respectively.

$Bigbath_{i,t}$ indicates an unexpectedly low level of earnings. The variable takes the value of "1" if the change in the firm i's pre-impaired earnings from time t-1 to time t, scaled by the closing balance of the total assets at time t-1, is smaller than the median of non-zero negative values observed in the firm i's industry. Otherwise, it will take the value of "0". On the contrary, $Smooth_{i,t}$ indicates an unexpectedly high level of earnings. The variable takes the value of "1" if the change in the company i's pre-impaired earnings from time t-1 to time t, divided by the closing balance of the total assets at time t-1, is greater than the firm's industry median of non-zero positive values. If this is not the case, the variable will take the value of "0".

In order to test our second and third hypotheses, we add a new variable defined as $Law_{i,t}$, which represents the national law system of the 4 countries that we observe in our research. The "rule of law" estimates, used to proxy the national legal system, are obtained from the World Bank data in accordance to Kaufmann et al. (2008). These are used as a proxy to indicate the agents' confidence levels in the rules of the society, the property rights, the judicial system and the quality level of the contract enforcement regulation. The rule of law estimate assigned to a specific country represents its score on the aggregate indicator. The estimate is normally distributed on a range from -2.5 to 2.5 ("Rule of Law: Estimate | Data Catalog," 2019). In addition, we insert $Bigbath_{i,t}$*$Law_{i,t}$ and $Smooth_{i,t}$*$Law_{i,t}$ variables, representing the interaction terms between the above-named estimate and Bigbath and Smooth variables respectively.

Economic factors

In the analysis of the relationships between goodwill impairment and earnings management and between the legal system and goodwill impairment, it is important to take into consideration additional variables, which may also have an impact on the goodwill impairment. Previous researchers argue that the impairment losses are expected to be correlated with macroeconomic factors, industry and firm's performance (Francis et al., 1996; Riedl, 2004). Consequently, various studies, identify a variety of economic variables that we also use as proxies for macroeconomic factors (i.e. GDP), industry's performance (i.e. ROA of an industry), firm's performance (i.e. cash flows in operating activities and revenue) (Francis et al., 1996; Van De Poel et al., 2008).

The percentage change in the country's GDP ($\Delta GDP_{i,t}$) is introduced in the model in order to capture the macroeconomic effect that has on goodwill impairment. This variable describes the percentage change in the country's GDP, specific to the firm i's domicile during the period from t-1 to t. Therefore, positive GDP growth may indicate that the overall economy has prospered, which might have a positive effect on the company's CGUs' fair values (Van De Poel et al., 2008).

Subsequent to Stenheim and Madsen's (2016) study, which concludes that impairment losses are negatively associated with a change in the industry's return on assets ($\Delta IndROA_{i,t}$), we consider that this variable will also have an effect on the goodwill impairment decisions. Therefore, we include in our model $\Delta IndROA_{i,t}$ that indicates the median change in the industry's return on assets specific to firm i, during the period from period t-1 to t. To be able to control the economic performance of the firms, two firm-specific variables are further considered. The first one is $\Delta Revenues_{i,t}$ defined as the change in the total revenues over one-year period, scaled by the total assets of year t-1. The second one is $\Delta CFO_{i,t}$ which represents the change in the operating cash flow during one-year period, divided by lagged total assets.

Control variables

We also include the size of the firms ($Size_{i,t}$) in our model, to be able to control its effect on goodwill impairment. This variable is defined as the natural logarithm of the company i's total assets, which is exposed to different currencies as several firms in our sample, use different currencies. To overcome this issue, we translate the total assets value from their presentation currency to Euro, using the European Central Bank's closing exchange rate at the balance sheet date, to be able to facilitate comparability. As all the other variables that we use are ratios or dichotomous variables, these are not exposed to the currency effects and therefore, do not need adjustment.

Finally, we include in our model the last control variable $GW_{i,t-1}$, being the ratio of the goodwill's opening balance over the total assets. This is considered so that we can verify its influence on goodwill impairment.

3.4 Sample and data collection

In order to test our hypotheses, we collect various data from the following four European countries: Norway, Sweden, Italy, and Greece. The sampling choice is based on several reasons. Our choice to focus on European countries only derives from the willingness to contribute to European research. Furthermore, it felt natural for us to concentrate our attention on a geographical area where publicly listed companies apply IFRS, in line with the matters covered during our master program. Moreover, we include Norway and Italy in our sample as these are relevant and close to our heart, due to our heritage and current study and settlement choices, both of us being based in Norway.

