THREE ESSAYS ON GOODWILL IMPAIRMENT DISCLOSURE

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Ionela ANDREICOVICI

JURY

Anne JENY	Supervisor	Professor, ESSEC Business School (Cergy, France)
Daphne LUI	Supervisor	Associate Professor, ESSEC Business School (Singapore, Singapore)
Paul ANDRÉ	Referee	Professor, HEC Lausanne (Lausanne, Switzerland)
Michel MAGNAN	Referee	Professor, John Molson School of Business, Concordia University (Montréal, Canada)
Olivier RAMOND	President	Chair, Université Dauphine (Paris, France)
Andrei FILIP	Examiner	Professor, ESSEC Business School (Cergy, France)

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Abstract

This dissertation is composed of three distinct studies that empirically examine the role of the information disclosed on goodwill impairment for key firm stakeholders (i.e., financial analysts, peer firms, and external auditors).

In the first study, I examine the effect of disclosure transparency on disagreement among analysts, and disagreement between analysts and managers, in the context of goodwill impairment. Drawing on a sample of European companies during 2006-2014, I construct a unique dataset on the transparency of goodwill impairment disclosure and develop two measures of disagreement using textual analysis of analysts' reports to extract analysts' opinions about firms' impairment actions. I show that the level of disclosure transparency is negatively associated with both disagreement among analysts, a proxy for information uncertainty, and disagreement between analysts and managers, a proxy for information asymmetry. Further, I find that only cash-flow-related, but not discount-rate-related, disclosure transparency is significantly associated with both metrics of disagreement, suggesting that disclosure transparency is more relevant when the verifiability of the underlying information is low. This chapter contributes to the debate about accounting for goodwill and its related disclosure. It also brings important empirical insights into how textual information in analysts' reports can be quantified and used to construct new measures of disagreements among economic agents.

The second study examines whether the reporting of significant goodwill impairment by a firm (impairment firm) affects the corporate investment behavior of other firms in the same industry (peer firms). Employing a difference-in-differences design on a sample of European acquirers over the period 2002-2015, I find that in the three years after the impairment firm's reporting, acquirers' cumulative abnormal returns surrounding acquisition announcements are

higher if they are peer firms. In addition, I find that the learning effect on peers' subsequent investment decisions exists only when the impairment firms provide an external reason for goodwill impairment, as opposed to an internal reason. Further, I show that after the impairment firm's announcement, peer firms adjust their over-investments to the level predicted by their growth opportunities. In the wake of standard setters' plans to revise the rules for goodwill and goodwill impairment, these results provide important empirical insights into how goodwill impairment signals valuable information that extends beyond the boundaries of the firm.

The third study investigates the impact of the expanded audit report disclosure on firms' financial disclosure decisions. Specifically, I examine whether firms adjust the levels of disclosure on goodwill impairment when auditors flag goodwill impairment as a risk of material misstatements in the expanded audit report. Drawing on a sample of U.K. premium listed companies with goodwill on their balance sheets over the period 2013-2017, I construct a unique dataset measuring the levels of goodwill impairment disclosure. I find that managers increase the levels of disclosure on goodwill impairment when auditors include this accounting event as a risk of material misstatements in their reports. The increase is stronger when goodwill amount is material and when the associated audit risk is disclosed for the first time. I further find that firms respond to market assessment of goodwill impairment in a timelier fashion when auditors include goodwill impairment as an audit risk. This study contributes to the debate about the usefulness of the expanded audit report by identifying the mechanism through which expanded audit report impacts financial reporting and corporate decisions.

Table of Contents

Chapter 1 13
1.1 General overview and structure of the dissertation 14
1.2. Motivation 16
1.3. Overview of the three chapters 20
Chapter 2 25
2.1. Introduction 26
2.2. Theoretical background and hypotheses development 30
  2.2.1. International Accounting Standard (IAS) 36 – Impairment of Assets 30
  2.2.2. The economic consequences of disclosure 32
  2.2.3. Text in analysts’ reports 33
  2.2.4. Consequences of goodwill impairment reporting 35
  2.2.5. Hypotheses development 36
2.3. Sample and Research Design 38
  2.3.1. Sample description 38
  2.3.2. Measurement of variables 40
  2.3.3. Regression models 43
2.4. Empirical results 45
  2.4.1. Univariate results 45
  2.4.2. Multivariate results 46
2.5. Robustness tests 48
2.6. Conclusions 51
Chapter 3 69
3.1. Introduction 70
3.2. Related literature and hypothesis development 76
  3.2.1. Usefulness of Peer Firm Information 76
  3.2.2. Consequences of goodwill impairment recognition 78
  3.2.3. Hypotheses development 80
3.3. Data and Sample selection 83
  3.3.1. Identification of significant goodwill impairments 83
  3.3.2. Research Design 85

3.3.3. Sample construction: Peers and control group firms 87
3.4. Empirical results 89
3.4.1. Univariate results 89
3.4.2. Multivariate results 91
3.4.3. Extensions 93
3.5. Robustness tests 95
3.5.1. Identification of significant goodwill impairments 96
3.5.2. Variables measurement: Post-announcement period definition 96
3.5.3. Variables measurement: CAR window 97
3.5.4. Excluding the United Kingdom, France and Germany 97
3.5.5. Deal size 98
3.5.6. Falsification tests 98
3.5.7. Propensity score matched sample 99
3.6. Addressing alternative explanations 100
3.6.1. Learning by doing as an alternative explanation 100
3.6.2. Other macroeconomic effects as an alternative explanation 101
3.7. Conclusion 101
Chapter 4 126
4.1. Introduction 127
4.2. Background and related literature 133
4.2.1. Changes in the auditing reporting regimes 133
4.2.2. Economic consequences of expanded audit 134
4.2.3. Audit and financial reporting 136
4.2.4. Hypotheses development 137
4.3. Sample and research design 140
4.3.1. Sample description 140
4.3.2. Measurement of goodwill impairment disclosure levels 140
4.3.3. Regression models 141
4.4. Empirical results 142
4.4.1. Univariate results 142
4.4.2. Multivariate results 143
4.5. Additional analyses 145
4.5.1. Goodwill impairment timeliness 145

4.5.2. Goodwill impairment disclosure transparency and goodwill impairment disclosure complexity 147
4.5.3. The role of the audit committee 149
4.6. Conclusion 150
Chapter 5 165
5.1. Conclusion and limitations 166
References 169

List of appendices

Appendix 2-1: Examples of Analysts' Interpretation of Goodwill Impairment Losses 53
Appendix 2-2: Items Composing the Impairment-Testing Disclosure Score 56
Appendix 2-3: Procedures in Coding Disagreement Metrics 57
Appendix 2-4: Variable Definition 58
Appendix 3-1: Variable definition 104
Appendix 4-1: Example of goodwill impairment mentions in expanded audit reports 152
Appendix 4-2: Variable definition 154