One of our main goals is to make a comparison between firms in countries that are considered to have a strong legal system and firms in countries that are considered to have a weak one, consequently, following the rule of law indicator we choose the four countries. In 2017, Norway and Sweden are in the top of the list with an estimator of 2.02 and 1.93 and Italy and Greece are at the bottom of the list with an estimator of 0.324 and 0.08 respectively. Norway and Sweden are considered to be countries with a stronger legal system, whilst Italy and Greece are deemed to have a weaker legal system ("Worldbank Database," 2018).

As mentioned, we focus our research on European listed companies for the period of 2014-2017. Our sample includes only those companies that have reported goodwill in their balance sheets for at least two continuous years in the interested time span. Although the time period is from 2014 to 2017, we need to collect data from 2013 onwards to be able to calculate the various ratios for 2014 that we use in our analysis. Our research focuses on both active and dead firms in order to avoid survivorship bias. However, most of the companies sampled appears to be active for the four-year period. We also eliminate from our sample firm-year observations which have missing values.

Based on the same method used by the previous research we exclude banks, financial institutions, real estate investment and service companies from our sample (Fama & French, 1992; Francis et al., 1996). According to Fama and French (1992), financial companies are excluded due to the fact *"that high leverage that is normal for these firms probably does not have the same meaning as for nonfinancial firms, where high leverage more likely indicates distress"*. These companies have to operate by following different rules and regulations and it is very rare that they have any goodwill reported. Therefore, our sample excludes 470 banks, 435 financial institutions and 580 real estate investment and service firm-years.

Our original sample consisted of 6,555 firm-year observations; after removing all of the companies that do not have any goodwill reported, the sample is significantly reduced. A further 1,436 firm-years with missing observations are excluded, together with the firm-years that we do not have access to their annual reports. The final sample consists of 1,644 firm-year observations from 480 public listed companies from 4 different countries.

Table 2: Number of firm-years and excluded firm years

Number of firm years during 2014-2017	6,555
Excluded firm years	
Banks	470
Financial institutions	435
Real estate investment and service	580
Firm years with non-goodwill reported	1,990
Firm years with missing values	1,436
Total number of firm years excluded	4,911
Number of observations included in the sample	**1,644**

Our data is primarily collected from Compustat Global, a database considered to be one of the best in terms of data collection related to European companies' financial information, having on its records complete data from companies all over the world. Besides the basic data such as company name, total assets, etc., the database allows us to collect one of our most valuable information, being the balance of the goodwill reported for each relevant year and company.

Compustat Global does not provide any information in relation to goodwill impairments. As this post is essential for our research, we hand-collect all of the impairment of goodwill data for all of the 480 companies sampled. Also, the database does not provide information about firms' industry, which is relevant to our analysis. We, therefore, collect this information from another database, Thomson Reuters Eikon. Although it is preferred to use data from one source to enhance the reliability of the study, the data collected from Eikon enables us to group industries and to measure the variables, that otherwise would not have been possible to do. Overall, the subjectivity level in the data collection is considered to be low.

3.5 Normalizing the sample and collinearity

The multiple linear regressions are based on the assumption that the collected sample is normally distributed. In order to normalize our sample, we perform winsorizing to minimize the impact of outliers in the sample and to decrease the effect of skewness and kurtosis in the regressions (Hamberg, 2018). To avoid excluding high and low values that are regular and relevant to the analysis, the winsorizing technique, on the basis of absolute numbers, is applied on two firm-specific economic variables ($\Delta Revenues_{i,t}$, $\Delta CFO_{i,t}$) and on the firm' size variable ($Size_{i,t}$) ,that show high skewness and kurtosis. The technique allows the extreme variables to be replaced by cut-off values and therefore, ensure that the number of firm-year observations is not reduced. As a result, the power of the statistical test is maintained when substituting outliers with the normal values (Hamberg, 2018).

Multicollinearity is one of the main issues encountered when using multivariate regression analysis. It can be defined as the state of inter-correlation between explanatory variables. Multicollinearity can reduce the reliability of estimates as it increases coefficients' sensitivity when there are small changes in the regression model (Adeboye, Fagoyinbo, & Olatayo, 2014). In order to assess multicollinearity, the Variance Inflation Factor (VIF) is measured. According to Hair et al. (2014) the level of VIF, smaller than 10, indicates an insignificant level of collinearity. However, O'Brien (2007) has a different opinion with regards to the accepted VIF level. He suggests that the VIF interval between 4 and 10 can represent an excessive level of multicollinearity.

The VIF results presented in table 3 and 4, indicate that the VIF levels are between 1 and 4, lower than the maximum level of acceptance, in line with both studies. As a result, we can assume that multicollinearity is insignificant, and it does not affect our analysis.

4. Empirical results and analysis

This chapter includes our results from the multivariate regressions we perform. Firstly, the descriptive statistics and variable correlations are presented and analyzed. Afterward, we analyze and discuss the results arising from our multivariate regressions.

4.1 Descriptive statistics and variable correlations

The complete sample consists of 1,644 firm-year observations, 778 being from Norway and Sweden whilst the remaining 866 representing observations from Italy and Greece. Table 5, shown in the next page, presents in detail the percentage of goodwill impairment in each country in the sample. 13.58%, 10.77%, 9.88% and 11.90% of these firms have recognized a goodwill impairment loss during the period from 2014 to 2017, respectively. The impairment is on average equal to 1.70% of the sum of the closing balance of goodwill and goodwill impairment. The results in table 5 show that Norway, the country with the highest rule of law estimate, has the highest number (in percentage) of goodwill impairments during all the four years, followed by Sweden. This is consistent with our expectation that firms operating in countries with strong legal systems take more goodwill impairments (i.e. H2a).

Tables 6 and 7 in the appendix represent the descriptive statistics related to the impairment sample and to the non-impairment one, respectively. The descriptive statistics results indicate that firms tend to recognize impairment losses when they experience unexpectedly low-income levels. More specifically, the mean of the Bigbath variable is greater in the impairment sample (27.91%), than in the non-impairment one (18.13%), which is consistent with our first hypothesis (H1).

With regards to our second hypothesis (H2a), the results of the descriptive statistics show that the mean value of the Law variable (1.33) in the impairment sample is greater than that of the non-impairment sample (1.08). This implies that firms operating in countries with stronger law systems have a higher tendency to recognize goodwill impairment losses, than the ones operating in countries with weaker law systems.

Table 5: Descriptive Statistics: goodwill impairments by countries

Countries	Firm years	Number of impairments (%)	Mean of GWI/(GW + GWI)
Norway			
2014	87	20.69%	3.03%
2015	85	20.00%	4.58%
2016	80	20.00%	2.94%
2017	76	19.73%	2.15%
Sweden			
2014	102	12.75%	2.91%
2015	110	7.27%	0.92%
2016	115	7.82%	0.22%
2017	123	8.94%	0.73%
Italy			
2014	174	10.34%	1.92%
2015	185	8.11%	1.32%
2016	179	6.70%	0.97%
2017	173	5.78%	0.96%
Greece			
2014	38	10.52%	1.42%
2015	39	7.69%	0.33%
2016	40	5.00%	0.53%
2017	38	13.16%	2.24%
Total	**1,644**	**11.53%**	**1.70%**
2014	401	13.58%	2.32%
2015	419	10.77%	1.79%
2016	414	9.88%	1.17%
2017	410	11.90%	1.52%

Table 8 shown in the next page, regards the whole sample and it represents the descriptive statistics and correlations of the variables used in our multivariate regression models. As expected, GW_decision shows a significant positive correlation with Bigbath at 0.076. This also supports our first hypothesis, i.e. that there is a relationship between goodwill impairment and earnings management, mainly in the form of big bath. We also observe that GW_Decision and Size have a positive correlation at 0.099. However, as we expected, GW_decision has a negative correlation with ΔindROA, ΔCFO and ΔSALES at -0.049, -0.146 and -0.062 respectively, due to the fact that management are motivated to report even lower earnings level when the firm's performance is below the expected level. The second hypothesis (H2a) is also supported by a strong positive correlation (0.094) of GW_decision and Law variables.

Table 8: Descriptive statistics and correlations

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
1. GW_decision	1											
2. Bigbath	**0.076**	1										
3. Smooth	0.017	**-0.316**	1									
4. Law	**0.094**	**0.075**	0.005	1								
5. Bigbath*Law	**0.089**	**0.795**	**-0.251**	**0.324**	1							
6. Smooth*Law	0.025	**-0.233**	**0.739**	**0.370**	**-0.186**	1						
7. GW	**0.067**	**-0.083**	-0.0134	**0.251**	-0.033	0.051*	1					
8. ΔGDP	0.008	0.0233	-0.010	**0.749**	**0.192**	**0.262**	**0.270**	1				
9. ΔIndROA	-0.049*	**-0.099**	**0.090**	-0.053*	**-0.115**	0.062*	0.036	-0.016	1			
10. Size	**0.099**	**-0.108**	-0.056*	**0.175**	-0.031	0.034	0.010	**0.210**	**-0.079**	1		
11. ΔRevenues	**-0.146**	**-0.136**	**0.110**	**0.072**	**-0.093**	**0.103**	-0.003	**0.089**	**0.109**	**-0.081**	1	
12. ΔCFO	-0.062*	**-0.159**	**0.182**	0.035	**-0.138**	**0.168**	0.006	0.037	**0.068**	0.002	**0.228**	1
Mean	0.107	0.192	0.296	1.110	0.238	0.331	0.150	1.616	0.002	6.295	0.062	0.006
Standard dev.	0.309	0.394	0.457	0.853	0.614	0.689	0.167	1.190	0.005	1.867	0.211	0.079
Minimum	0	0	0	0	0	0	0	-0.291	-0.021	1.966	-1.230	-0.468
Maxium	1	1	1	2.038	2.038	2.038	0.954	4.522	0.013	11.178	1.203	0.560
Skewness	2.542	1.567	0.893	0.097	2.485	1.957	1.446	0.738	-1.828	0.085	0.687	0.034
Kurtosis	7.461	3.456	1.797	1.031	7.332	4.997	4.802	3.266	10.126	2.605	14.977	15.764
N	1,644	1,644	1,644	1,644	1,644	1,644	1,644	1,644	1,644	1,644	1,644	1,644