List of tables

Table 2-1: Goodwill impairment sample 60
Table 2-2: Descriptive statistics 62
Table 2-3: The effect of disclosure transparency on disagreement among analysts 64
Table 2-4: The effect of disclosure transparency on disagreement between analysts and managers 65
Table 2-5: The effect of disclosure complexity on analyst-analyst disagreement and on analyst-manager disagreement 66
Table 2-6: The effect of disclosure transparency relating to goodwill impairment on alternative measures of the disagreement metrics 67
Table 2-7: The effect of disclosure transparency relating to goodwill impairment on analyst-analyst disagreement and on analyst-manager disagreement, excluding the year 2008 68
Table 3-1: Identification of the significant goodwill impairments (Impairment firms) 106
Table 3-2: Peers and control group firms 110
Table 3-3: Descriptive statistics 114
Table 3-4: Market reaction around M&A deals 117
Table 3-5: Market reaction around M&A deals based on the reasons for goodwill impairment 118
Table 3-6: Deviation from the expected investment level 119
Table 3-7: Deviation from the expected investment level 120
Table 3-8: Robustness tests 121
Table 3-9: Falsification tests shifting the timing of the announcement of significant goodwill impairment 122
Table 3-10: Market reaction around M&A deals based on a matched sample 123
Table 3-11: Learning by doing 123
Table 3-12: Other macroeconomic effects 125
Table 4-1: Sample construction 156
Table 4-2: Descriptive statistics 157
Table 4-3: Manager’s response to the identification of goodwill impairment as an audit risk .. 159
Table 4-4: The role of goodwill materiality on manager’s response to the identification of goodwill impairment as an audit risk 160
Table 4-5: The role of first-time mention of goodwill impairment as an audit risk on manager’s response 161
Table 4-6: Goodwill impairment timeliness 162
Table 4-7: Disclosure transparency (disclosure readability) and audit risk disclosure 163
Table 4-8: Manager’s response to the identification of goodwill impairment as a business risk by both the auditor and the audit committee 164

Chapter 1

General introduction

1.1. General overview and structure of the dissertation

The central theme of this PhD thesis is the role of the information disclosed on goodwill impairment for key firm stakeholders (i.e., financial analysts, peer firms, and external auditors). Information on goodwill impairment is of particular relevance since it allows capital market participants to gain a deeper understanding of managers' private information about the firm's future earnings prospects (Ramanna and Watts, 2011), is a key component of the financial reporting process, and constitutes the subject of debates among standard setters and practitioners (Ayres, Campbell, Chyz, and Shipman, 2018). The accounting treatment of goodwill subsequent to its initial measurement (i.e., goodwill impairment) is a highly controversial reporting regulation, due to the complexity of goodwill impairment as an accounting estimate over which managers employ extensive discretion. It therefore has become a topic of debate among academics, practitioners, and standard setters, with some holding a view that the accounting treatment should be reverted to regular amortization.[1] Finally, it is also economically meaningful to study this topic in accounting research, since this accounting estimate ranks among the most substantial asset write-offs, gaining increased visibility in recent years (Francis, Hanna, and Vincent, 1996). [2]

In the current thesis, I am making three specific inquiries. First, I assess if and how transparency in goodwill impairment disclosures affects financial analysts' interpretation of goodwill impairment reporting in their research reports (chapter 2). Second, I explore whether the reporting of significant goodwill impairment by a given firm affects the investment behavior of other firms in the same industry (chapter 3). Third, I ask whether firms adjust the levels of disclosure on goodwill impairment when auditors flag goodwill impairment as a risk of material misstatements after the adoption of the expanded audit report (chapter 4).

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[1] For instance, The International Accounting Standards Board (IASB) has recently included a project on its agenda related to the disclosure and impairment of goodwill. See http://www.ifrs.org/projects/work-plan/goodwill-and-impairment/.

[2] In 2015 alone, constituent companies in STOXX Europe 600 reported a total of €37.1 billion of goodwill impairment. This amount represents a significant increase of 26% over the amount recorded in 2014 (Duff and Phelps, 2016).

By providing evidence based on manually-collected data on goodwill impairment reporting, this thesis contributes to the literature by advancing understanding on the causes and effects of managers' discretionary reporting choices. I start by constructing two new metrics for disagreement among analysts and between analysts and managers, through textual analysis on goodwill-impairment related discussions in analyst reports. My results show that goodwill impairment related disclosure transparency is negatively associated with both metrics of disagreement (chapter 2). I further identify that the effects of goodwill impairment extend beyond the reporting firm and that goodwill impairments can be beneficial to the capital markets. I show that after a firm reports the impairment of goodwill, firms in the same industry (peer firms) engage in better quality acquisitions (chapter 3). Finally, I look at the channel through which auditors augment managers' disclosures on goodwill impairment and find that managers increase the levels of goodwill impairment related disclosure when auditor mentions this accounting estimate in the expanded audit report as a risk of material misstatements (chapter 4). Overall, this thesis also contributes to the literature on the information content of financial statement disclosures, to the recently emerged literature on intra-industry spillovers, and to the literature on the consequences of expanded audit reports. Moreover, the results presented in this thesis have policy implications for accounting and auditing regulators.

The rest of this general introduction proceeds as follows. Section 1.2 develops the motivations of this thesis by providing an overview of the institutional background and a literature review on goodwill impairment. Section 1.3 provides an overview of the three chapters. The final Section discusses the contributions and implications of this Ph.D. thesis.

1.2. Motivation

Thirteen (seventeen) years after the IASB (FASB) replaced the previous amortization and impairment approach with an impairment-only approach, goodwill impairment has continued to receive a lot of scrutiny from regulators and academics. In line with this continuous attention, the IASB added in 2015 a research project to its agenda, "Goodwill and Impairment", considering, among others, whether initial and subsequent measurements of goodwill, and the financial disclosures on goodwill impairment are likely to meet the needs of the users of financial statements. Similarly, the FASB also reconsidered its respective standard relating to the accounting for goodwill impairment and simplified goodwill impairment tests.

The International Accounting Standard (IAS) 36 – Impairment of Assets – eliminated the practice of systematic amortization of acquired goodwill and thus goodwill becomes a subject of mandatory regular impairment testing. The standard prescribes the rules to carry out goodwill impairment tests. Specifically, at the time of acquisition, companies must allocate goodwill to each cash generating unit (CGU) that is expected to benefit from the synergies of the business combination. The goodwill impairment tests are therefore carried out at the level of these units. Subsequently, firms need to compare the carrying amount of goodwill with its recoverable amount – defined as the higher of its fair value less costs of disposal and its value in use – and report an impairment expense if the former exceeds the later. An important mention is that IAS 36 also prohibits the reversal of an impairment loss recognized for goodwill.

Although IAS 36 and Statement of Financial Accounting Standards (SFAS) 142, are relatively similar, the two standards contain slightly different requirements. While IAS 36 requires impairment tests to be conducted at the CGU level, SFAS 142 uses the reporting unit level, which means testing for impairment is carried out at a higher level. Moreover, in contrast to the one-step approach proposed by IAS 36, SFAS 142 requires a two-step approach.[3] The first step, according to SFAS 142, is to compare the fair value and the carrying amount of the reporting unit, including goodwill. If the fair value is less than the carrying amount, then the second step requires the calculation of the amount of the goodwill impairment loss. Although, from a theoretical perspective there is no clear indication which standard allows for more discretion, U.S. firms and European firms exhibit different patterns of goodwill impairment recognition (André, Filip, and Paugam, 2016). Specifically, relative to U.S. firms, European firms book more untimely goodwill write-offs. Consequently, European firms adopting the IFRS offers an interesting setting to examine the information disclosed on goodwill impairment.