Bold number significant at **0.01** level

* Significant at 0.05 level

4.2 Regression results

4.2.1 Is goodwill impairment used as a tool for earnings management?

Our first multivariate model is designed to identify the relationship between the likelihood of goodwill impairment being recognized (GW_decision) and earnings management being performed (Bigbath and Smooth). Five alternative multivariate models are conducted. The first model, Model 1a, includes only test variables on the regression's right side with fixed effects on year, industry and country. The Model 1b is conducted without any fixed effect. In Model 1c we add the year effect, whilst other variables remain the same. In Model 1d both year and industry effects are included. Finally, in Model 1e all three fixed effects are included, specifically the year, industry and country effects.

Table 9 illustrates the results from the above-mentioned multivariate models, which contain all the firm-year observations from the four interested countries with reported goodwill on their balance sheet.

Model 1a's results show that, while Bigbath is strongly and positively correlated to GW_decision, Smooth's significance is not evidenced when no effects from other variables are included. The test carried out by the second model (Model 1b) shows that the coefficient on the two proxies of income decreasing-incentives for earnings management (Bigbath and Smooth) are significantly positive at 1% level. This indicates that the likelihood of recognizing goodwill impairment increases when earnings levels are unexpectedly low (big bath) or unexpectedly high (income smoothing). These findings suggest that companies strategically use goodwill impairments as a tool for earnings management, mainly in the form of income smoothing and big bath, which is in consistency with our first hypothesis and Van de Poel et al.'s study (2008).

Models 1c, 1d, and 1e's results also indicate that Bigbath and Smooth are significantly positive. However, while the Models 1b, 1c, and 1d still maintain the significant levels of these variables' coefficients (1% level), Model 1e shows a slight decrease in the significant level of Smooth coefficient (5% level). This implies that adding the fixed effect for year, country and industry does not considerably influence the results of our model which is consistent with

Hassine and Jilani (2017) and Van de Poel et al.'s (2008) studies. However, some other previous studies such as the one conducted by Steiheim and Madsen (2016) only find evidence to support the positive relationship between goodwill impairment losses and earnings management in the form of big bath.

Moreover, our results show that the size and the goodwill variables have a positive effect on the likelihood of goodwill impairment at 1% level. In fact, the larger the companies are, the likelier it is for these to report goodwill impairments compared to smaller companies. Furthermore, the firms with a higher amount of reported goodwill are likely to take goodwill impairments. Again all these results are consistent with the study conducted by Van de Poel et al. (2008).

Companies are likely to perform big bath practices when their performance drops considerably. In line with our expectation, the likelihood of taking goodwill impairments increases when the companies' revenues decline. This is supported by the coefficients of our multivariate models (1b, 1c,1d, and 1e) which are significant at 1% level. However, the lack of significance of ΔIndROA and ΔCFO in our study does not support the assertion of negative relationships between industry performance (ΔIndROA), firm performance (ΔCFO) and the decision to take goodwill impairment (GW_decision), as found by Van de Poel et al. (2008).

In conclusion, our first hypothesis is supported by empirical data. This implies that the companies are likely to use the goodwill impairment as a tool for earnings management.

Table 9: Regression analysis: Goodwill impairment decisions and Earnings management

Variables	Model 1a	Model 1b	Model 1c	Model 1d	Model 1e
Bigbath	0.053***	0.073***	0.073***	0.072***	0.060***
	(2.65)	(3.53)	(3.54)	(3.50)	(2.91)
Smooth	0.027	0.050***	0.050***	0.048***	0.044**
	(1.58)	(2.87)	(2.87)	(2.77)	(2.56)
GW		0.139***	0.143***	0.178***	0.191***
		(3.10)	(3.19)	(3.83)	(3.92)
ΔIndROA		-1.597	-1.719	0.745	0.803
		(-1.07)	(-1.15)	(0.43)	(0.47)
Size		0.017***	0.017***	0.013***	0.016***
		(4.07)	(4.08)	(2.94)	(3.57)
ΔRevenues		-0.182***	-0.182***	-0.166***	-0.173***
		(-4.93)	(-4.91)	(-4.45)	(-4.65)
ΔCFO		-0.123	-0.118	-0.108	-0.113
		(-1.25)	(-1.19)	(-1.09)	(-1.15)
Constant	0.225***	-0.032	-0.006	0.147***	0.101**
	(5.52)	(-1.06)	(-0.18)	(3.15)	(1.96)
Year	Yes	No	Yes	Yes	Yes
Industry	Yes	No	No	Yes	Yes
Country	Yes	No	No	No	Yes
N	1,642	1,644	1,644	1,642	1,642
F	5.22	10.930	8.1	6.13	6.92
Adj. R^2	0.049	0.041	0.041	0.053	0.07

*p<0.10, **p<0.05, ***p<0.01 (2-tailed)

(t-statistics in parentheses)

As discussed in the above section, the regressions illustrated in Table 9 concern the relationship between the earnings management incentives and goodwill impairment decisions.

To be able to analyze how the goodwill impairment's magnitude is influenced by earnings management, we perform the same regression models using a new dependent variable, GWI/(GW+GWI), which is defined as the ratio of goodwill impairment scaled by the sum of closing balance of goodwill and impairment losses.

Our results are summarized in table 10 and they are reinforcing our findings related to our first hypothesis, i.e. earnings-decreasing incentives for earning management are correlated to goodwill impairment. Similar to our findings presented in table 9, the coefficients of Bigbath and Smooth are positive and highly significant at 1% and 5% levels, respectively. This suggests that firms with an unexpected low-income level (Bigbath) and those with an unexpected high-income level (Smooth) tend to recognize larger goodwill impairments. Moreover, the explaining power (adjusted R squared = 0.052) of this regression with fix effects is lower than that of the initial regression (adjusted R squared = 0.072). It implies that goodwill impairment dummy might be a better measure of the dependent variable than goodwill impairment magnitude variable.

The negative significant coefficient at 1% level of ΔRevenues presented in table 10 also confirms that companies with unfavorable sale performance (ΔRevenues) tend to recognize larger amounts of goodwill impairments. On top of that, the significant positive coefficients of goodwill balance imply that companies with larger goodwill reported, impair greater amounts of goodwill than the ones with lower goodwill balance.

Table 10: GWI/(GW+GWI) and Earnings management

Variables	Model 1a	Model 1b	Model 1c	Model 1d
Bigbath	0.0132***	0.013***	0.013***	0.012***
	(2.86)	(2.87)	(2.94)	(2.66)
Smooth	0.009**	0.009**	0.009**	0.008**
	(2.28)	(2.29)	(2.22)	(2.12)
GW	0.022**	0.023**	0.030***	0.036***
	(2.22)	(2.33)	(2.87)	(3.27)
ΔIndROA	-0.769**	-0.769**	-0.382	-0.362
	(-2.3)	(-2.29)	(-0.98)	(-0.94)
Size	0.0017*	0.002*	0.001	0.002**
	(1.83)	(1.86)	(1.35)	(2.17)
ΔRevenues	-0.036***	-0.036***	-0.033***	-0.033***
	(-4.33)	(-4.34)	(-3.93)	(-3.96)
ΔCFO	-0.034	-0.032	-0.031	-0.031
	(-1.53)	(-1.46)	(-1.42)	(-1.43)
Constant	0.001	0.007	0.037***	0.027**
	(0.08)	(0.9)	(3.62)	(2.32)
Year	No	Yes	Yes	Yes
Industry	No	No	Yes	Yes
Country	No	No	No	Yes
N	1,642	1,642	1,640	1,640
F	6.03	6.13	5.11	5.28
Adj. R^2	0.03	0.030	0.054	0.052

*p<0.10, **p<0.05, ***p<0.01 (2-tailed)

(t-statistics in parentheses)

4.2.2 Does the quality of the legal system positively affect goodwill impairment decisions?

To test the H2a and H2b hypotheses, we proceed with adding four additional variables to our models: Law, ΔGDP, Bigbath*law, Smooth*law. The last two variables represent the interaction between the law system and big bath, and income smoothing, respectively.

Our first model (Model 2a) is conducted exclusively with law system-related variables. Its results show that when there are no effects from other economic factors, the law system itself does not affect the decision of recognizing a goodwill impairment. However, when adding the firm's performance, countries' performance and the other control variables, the Models 2b, 2c and 2d show positive and strong significant Law coefficients, suggesting that the quality of the judicial system is positively correlated to the likelihood of recognizing goodwill impairments. All of these findings are consistent with the conclusion of Van de Poel et al. (2008) that companies in a high-quality legal system are more conservative and are likely to recognize goodwill impairments.