Both IAS 36 and SFAS 142 are intended to provide financial statement users with a better understanding of the goodwill's underlying economic value. Goodwill impairment test is an example of management discretion in financial reporting (Beatty and Weber, 2006), as the "current fair value of goodwill is a function of management's future actions, including managers' conceptualization and implementation of firm strategy" (Ramanna and Watts, 2012). If applied neutrally, such discretion allows managers to provide their private information about the firm's future earnings prospects to market participants (Ramanna and Watts, 2012). Consistent with this view, extended empirical evidence shows that reported goodwill impairments are value relevant and are negatively impounded into prices by investors (AbuGhazaleh, Al-Hares, and Haddad, 2012; Bens, Heltzer, and Segal, 2011; Muller, Neamtiu, and Riedl, 2012). Moreover, the literature analyzing the consequences of goodwill impairment losses shows that firms reporting goodwill impairments experience downward revisions from financial analysts (Bens et al., 2011; Li, Shroff, Venkataraman, and Zhang, 2011), less accurate analyst earnings forecasts (Chen, Krishnan, and Sami, 2014), and more dispersed analyst earnings forecasts (Chen et al., 2014). Similarly, prior studies also find that the levels of disclosure on goodwill or goodwill impairment are negatively associated with analysts' forecast dispersion and forecast errors (André, Dionysiou, and Tsalavoutas, 2018; Paugam and Ramond, 2015). With respect to financial reporting consequences, prior studies find that goodwill impairment losses are negatively associated with operating cash flows, sales growth and growth in operating income in the subsequent two periods (Li et al., 2011).

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[3] The FASB has eliminated Step 2 of the goodwill impairment test. For U.S Securities and Exchange Commission filers the standard is effective for annual or any interim goodwill impairment tests in fiscal years beginning after December 15, 2019; for public companies that are not US fillers the effective date is December 15, 2020; for all other entities it is effective from fiscal years beginning after December 15, 2021

On the other hand, the discretion allowed by the impairment tests may incentivize managers to act opportunistically and alter the timing or the amount of the impairment loss recognized (Muller et al., 2012; Ramanna and Watts, 2012). In line with this view, the majority of research finds that managers use their discretion strategically and avoid or delay the recognition of goodwill impairment (Ramanna and Watts, 2012). For instance, Hayn and Hughes (2006) and Jarva (2009) show that impairments lag behind deteriorating economic performance for several years. Looking at a sample of firms reporting under IFRS, argue that the timeliness of goodwill impairment strongly depends on the strength of national accounting and auditing enforcement system (Glaum, Landsman, and Wyrwa, 2018).

Another stream of literature closely related to the current thesis includes studies on antecedents of goodwill impairment reporting. Glaum et al. (2018) present an exhaustive list of motives for goodwill impairment reporting. Their results suggest that the decision to write down goodwill balances is negatively associated with economic performance, but is also associated with measures for managerial and firm level incentives. In particular, they find that CEO tenure, income smoothing, the number of firms' operating segments, and ownership structure exhibit the highest influence on the decision to write down goodwill balances. Ramanna and Watts (2012) argue that the decision not to impair goodwill is associated with agency theory-based motives such as CEO compensation, CEO reputation, debt covenant violation but not with proxies that denote the private information managers might hold and could convey. These results are confirmed by Darrough, Guler, and Wang (2014), who finds that cash based and option based CEO compensation diminish as firms decide to recognize goodwill impairment losses in accounting books. Other determinants for the goodwill impairment decision include debt covenants, earnings-based bonus plan that does not exclude special item effects, cross listing on stock exchanges where listings are conditional on net worth amounts (Beatty and Weber, 2006), and management entrenchment (Hamberg, Paananen, and Novak, 2011). Moreover, prior literature documented that characteristics of the original acquisition are powerful predictors of eventual goodwill write offs. Finally, Filip, Jeanjean, and Paugam (2015) find that companies use real earnings management to convince their monitors that goodwill impairment is not necessary.

So far, our understanding of goodwill impairment has been greatly advanced, but given its complexity and numerous debates over the usefulness of the impairment testing model, further investigations on this topic are required (Boennen and Glaum, 2014). Recent anecdotal evidence also supports this view. For instance, the recent collapse of the British multinational company Carillion has added further concerns over the goodwill impairment testing rules. At the date of liquidation, Carillion had goodwill valued at £1.57 billion on its financial statements, representing more than a third of the company's total assets. Although the financial statement note on goodwill impairment test indicated that the annual impairment review had been performed, there was no impairment needed.

1.3. Overview of the three chapters

Chapter 2 - The Effect of Disclosure Transparency on Disagreement Among Economic Agents: The Case of Goodwill Impairment

The second chapter of this thesis investigates the effect of goodwill impairment disclosure transparency on disagreement among economic agents, using qualitative outputs from financial analysts' reports. I define disagreement among economic agents as (1) disagreement among analysts and (2) disagreement between analysts and managers. Financial analysts, relative to managers or other insiders, are not aware *a priori* about the distribution of firms' future cash flows and earnings. This asymmetry is due to firm insiders being in possession of private information regarding the parameters used in goodwill impairment tests (Muller et al., 2012). Under this scenario, more transparent disclosure on goodwill impairment tests mitigates the information asymmetry and agency conflicts between firm managers and other stakeholders. Relying on a sample of European non-financial firms that apply IFRS in consolidated financial statements and that report material goodwill impairment for fiscal years 2006 through 2014, I construct a unique dataset on the transparency of goodwill impairment disclosures. Further, using textual analysis of analysts' reports to extract opinions about firms' impairment actions, I develop two measures of disagreement.

My results indicate that the level of disclosure transparency on goodwill impairment is negatively associated with both (1) disagreement among analysts and (2) disagreement between analysts and managers. The results suggest that goodwill impairment information is crucial for analyst opinion formation regarding firms' impairment actions. The results are robust to an alternative measure of disclosure transparency and excluding financial crisis period from the sample. Further, I use the fact that goodwill impairment tests require inputs about both (i) future cash-flow projections and (ii) the choice of discount rates and I examine whether the tests are associated with the disagreement metrics. I find that only cash-flow-related, but not discount-rate-related, disclosure transparency is significantly and negatively associated with both metrics of disagreement. Results suggest that that disclosure transparency is more relevant when the external verifiability of the underlying information is low.

Chapter 3 - Learning from Peers? The Spillover Effect of Goodwill Impairment on Peer Firms' Investment Behavior

The third chapter examines whether market participants may perceive goodwill impairments as beneficial. In particular, I look at whether the reporting of significant goodwill impairment by a given firm (the impairment firm) affects the investment behavior of other firms in the same industry (peer firms). I contend that goodwill impairment reporting can be a source of news communicating information regarding the overpayment at acquisition or the misevaluation of expected synergies. This information is transferred from the impairment firm to peer firms because goodwill impairment announcements contain state-of-the-world information. I use the announcements of significant goodwill impairments as shocks that are likely to change the quality of peer firms' subsequent corporate acquisition decisions. Drawing on a sample of

European acquirers over the period 2002-2015, I employ a difference-in-differences design and I find that the seven-day cumulative abnormal returns around acquisition announcements are significantly higher for peer firms relative to control firms in the three-year window after impairment firms' decisions, as compared to a nil difference in the preceding three-year period. The results suggest that peer firms consider impairment firms as reliable sources of information from which they learn to engage in better quality acquisitions. Further, when I take into account that reasons that triggered the reporting of significant goodwill impairment by the impairment firm, I find that the aforementioned association prevails only when the managers provide an external reason for impairment, as opposed to an internal one. These results suggest that information released by impairment firm is more relevant when the signal to noise ratio of the underlying information is high. Finally, I find that impairment firms' reporting deters peer firms' over-investment in assets but does not affect the under-investment in assets. These results are consistent with the idea that the reporting of significant goodwill impairment constraints managers to engage in value-destroying activities.