In a similar way, we now replace the goodwill dummy variable (GW_decision) with the GWI/(GW+GWI) variable in order to examine the influence of the law system on the size of goodwill impairment. As previously mentioned, this variable is defined as the ratio of goodwill impairment scaled by the sum of closing balance of goodwill and impairment losses. The results are presented in table 12. The regression models 2a, 2b and 2c show that the Law' s coefficients are positive and highly associated with the size of the goodwill impairment. This implies that the law system does not only influence the decision of recognizing goodwill impairments, but it also affects its magnitude. Therefore, it seems that the stronger the law system is, the bigger the size of goodwill impairment is. This affirmation is consistent with the results of Bushman and Piotroski's (2006) study which suggest that firms in high-quality judicial systems tend to be more conservative.

In conclusion, our second hypothesis is supported by empirical data. This implies that the quality of the judicial system is likely to have a positive impact on goodwill impairment decisions and magnitude.

Table 11: Regression analysis: Goodwill impairment decisions and Law System

Variables	Model 2a	Model 2b	Model 2c	Model 2d
Bigbath		0.073**	0.073**	0.065*
		(2.12)	(2.11)	(1.89)
Smooth		0.078***	0.077***	0.070**
		(2.78)	(2.75)	(2.51)
Law	0.022	0.075***	0.077***	0.069***
	(0.14)	(4.61)	(4.55)	(3.94)
Bigbath*Law	0.025*	-0.010	-0.010	-0.003
	(1.82)	(-0.41)	(-0.4)	(-0.13)
Smooth*Law	0.004	-0.029	-0.029	-0.024
	(0.36)	(-1.46)	(-1.42)	(-1.17)
GW		0.126***	0.129***	0.163***
		(2.68)	(2.73)	(3.33)
ΔGDP		-0.040***	-0.043***	-0.040***
		(-4.18)	(-4.04)	(-3.72)
ΔIndROA		-1.153	-1.064	0.797
		(-0.77)	(-0.71)	(0.46)
Size		0.017***	0.017***	0.013***
		(4.01)	(4.03)	(2.98)
ΔRevenues		-0.184***	-0.186***	-0.171***
		(-4.98)	(-5.03)	(-4.6)
ΔCFO		-0.125	-0.118	-0.106
		(-1.28)	(-1.2)	(-1.08)
Constant	0.213***	-0.046	-0.039	0.093*
	(4.24)	(-1.49)	(-1.16)	(1.92)
Year	Yes	No	Yes	Yes
Industry	Yes	No	No	Yes
N	1,642	1,640	1,644	1,642
F	5.43	4.11	7.41	5.96
Adj. R^2	3.65	0.043	0.041	0.062

*p<0.10, **p<0.05, ***p<0.01 (2-tailed)

(t-statistics in parentheses)

Table 12: GWI/(GW+GWI) and Law system

Variables	Model 2a	Model 2b	Model 2c
Bigbath	0.010	0.010	0.009
	(1.39)	(1.38)	(1.2)
Smooth	0.012**	0.012**	0.010*
	(2.01)	(1.97)	(1.7)
Law	0.010***	0.010***	0.006*
	(2.73)	(2.71)	(1.79)
Bigbath*Law	0.001	0.001	0.003
	(0.19)	(0.21)	(0.58)
Smooth*Law	-0.003	-0.003	-0.002
	(-0.87)	(-0.81)	(-0.48)
GW	0.0225**	0.023**	0.032***
	(2.13)	(2.24)	(2.96)
ΔGDP	-0.006***	-0.007***	-0.006***
	(-3.04)	(-2.98)	(-2.71)
ΔIndROA	-0.703**	-0.667**	-0.365
	(-2.1)	(-1.98)	(-0.94)
Size	0.0018**	0.001**	0.001*
	(1.96)	(2.00)	(1.69)
ΔRevenues	-0.035***	-0.035***	-0.032***
	(-4.27)	(-4.32)	(-3.86)
ΔCFO	-0.033	-0.031	-0.030
	(-1.51)	(-1.43)	(-1.37)
Constant	-0.000	0.002	0.032***
	(-0.11)	(0.29)	(2.97)
Year	No	Yes	Yes
Industry	No	No	Yes
N	1,642	1,642	1,642
F	6.03	5.18	5.18
Adj. R2	0.0326	0.034	0.034

*p<0.10, **p<0.05, ***p<0.01 (2-tailed)

(t-statistics in parentheses)

4.2.3 Does the quality of the law system influence the increase in the likelihood of reporting goodwill impairment, considering the rise in earnings management incentives?