Chapter 4 - Do Managers Respond to Auditors' Red Flags?

The fourth chapter of my thesis examines whether managers' disclosure behavior adjusts in response to the adoption of the expanded audit report in the U.K. Specifically, I investigate whether managers enhance the levels of disclosure related to goodwill impairment tests when auditors mention goodwill impairment as a risk of material misstatements in the expanded audit report. Given than auditors' disclosure may trigger third party scrutiny, I posit that managers may perceive lower net costs of enhancing the degree of disclosure as behaving otherwise may be detrimental to the firm. I draw on a sample of non-financial U.K. premium listed companies on the London Stock Exchange with goodwill on their balance sheet for fiscal years 2013 through 2017 to test my contention. My empirical tests show that managers increase the levels of goodwill-impairment-related disclosure when auditors include goodwill impairment as a risk of material misstatements in their reports. The positive relationship becomes stronger when the goodwill amount is material and when auditors mention for the first-time goodwill impairment as a potential risk.

Overall, my results suggest that disclosures in the expanded audit report commit managers to provide their private information regarding the impairment of goodwill. Further, I find that when economic conditions indicate that goodwill is likely to be impaired, the probability of firms booking a goodwill impairment loss is higher if goodwill impairment is flagged in the audit risk disclosure.

1.4. Contribution and implication

This Ph.D. thesis contributes to the understanding of the determinants and consequences of managers' discretionary reporting choices, using the case of goodwill impairment reporting, by providing additional evidence on the relevance of goodwill impairment disclosure for capital market participants. First, I show that information asymmetry and uncertainty among analysts and managers are lower for firms with higher goodwill impairment disclosure transparency, suggesting that the inconsistent application of the accounting standard rules for goodwill impairment lead to disagreement in the market. Second, in contrast with previous studies that focuses on the negative consequences of a write-off on the impairment firm itself (Chen et al., 2014; Li et al., 2011), I provide evidence that goodwill impairment can be beneficial to capital market participants by signaling valuable information that extends beyond the boundaries of the firm. In doing so, it adds to the understating of how new information released by one firm affects other firms in the same industry (Foucault and Fresard, 2014; Servaes and Tamayo, 2013). Finally, the thesis contributes to the determinants of goodwill impairment disclosure, by providing evidence showing that auditors can shape the manner and nature of managerial communications.

Moreover, this PhD thesis contributes to the literature on textual analysis (e.g., Loughran and McDonald, 2016) through my focus on the text of analyst reports from chapter 2, gaining understanding on how financial analysts generate their outputs. In doing so, I provide a methodological contribution to the literature by creating two new proxies for the divergence in opinions of analysts.

This thesis contributes to the recent literature on the impact of external reporting on internal decision-making (Cheng, Cho, and Yang, 2018; Goodman, Neamtiu, Shroff, and White, 2013; Shroff, 2017), by documenting a relation between external auditors' disclosure and managers' internal decision on firm disclosure. I extend the stream of literature on the expanded audit report, that so far largely ignored its impact on firms' disclosure decisions (Lennox, Schmidt, and Thompson 2018; Smith, 2018).

Finally, this PhD thesis provides accounting and auditing policy implications. In light of standard setters' plan to revise the rules for the subsequent measurement of goodwill, I show that the application of current goodwill impairment rules – IAS 36 – results in varying degrees of disclosure transparency. However, auditors can commit managers to enhance the levels of the disclosure on goodwill impairment. By documenting evidence on the informational benefits of the expanded audit report, I also offer guidance for standard setters to improve the communicative value and relevance of the current audit report (IAASB, 2015; PCAOB, 2017;

EU law, 2014).

Chapter 2

The Effect of Disclosure Transparency on Disagreement Among Economic Agents:
The Case of Goodwill Impairment

2.1. Introduction

Corporate disclosure is crucial for the functioning of an efficient capital market (Healy and Palepu, 2001), given the need to mitigate information asymmetry and agency conflicts between firm managers and other stakeholders (Diamond and Verrecchia, 1991; Dye, 1985). Despite a large body of literature examining firms' disclosure decisions, the majority has predominantly studied the quantitative benefits of disclosure for the capital markets, such as improved market liquidity and share price (Diamond and Verrecchia, 1991), a lower cost of capital (Botosan, 1997; Dhaliwal, Li, Tsang, and Yang, 2011), an enhanced level of analysts' forecast accuracy, reduced forecast dispersion, and increased analyst following (Lang and Lundholm, 1996). However, quantitative effects alone cannot entirely explain the behavior of the capital markets (Tetlock, Saar- Tsechansky, and Macskassy, 2008). In this chapter, I examine the effect of corporate disclosure transparency on disagreement among economic agents, using qualitative outputs produced by analysts, in the context of goodwill impairments.[4] My objective is to examine how the communication of a complex accounting decision, in this case goodwill impairment, affects analysts' interpretation of a firm's action through the text of their research reports. To this end, I focus on disagreements among analysts and between analysts and managers.

Often referred to as one of the most complex accounting estimates that are subject to significant managerial discretion, goodwill impairment is gradually becoming a regular element of the financial reporting process. Although impairment charges negatively affect net income, they do not have any cash flow implications (Bradshaw and Sloan, 2002). Yet financial analysts often express their opinions about potential or actual goodwill impairments in their research reports. Considering the high level of information asymmetry relating to goodwill impairments, and analysts' explicit discussion about their timing and amount, I posit that if disclosure transparency is related to analysts' disagreement, this relationship should be more pronounced surrounding an accounting event such as goodwill impairment.

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[4] In line with Paugam and Ramond (2015) and Lobo, Paugam, Zhang, and Casta (2017), I use disclosure transparency to refer to both disclosure quality and disclosure quantity.

Both theory and prior empirical evidence suggest a negative association between disclosure transparency and disagreement among economic agents in the capital markets in the case of goodwill impairment. A crucial input to goodwill impairment test is the fair value estimates of a firm's cash generating units (CGUs), which not only depend on the manager's conceptualization and implementation of the firm's strategy but also on their subjective discounted cash-flow estimates (Ramanna and Watts, 2012). Since managers' private information is unobservable, any estimates based on such information cannot be fully verified by analysts unless managers disclose it.[5] Consequently, the disclosure transparency relating to goodwill impairment tests enables managers to convey their private information to financial analysts about both the timing and amount of goodwill impairment, thus allowing analysts to gain insights into the judgments and estimates made in the impairment recognition process (Dye, 1985). To the extent that goodwill impairment disclosure is informative, it can assist analysts and managers to reach similar opinions regarding the timing and the amount of goodwill impairment. An alternative view suggests no association between disclosure transparency and disagreement. If managers use opportunistically their discretion regarding both the timing and amount of goodwill impairment, the resulting disclosure is unlikely to be informative, as they rely on inappropriate impairment inputs (Amiraslani et al., 2013).[6] As a result, more opportunistic goodwill impairments increase the noise of the information communicated through disclosure and consequently hamper its usefulness for analysts. Therefore, disclosure about goodwill impairment tests does not affect the divergent opinions among analysts and between managers analysts and managers

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[5] Given the discretion, corporate disclosures are particularly important for different stakeholders (Cazavan-Jeny and Jeanjean, 2007), but in practice disclosure of the subjective valuation assumptions used in impairment tests varies significantly across companies and jurisdictions (Amiraslani, Iatridis, and Pope, 2013).