To answer this question, we conduct the same binary regression models that we use in testing the previous two hypotheses. The negative coefficients of Bigbath*law and of Smooth*law variables, that are shown in table 11, are consistent with our third hypothesis (i.e. when earnings management incentives increase, the likelihood of recognizing goodwill impairment will increase less for firms domiciled in countries with strong legal systems than for firms domiciled in countries with weak law systems). However, since these coefficients are not significant, our hypothesis cannot be proven.

For the purpose of testing the robustness, we replace the continuous Law variable, with a dummy variable and we proceed with conducting the same regression models using this new variable. The dummy variable takes the value of "1" for the countries that are considered to have a strong legal system and the value of "0" for the countries that are considered to have a weak one. In other words, the Law variable for all the firms domiciled in Norway and Sweden take the value of "1", whilst all of those domiciled in Italy and Greece have a Law variable value of "0".

We run our models with the new Law variable, and our findings, shown in table 13, reinforce the assertation made above that our third hypothesis (H2b) cannot be proven. In particular, the negative coefficients of Bigbath*law and of Smooth*law are also insignificant in this case. A cause for this could be the fact that our research focuses only on 4 European countries that might have some similarities among them, for instance, stakeholder orientation and similar law codes (Van De Poel et al., 2008). Therefore, the differences in litigation costs provoked by the difference in the strength of the legal systems could be too trivial to lead to considerable differences in earnings management.

Table 13: Regression analysis: Goodwill impairment decisions and Law dummy

Variables	Model 2a	Model 2b	Model 2c
Bigbath	0.073**	0.073**	0.064*
	(2.12)	(2.11)	(1.88)
Smooth	0.078***	0.077***	0.070**
	(2.78)	(2.75)	(2.49)
Law	0.075***	0.077***	0.115***
	(4.61)	(4.55)	(3.93)
Bigbath*Law	-0.01	-0.01	-0.002
	(-0.41)	(-0.4)	(-0.10)
Smooth*Law	-0.029	-0.029	-0.023
	(-1.46)	(-1.42)	(-1.15)
GW	0.126***	0.129***	0.164***
	(2.68)	(2.73)	(3.36)
ΔGDP	-0.040***	-0.043***	-0.039***
	(-4.18)	(-4.04)	(-3.68)
ΔIndROA	-1.153	-1.063	0.76
	(-0.77)	(-0.71)	(0.44)
Size	0.017***	0.017***	0.013***
	(4.01)	(4.03)	(2.97)
ΔRevenues	-0.184***	-0.186***	-0.171***
	(-4.98)	(-5.03)	(-4.58)
ΔCFO	-0.125	-0.118	-0.107
	(-1.28)	(-1.2)	(-1.09)
Constant	-0.046	-0.039	0.117**
	(-1.49)	(-1.16)	(2.48)
Year	No	Yes	Yes
Industry	No	No	Yes
N	1,644	1,644	1,642
F	9.44	7.61	5.95
Adj. R^2	0.054	0.053	0.062

*p<0.10, **p<0.05, ***p<0.01 (2-tailed)

(t-statistics in parentheses)

5. Conclusion

This chapter presents the findings, the implication, the critical assessment and our recommendations for further research.

This study is conducted in order to investigate the impact that the quality of a national legal system has on accounting/business decisions and to better understand the management's opportunistic behaviors. In particular, the main purpose of this study is to examine whether the national legal system affects goodwill impairment decisions. We also aim to investigate if the goodwill impairment is used as a tool for earnings management.

The results of our analysis indicate that goodwill impairment can be used as a tool for earnings management, mainly in the form of big bath and income smoothing. More specifically, companies with unexpected low income (big bath accounting) and unexpected high income (income smoothing) tend to recognize more frequently goodwill impairments. Furthermore, the goodwill magnitude model indicates that firms tend to impair a higher amount of goodwill when earnings management incentives are high. Thus, H1 is accepted. Moreover, our findings suggest that there is a positive relationship between the strength of the law system and goodwill impairment decisions and hence, H2a is supported. However, we could not find any evidence suggesting that when earnings management incentives increase, the likelihood of recognizing goodwill impairments increases less for the firms in countries with a high-quality judicial system than for those in countries with a low-quality judicial system, therefore, our H2b is not accepted.

Although the goodwill impairment is not an accounting item that attracts enough attention from investors and financial analysts, it is in fact used as a tool for earnings management and hence, internal and external financial users should consider this post carefully when making their decisions. As our findings suggest, the law system plays an important role in the decision process of recording goodwill impairments and therefore, this should as well be taken into consideration when assessing the financial reports.