My sample consists of listed European nonfinancial firms that report material goodwill impairment from 2006 through 2014. I use the information disclosed in the goodwill-impairment-related notes to the financial statements to construct a disclosure transparency index (Paugam and Ramond, 2015; Lobo et al., 2017). Given that prior literature does not offer a suitable proxy to measure the divergence of beliefs about specific firm actions, I start my investigation by constructing two metrics for disagreement using textual analysis on goodwill-impairment-related discussions in analysts' reports. I identify three types of opinions – agreement opinions, disagreement opinions, and no mention opinions, and use their relative frequency to construct a metric to measure disagreement among analysts, and a metric to measure disagreement between analysts and managers, regarding the reported goodwill impairment.

I find that among firms that have impaired goodwill, disagreement in opinions among analysts and between analysts and mangers is lower for firms with higher discourse transparency. These results indicate that analysts use information from goodwill impairment disclosure to structure their opinions, but different levels of disclosure transparency affect the degree of information asymmetry and uncertainty in the capital market. My results are robust to using alternative measures for disclosure transparency and disagreement and excluding the financial crisis period from my sample. Further, I harvest the fact that goodwill impairment tests require both future cash flow projections and discount rates as inputs, but these two pieces of information differ in their external verifiability. Given that discount rates can be inferred from other disclosures by the firm or independently estimated from macroeconomic and other firm-specific information, analysts are less likely to rely on disclosure relating to discount rates to form their own opinions about both the timing and amount of a firm’s goodwill impairment. The same cannot be said for future cash flows, as managers are likely to be the only information source. Consistent with this view, I find that only the disclosure transparency relating to cash flow projections is significantly and negatively associated with both forms of disagreements.

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[6] Opportunistic use of goodwill impairment is evidenced by a stream of literature that shows the decision not to impair goodwill is associated with agency theory based motives (Li et al., 2011; Ramanna and Watts, 2012).

To date, the existing literature focuses on analysts’ forecast dispersion as a proxy for disagreement among analysts, and analysts’ forecast error as a proxy for disagreement between analysts and managers. However, these measures might not reflect the true extent of disagreement because analysts tend to herd (Welch, 2000), and their forecasts could be subject to conflicts of interest (Lin and McNichols, 1998; McNichols and O'Brien, 1997). This chapter makes methodological contributions to the current literature by creating new proxies through analyzing the text in analysts’ reports. These measures are especially useful for the understanding of the consequences of specific firm actions in the capital market.

Prior literature shows that goodwill impairment is value relevant and goodwill/goodwill-impairment-related disclosure affects the properties of analysts’ summary forecasts, such as their forecast dispersion and forecast accuracy (André, Dionysiou, and Tsalavoutas, 2017; Paugam and Ramond, 2015). Unlike these studies, I focus on the text in analysts’ reports to capture the usefulness of goodwill impairment disclosure for analysts. In doing so, this study enhances our understanding of how financial analysts generate their outputs. Further, despite substantial interest among academics and practitioners to examine financial analysts' information dissemination role (Bradshaw, 2011), the majority of the extant research focuses on their summary forecasts and recommendations. As such, my study answers the call by Ramnath, Rock, and Shane (2008), Bradshaw (2011), and Kothari, So, and Verdi (2016) to unlock the "black-box" of financial analysts' forecast activities.

I also contribute to the goodwill impairment literature by showing that the application of the current goodwill impairment rules – IAS 36 – results in varying degrees of disclosure transparency that can lead to disagreement in the market. The accounting treatment of goodwill subsequent to its initial measurement is currently subject to considerable debate by standard setters and practitioners, with some holding a view that the rule should be reverted to the systematic amortization of goodwill. My results indicate that goodwill impairment provides relevant information for the capital market, and it is the inconsistent application of the accounting standard that creates concerns about the appropriateness of impairment, as opposed to amortization, on goodwill.

The rest of the chapter is structured as follows. Section 2.2 discusses the theoretical background and related literature and develops hypotheses. Section 2.3 explains the sample selection process and presents the research design. Section 2.4 describes the main results while Section 2.5 discusses additional analyses. Finally, Section 2.6 concludes.

2.2. Theoretical background and hypotheses development

2.2.1. International Accounting Standard (IAS) 36 – Impairment of Assets

From 1 January 2005, the European Union (EU) law requires all listed companies in the EU to apply the International Financial Reporting Standards (IFRS) to their consolidated financial statements. IAS 36 on impairment of assets abolishes the systematic amortization of goodwill acquired in business combinations, and mandates goodwill to be tested for impairment at least annually or whenever there is an indication that goodwill might be impaired. The standard specifies the procedures to perform goodwill impairment tests. At the time of acquisition, goodwill must be allocated to each of the acquirer's CGUs that are expected to benefit from the synergies of the business combination. In subsequent periods, firms must compare the carrying amount of goodwill with their recoverable amount for each CGU and report an impairment expense in the profit and loss statement if the carrying amount exceeds the recoverable amount.[7] IAS 36 prohibits the reversal of an impairment loss recognized for goodwill.

The goodwill impairment regime brings a qualitative change in disclosure, as impairment data represent the dissemination of pieces of information that were not previously publicly available (Ramanna and Watts, 2012). IAS 36 requires disclosure of specific estimates and judgments involved in goodwill impairment tests. Irrespective of whether an impairment loss is recognized, firms that carry goodwill on their accounts are subject to an exhaustive disclosure requirement comprising information about the goodwill impairment test itself (i.e., the allocation of goodwill to CGUs and relevant information for the determination of the recoverable amount) and additional information if a material impairment loss is recognized during the period (i.e., events and circumstances that led to the impairment loss, disclosures of whether the recoverable amount is the value in use or the fair value less costs of disposal, disclosure of the impairment loss per segment, and a description of any changes to the aggregation of assets in the identification of the CGU). In fact, impairment information indicates the variation in managers' earnings forecasts over time, attributable to the acquired intangible assets. However, the regime allows flexibilities for managers to decide the extent of impairment-related disclosure, resulting in significant variations in the level of information voluntarily disclosed to market participants.

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[7] The recoverable amount of a CGU is defined as the higher of the CGU's fair value less costs of disposal and its value in use (VIU). The recoverable amount of goodwill is mostly determined based on its VIU (Petersen and Plenborg, 2010), which are usually calculated using the discounted cash-flow method (IAS 36).

2.2.2. The economic consequences of disclosure

There is an extensive literature on how corporate disclosure impacts the amount and variation of information in the market. At the core of this link is the insight that corporate disclosure mitigates information asymmetry and agency conflicts between managers, investors, and intermediaries (Ross, 1977). This literature, in general, has inquired into the quantitative capital market benefits of disclosure, such as market liquidity, cost of capital, and properties of analysts' forecasts.[8] In particular, firms that make more/better disclosure have improved market liquidity (Daske, Hail, Leuz, and Verdi, 2008; Heflin, Shaw, and Wild, 2005), a reduced cost of capital (Core, Hail, and Verdi, 2015; Hughes, Liu, and Liu, 2007; Lambert, Leuz, and Verrecchia, 2007), increased analyst following, and reduced dispersion and volatility in analysts' forecasts (Hope, 2003; Lang and Lundholm, 1996).

Studies that examine the impact of disclosure on analysts' forecast characteristics harvest the idea that more/better information is useful for analysts to improve their forecasts (Glaum, Baetge, Grothe, and Oberdörster, 2013; Hodgdon, Tondkar, Harless, and Adhikari, 2008; Tan, Wang, and Welker, 2011). As an important capital market intermediary, financial analysts have been extensively studied in prior literature. For instance, Lang and Lundholm (1996) and Hope (2003) show that firms with more informative disclosure policies have larger analyst following, more accurate analysts' earnings forecasts, less forecast dispersion, and lower volatility in forecast revisions. Taking a step further, Byard and Shaw (2003) differentiate between individual analysts' common and idiosyncratic information and show that higher quality disclosure increases the precision of both analysts' common and idiosyncratic information. In addition to the level of disclosure, the readability of annual reports also impacts analysts' earnings estimates. Bozanic and Thevenot (2015) find that the qualitative elements of disclosure contained in earnings press releases are informative as they affect analysts' information environment. Lehavy, Li, and Merkley (2011) show that less readable 10-K narratives are associated with increased demand for analysts' service, greater analysts' forecast dispersion, and lower analysts' forecast accuracy.

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[8] I discuss only the literature that examines the consequences of voluntary and mandatory disclosure given the focus of my study. Comprehensive reviews of the corporate disclosure literature are provided by Healy and Palepu (2001), Beyer, Cohen, Lys, and Walther (2010), and Leuz and Wysocki (2016).

Similar to this chapter, some studies have examined whether goodwill or goodwill-impairment-related disclosure affects analysts forecast properties. André et al. (2017) find that the compliance levels with the mandated disclosure requirement under IAS 36 and IAS 38 are negatively associated with analysts' forecast dispersion. Paugam and Ramond (2015) document that impairment-testing disclosure is negatively related to analysts' forecast errors. This study differs from theirs in two aspects: I cover a larger sample of goodwill impairment disclosure spanning nine years and 18 countries, and I develop two new metrics to measure disagreement among analysts and between analysts and managers regarding the reported goodwill impairment.[9]

2.2.3. Text in analysts' reports

While most literature examining analysts' information dissemination role focuses on their summary forecasts and recommendations (Bradshaw, 2011), there is a burgeoning literature on the importance of analyzing the text in analysts' research reports.[10] An early study by Previts, Bricker, Robinson, and Young (1994) shows that analysts invoke in their reports conspicuous earnings management practices through accounting methods. A follow-up paper by Bricker, Previts, Robinson, and Young (1995) finds that analysts associate high earnings quality with near-term earnings predictability.

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[9] The sample in André et al. (2017) covers only one year, whereas the sample in Paugam and Ramond (2015) is limited to a single country.

Several studies have also focused on the informativeness of narratives in analysts' reports. Asquith, Mikhail, and Au (2005), De Franco, Kothari, and Verdi (2011) and Huang, Zang, and Zheng (2014) provide evidence that analysts' text is incrementally informative to the revisions of their forecasts, recommendations, and target prices, and that the market reacts positively (negatively) to positive (negative) arguments. Twedt and Rees (2012) and De Franco, Hope, Vyas, and Zhou (2015) examine how different features of analysts' reports impact investors' reaction to contemporaneously released quantitative forecasts. They find that the tone in analysts' reports is incrementally informative beyond earnings forecasts and earnings recommendations, and capital market participants value more analysts' reports that are more readable.

More closely related to this study, some studies focus on the information content of the textual description of specific corporate events, rather than examining all text in analysts' reports. For instance, Foster (1979) examines the text related to earnings quality and find that their release conveys new information to the market. This study complements the prior literature since I focus on the information content of narratives related to a specific accounting event, namely goodwill impairment, which can influence opinion formation regarding earnings forecasts. In doing so, I show how qualitative information provided by analysts can be quantified and linked with disclosure transparency.

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[10] Loughran and McDonald (2016) provide an exhaustive literature review of the use of textual analysis in accounting and finance.

2.2.4. Consequences of goodwill impairment reporting

Goodwill impairment is an important component of the financial reporting process (Ayres, Campbell, Chyz, and Shipman, 2018), and has consumed a substantial amount of standard-setters' time and efforts in recent years (Lev, Li, and Sougiannis, 2010). As a result, the reporting of these charges has attracted much attention in the academic community to examine the value relevance of goodwill write-offs, and the consequences of their announcements (Bens et al., 2011).

Studies that examine how the market reacts to goodwill impairment decisions suggest that goodwill impairment is value relevant and its information is incorporated by investors in firm valuation. For instance, there is evidence that the market reacts negatively at the time of the revelation of goodwill impairments (Li et al., 2011; Bens et al., 2011, Knauer and Wöhrmann, 2016), while some others show that goodwill impairment, as opposed to goodwill amortization, negatively impacts the market value (Ahmed and Guler, 2007).

Goodwill impairment also affects the properties of analysts' forecasts. Prior research shows that analysts revise their expectations downward (Bens et al., 2011; Li et al., 2011), as well as forecast less accurate and more dispersed earnings, following an impairment loss announcement (Chen et al., 2014). Moreover, the presence of financial analysts compels managers to recognize goodwill impairments in a timelier manner (Ayres et al., 2018). Given that analysts value the information impounded in goodwill impairment reporting, it is important that the goodwill impairment information provided by managers is reliable.

2.2.5. Hypotheses development

As summarized in Section 2.2.2, corporate disclosure brings relevant information to financial analysts. More specifically, a commitment to high-quality/quantity disclosure lowers analysts' forecast dispersion and increases their forecast accuracy. In the context of goodwill impairment, a survey conducted by Ernst & Young in 2010 indicates that financial statement users, including analysts, use impairment-testing disclosure in making their investment or lending decisions.[11]

Goodwill impairment tests rely on managers' subjective estimates of the fair value of goodwill for the concerned CGUs (Ramanna and Watts, 2012). Since such private information is opaque (Riedl, 2004), disclosure of the assumptions used in goodwill impairment tests are critical for analysts to gain a subtler understanding of the judgments and estimates made in the impairment testing process and to make inferences about managers' private information. Additional or better impairment disclosure can also signal the reliability of the impairment test. Therefore, transparent and robust impairment disclosure helps to confirm analysts' beliefs on the parameters used in the impairment test. If a firm is transparent about its impairment test procedures and parameters, I should observe a lower level of disagreement among analysts and disagreement between analysts and managers.[12] Nonetheless, I acknowledge that managers tend to exploit the discretion offered by the goodwill impairment reporting process (Ramanna, 2008; Ramanna and Watts, 2012) and manipulate the outcome of the goodwill impairment tests (Hayn and Hughes, 2006; Ramanna and Watts, 2012).[13] Under these conditions, the resulting disclosures associated with manipulated goodwill impairments are likely to be less transparent, as these disclosures are based on inappropriate impairment inputs (Amiraslani et al., 2013). Therefore, such disclosures are unlikely to affect analysts' beliefs regarding the timing and amount of goodwill impairment. Following these arguments, I state my first two hypotheses in their alternative form:

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[11] Similar evidence is reported by FRC (2014) and KPMG (2014).

[12] I define disagreement among analysts as analysts' different expectation regarding both the timing and amount of a firm's goodwill impairment, and disagreement between analyst and manager as instances in which an analyst has a different opinion regarding either the amount or timing of goodwill impairment from the manager.

[13] According to agency theory, compensation, reputation concerns or debt covenant violations give managers incentives to avoid booking goodwill impairments (Ramanna and Watts, 2012).

H1: Disclosure transparency relating to goodwill impairment tests is negatively associated with disagreement among analysts.

H2: Disclosure transparency relating to goodwill impairment tests is negatively associated with disagreement between analysts and managers.