Our findings enrich the existing accounting literature in three different aspects. First, we reveal the opportunistic behaviors of the management in order to manipulate earnings, as well as testing the discretionary application of goodwill impairment losses under IFRS. Second, we analyze the significance of the judicial system's magnitude on recording goodwill impairment losses, adding value to the limited existing literature on this topic. Finally, compared to other studies, our paper focuses on four different countries not previously analyzed together in this context. This provides a greater understanding of management's opportunistic behaviors in this specific geographically context.

The level of subjectivity in our paper is considered to be low as all the data is collected from trustful publicly available sources including the hand-collected data from annual reports. We follow the empirical model produced by Van de Poel, Maijoor and Vanstraelen (2008) that is considered to be highly reliable. There might be some insignificant limitations in our implementation of the model. We use size as a control variable, however it is possible to adopt other measurements for the size, such as the market capital, which may influence the results and provide a better explanatory power for the model. Furthermore, as previously described, our sample includes both active and dead firms, during the four-year period, although our sample contains mostly surviving companies. Thus, the study might be exposed to surviving bias. In addition, the data analyzed for the period from 2014 to 2017 may be influenced by extraordinary factors that might affect goodwill impairments; for instance, the drop in oil prices from 2014 might lead companies operating in the oil and gas industry to recognize larger and more frequent goodwill impairments. Overall, we consider that our research is reliable and that our results are trustworthy.

Our research focuses only on four European countries that might have some similar characteristics of institutional setting as explained in chapter 4 and therefore, we suggest that further research should expand their sample to various countries from different continents, in order to better capture the significant differences in their judicial systems and consequently, to be able to test this interaction in greater detail. Moreover, survival bias and any extraordinary factors captured in a specific period might be neutralized in future studies by extending the time framework analyzed.

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Appendix

Table 3: Collinearity statistics - Earnings management

Model 1		
Variables	**VIF**	**Tolerance**
Bigbath	1.18	0.846
ΔGDP	1.16	0.864
Smooth	1.15	0.870
ΔRevenues	1.1	0.910
GW	1.1	0.910
Size	1.1	0.912
ΔCFO	1.09	0.915
ΔIndROA	1.03	0.970

Table 4: Collinearity statistics - Law System

Model 2		
Variables	**VIF**	**Tolerance**
Bigbath*Law	3.81	0.263
Smooth*Law	3.54	0.283
Law	3.52	0.284
Bigbath	3.36	0.298
Smooth	2.99	0.334
ΔGDP	2.38	0.420
GW	1.12	0.893
ΔRevenues	1.1	0.908
Size	1.1	0.910
ΔCFO	1.1	0.912
ΔIndROA	1.04	0.965

Table 6: Impairment sample (n= 172)

Variables	Mean	Median	Std Dev.	Min	Max	Skewness	Kurtosis
GWI_GW	0.149	0.094	0.159	0	0.800	1.637	5.897
Bigbath	0.279	0	0.450	0	1	0.985	1.970
Smooth	0.314	0	0.465	0	1	0.802	1.643
Law	1.327	1.992	0.841	0.084	2.038	-0.413	1.192
Bigbath*Law	0.393	0.000	0.767	0	2.038	1.614	3.677
Smooth*Law	0.366	0.000	0.721	0	2.038	1.784	4.334
GW	0.186	0.121	0.199	0	0.954	1.638	5.728
ΔGDP	1.644	1.919	1.065	-0.291	4.522	0.617	3.655
ΔIndROA	0.001	0.002	0.007	-0.021	0.013	-1.762	6.887
Size	6.798	6.602	1.932	3.071	11.178	0.302	2.615
ΔRevenues	-0.028	-0.007	0.209	-1.230	0.551	-2.288	14.969
ΔCFO	-0.008	-0.003	0.063	-0.292	0.234	-0.666	8.330

Table 7: Non-impairment sample (n=1472)

Variables	Mean	Median	Std Dev.	Min	Max	Skewness	Kurtosis
Bigbath	0.181	0	0.385	0	1	1.654	3.735
Smooth	0.294	0	0.456	0	1	0.903	1.816
Law	1.085	0.377	0.851	0.084	2.038	0.156	1.046
Bigbath*Law	0.220	0.000	0.592	0	2.038	2.637	8.130
Smooth*Law	0.327	0.000	0.686	0	2.038	1.979	5.085
GW	0.146	0.080	0.163	0	0.791	1.368	4.285
ΔGDP	1.613	1.502	1.204	-0.291	4.522	0.748	3.225
ΔIndROA	0.002	0.002	0.005	-0.021	0.013	-1.775	10.547
Size	6.237	6.208	1.851	1.966	11.178	0.047	2.552
ΔRevenues	0.072	0.046	0.209	-1.230	1.203	1.066	14.886
ΔCFO	0.008	0.006	0.081	-0.468	0.560	0.048	15.919