Goodwill impairment tests require managers to forecast future cash flows and estimate the appropriate discount rates for each CGU concerned. Either of these two estimates can materially impact the robustness and outcome of the impairment assessment exercises undertaken by reporting entities. However, these parameters are subject to various degrees of managerial discretion, which could be employed to avoid or manage the timing and amount of impairment losses.[14] Filip, Jeanjean, and Paugam (2015) show that managers use a combination of unrealistic valuation assumptions and engage in cash-flow-increasing real activities to support the avoidance of economic goodwill impairments. Amiraslani et al. (2013) find that while information about discount rates is disclosed by a majority of companies, detailed information on forecasts of future cash flows is withheld by some. Consequently, analysts potentially need more extensive disclosure about future cash flow assumptions to assess impairments, but they can approximate discount rates from other existing firm disclosures or independently generate them. I, therefore, posit that the relation between cash-flow-related disclosure and disagreement among agents is stronger than the relation between discount-rate-related disclosure and disagreement among agents. I state my next two hypotheses in their alternative form as follows:

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[14] Opportunism may manifest in the selection of inappropriately lower or higher discount rates, the number of forecasting periods to discount cash flows, the current level of cash flows, or the terminal value.

H3a: Disagreement among analysts is more strongly associated with disclosure transparency relating to cash flow projections than disclosure transparency relating to discount rate selection.

H3b: Disagreement between analysts and managers is more strongly associated with disclosure transparency relating to cash flow projections than disclosure transparency relating to discount rate selection.

2.3. Sample and Research Design

2.3.1. Sample description

My initial sample comprises listed firms in European countries that mandated the adoption of IFRS in 2005 and that impaired goodwill in any year(s) from 2006 to 2014. Although all my sample firms must apply IAS 36 from 2005 onward, I eliminate 2005 from the sample period to address potential concerns regarding implementation issues to IFRS adoption. I identify a total of 5,395 firms-year observations that have reported goodwill impairment. A significant number of these firms are financial firms, as evidenced by the loss of 3,665 observations after I eliminate financial firms (SIC = 6xxx) due to the requirement for these firms to follow industry-specific impairment rules and disclosures (Lobo et al., 2017). In subsequent steps, I disregard 500 observations without material goodwill impairment, 259 observations without available annual reports, and 611 observations with missing analysts' reports.[15] I further drop observations with fewer than two different analysts' opinions regarding the reported goodwill impairment, missing values for the control variables, and negative book value of equity, resulting in a final sample of 183 unique goodwill impairments, corresponding to 134 unique firms.[16] Panel A of Table 2-1 reports the impairment sample construction procedure for the tests of disagreement among analysts. I download firms' annual reports and manually code the transparency of their goodwill impairment disclosure in a scale from 0 to 1. The coding scheme is exemplified in Appendix 2-2.

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[15] I consider goodwill impairment to be material if its amount exceeds €10 million. Previous literature defines goodwill impairment as material when its amount is higher than 1% of a firm's total assets at the beginning of the year or exceeds the equivalent of €10 million (Jarva, 2009; Knauer and Wöhrmann, 2016). I choose the latter

[Insert Table 2-1 here]

Panel B reports the sample construction procedure for the tests of disagreement between analysts and managers. The total number of analysts' opinions regarding the timing or amount of goodwill impairment for the sample described in Panel A is 1,117. I eliminate no mention opinions (562 observations), observations with negative book value of equity (14 observations), and observations with missing values for the control variables (239 observations), resulting in a final sample of 302 analysts' opinions.

Panel C reports the distribution of the goodwill impairment sample by year. The sample is relatively uniformly distributed across the years, with 2008 having the highest level of representation (16.4%). This is not surprising since this period largely coincides with the worldwide economic recession. Panel D presents the distribution of the goodwill impairment sample by country. The sample companies come from 18 European countries, with the largest sample representation pertaining to the largest European capital markets: Germany (22.4% of the

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approach, as market participants are more likely to react when the unscaled impairment amount is material (Jarva, 2009; Knauer and Wöhrmann, 2016).

[16] Analysts' reports are retrieved from Thomson Reuters InvesText, goodwill impairment data from Worldscope, analysts-related data from I/B/E/S, and all other firm and market data from Thomson Reuters Eikon.

sample), the U.K. (20.22%), and France (14.21%). All other countries represent less than 10% of the sample individually.

2.3.2. Measurement of variables

Disclosure transparency

I use the methodology developed by Lobo et al. (2017) and Paugam and Ramond (2015) to operationalize the disclosure transparency measure relating to goodwill impairment tests. This measure incorporates items disclosed in the financial statements that cover technical valuation elements and descriptive elements of impairment tests, such as information related to the carrying amount of goodwill allocated to a unit (group of units), the basis on which the unit's (group of units') recoverable amount has been determined (i.e., value in use or fair value less costs of disposal), and the discount rate(s) applied to the cash flow projections. The items are grouped into eight categories, each containing one to four items. I attribute one point to firm's disclosure transparency index if a particular item belonging to the measure is disclosed in the firm's financial statements and zero otherwise. I calculate the overall disclosure transparency index for a given firm *i* in year *t* as follows:[17]

$$Index_{i,t} = \frac{1}{25}\sum_{k=1}^{25}(item_k)$$

Next, I divide the information included in the index into two types: (1) cash-flow-related disclosure, which explain how future cash flow is forecasted; and (2) discount-rate-related disclosure, which explain the selection of the discount rate. The cash flow sub-score (*Index_CF*) consists of four categories with nine items in total: (1) number of cash-generating units (2) cash-flow extrapolation, and (3) terminal value, and (4) sensitivity of impairment tests regarding the cash flow. The discount rate sub-score (*Index_DR*) consists of five categories with 16 items: (1) details on the discount rate, (2) number of discount rates, (3) discount rate components, (4) sensitivity of impairment tests regarding discount rate, and (5) explanations of the variations of the discount rate between consecutive years. These two sub-scores for a given company *i* in year *t* are computed as follows:

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[17] The disclosure index is standardized by the number of items. By dividing the index by the number of items, the index considers all items equally important.

$$Index\_CF_{i,t} = \frac{1}{9}\sum_{k=1}^{9}(item_k)$$

$$Index\_DR_{i,t} = \frac{1}{16}\sum_{k=10}^{25}(\,item_k)$$

Disagreement among analysts

To construct the disagreement measures, I retrieve, from Thomson Reuters InvesText, a firm's analysts' reports that 1) are issued within six months after the end of the fiscal year when the firm impairs its goodwill, 2) are written in English and issued by brokerage houses, and 3) contain the following keywords: goodwill and impairment, or goodwill and write-down, or goodwill and acquisition, and variants of these words.[18]

I use Python machine coding to process analysts' reports in the following steps. First, I use an algorithm to remove tables from the reports and extract from the remaining text goodwill-impairment-related paragraphs. A paragraph is coded goodwill-impairment related if it contains a word from two of the following three groups: (1) "goodwill"; (2) "impairment", "write-off", "write-down", "one-off", and their variants; and (3) "merger", "acquisition", and their variants.

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[18] Given that it is difficult to ascertain the exact date on which goodwill impairment is announced for all firm-years in the sample, I choose to focus on analysts' reports issued within a period after the end of the fiscal year in which goodwill is impaired. This method implicitly assumes that the announcement of goodwill impairment takes place within six months after the fiscal year end date.

Second, I examine the goodwill-impairment-related paragraphs to identify *agreement opinions*, instances in which analysts had anticipated both the timing and amount of goodwill impairment; *disagreement opinions*, instances in which analysts had not anticipated the timing or amount of goodwill impairment; and *no mention opinions*, instances in which analysts mentioned goodwill impairment but had not discussed their expectations.[19] A goodwill-impairment-related paragraph is classified as an *agreement opinion* if it contains one of the following words: "expect", "anticipate", "announce", "match", "in line", and their variants, within ten words from one word from group (1) or group (2) above; as a *disagreement opinion* if it contains one of the following words: "surprise", "unexpected", "larger", "higher", "later", "over forecasts", "below forecasts", "delayed", and their variants, within ten words from one word from group (1) or group (2). The rest are coded as *no mention opinions*. Appendix 2-3 details the coding procedure. I then construct disagreement among analysts, a firm-year variable, as follows:

$$Disagreement\ A-A=$$

$$1-\left[\left(\frac{Number\ of\ agreement\ opinions}{Total\ number\ of\ opinions}\right)^2+\left(\frac{Number\ of\ disagreement\ opinions}{Total\ number\ of\ opinions}\right)^2\right]$$

where *Total number of opinions=Number of agreement opinions + Number of disagreement opinions*. A zero value of *Disagreement A-A* indicates total agreement and a 0.5 value of the variable indicates the maximum level of disagreement.

Analyst-manager disagreement

I use the same methodology described above to collect the data for the measurement of disagreement between analysts and managers. I construct an analyst-impairment level variable, *Disagreement A-M*, which takes the value of one if a particular analyst discloses in their research report that they have a different opinion regarding either the timing or amount of the reported goodwill impairment and zero otherwise.

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[19] Appendix 2-1 provides examples of analysts' discussions of goodwill impairment losses in their research reports.

2.3.3. Regression models

To test H1, I model disagreement among analysts (*Disagreement A-A*) as a function of disclosure transparency relating to goodwill impairment (*Index*) and a vector of controls including the size of impairment and other firm characteristics, as specified in Equation (II.1):

$$\begin{aligned} Disagreement\ A-A_{\ i,t+1} = {} & \alpha_1 Index_{i,t} + \alpha_2 Size_{i,t} + \alpha_3 Leverage_{i,t} \\ & + \alpha_4 ROA_{i,t} + \alpha_5 BIG\ 4_{i,t} + \alpha_6 Coverage_{i,t} \\ & + \alpha_7 Impairment_{i,t} + \alpha_8 Volatility_{i,t} + \alpha_9 Loss_{i,t} \\ & + \textit{Industry fixed effects} + \textit{Year fixed effects} + \varepsilon \qquad \text{(II.1)} \end{aligned}$$

where *i* and *t* refer to firm and year respectively. *Disagreement A-A* and *Index* are defined as above. In this specification, the coefficient α_1 represents the effect of disclosure transparency relating to goodwill impairment tests on disagreement among analysts with regard to the impairment timing or amount.

I control for several factors that have been documented in prior literature to affect analysts' outputs, in particular their overall forecast dispersion. Empirical evidence indicates that forecast dispersion is higher for firms that are smaller (e.g., Kothari, Li, and Short, 2009), more leveraged (e.g., Hope, 2003), and loss-making (e.g., Horton, Serafeim, and Serafeim 2013).[20] It also positively relates to return on assets, return volatility (e.g., Behn, Choi, and Kang 2008), analyst coverage (e.g., Horton, Serafeim, and Serafeim 2013), and goodwill impairment amount, but negatively relates to audit quality (e.g., Behn, Choi, and Kang 2008). Therefore, I control for firm size (*Size*), measured as lagged total assets; leverage (*Leverage*), measured as the ratio of total debt to total assets; return on assets *(ROA)*, measured as the ratio of net income to total assets; audit quality (*BIG4*), an indicator that takes the value of one if a firm is audited by a Big 4 auditor and zero otherwise; analyst coverage (*Coverage*), measured as the natural logarithm of the number of analysts covering a company; the amount of goodwill impairment (*Impairment*), measured as the natural logarithm of the goodwill impairment amount; return volatility *(Volatility)*, measured as the standard deviation of daily stock returns; and whether a firm reports a loss (*Loss*), an indicator that takes the value of one if a firm reports negative net income and zero otherwise. I measure all firm characteristics at the fiscal year end in which goodwill impairment has been reported. Finally, I include industry (two-digit SIC) and year fixed effects, and cluster standard errors at the firm level to account for within-firm correlation. Details of the definition of the variables are outlined in Appendix 2-4. If applicable, I convert values denominated in currencies other than euros into euros.

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[20] Kothari et al. (2009) measures *Size* based on the market value of equity and not total assets. However, my results are not sensitive to this change in definition.

To test H2, I model disagreement between analysts and managers (*Disagreement A-M*) as a function of goodwill impairment disclosure transparency (*Index*), and control for other firm and analyst characteristics, as specified in Equation (II.2):

$$\begin{aligned} Disagreement\ A - M_{i,j,t+1} = {} & \beta_1 Index_{i,t} + \beta_2 Size_{i,t} + \beta_3 Leverage_{i,t} \\ & + \beta_4 ROA_{i,t} + \beta_5 Loss_{i,t} + \beta_6 Coverage_{i,t} \\ & + \beta_7 Impairment_{i,t} + \beta_8 Broker_{j,t} + \beta_9 Portfolio_{j,t} \\ & + \beta_{10} Experience_{i,t} + Industry\ fixed\ effects \\ & + Year\ fixed\ effects + \mathcal{E}. \end{aligned} \tag{II.2}$$

where *i*, *j*, and *t* refer to firm, analyst, and year respectively. *Disagreement A-M* and *Index* are defined as above. In this specification, the coefficient β_1 represents the effect of disclosure transparency relating to goodwill impairment on disagreement between analysts and managers with regard to goodwill impairment timing or amount. I control for *Size*, *Leverage*, *ROA*, *Loss*, *Coverage*, and *Impairment* as defined earlier according to prior literature, and add variables that control for analysts' characteristics. I expect that disagreement between analysts and managers is higher if analysts work for a brokerage house of a higher status, follow a smaller portfolio of companies, and are more experienced, because these analysts are likely to have more resources and are more able to analyze the details of impairment (Clement, Koonce, and Lopez, 2007). Therefore, I control for brokerage firm status (*Broker),* an indicator variable that takes the value of one if an analyst is employed by a higher status brokerage firm and zero otherwise, analysts' portfolio size, measured as the number of firms followed by an analyst in the previous year *(Portfolio)*, analysts' experience *(Experience),* measured as the number of years for which an analyst provides annual forecasts for a particular firm. Analyst forecasts data is obtained from Thomson Reuters Eikon and I/B/E/S. Finally, I include industry and year fixed effects and adjust standard errors for within-cluster correlation at the analyst level.

I test H3a and H3b by re-estimating Equation (II.1) and Equation (II.2) with the main independent variable of interest, *Index*, replaced by *Index_CF* and *Index_DR.* All other aspects of the model specifications remain unchanged.

2.4. Empirical results

2.4.1. Univariate results

Panel A of Table 2-2 reports the descriptive statistics of the variables used in my sample. The two novel measures of disagreement, *Disagreement A-A* and *Disagreement A-M*, have a mean of 0.293 and 0.550 (a median of 0.440 and 1), respectively. The disclosure index (*Index*) has a mean of 0.370 with a standard deviation of 0.080, consistent with the values reported in (Paugam and Ramond, 2015). With regard to the control variables, my sample firms are relatively large, as expected for acquirers with analyst coverage, with average total assets over €21 billion. These firms also have low financial leverage (mean *Leverage* = 24%), are audited by BIG 4 auditors (mean *BIG4* = 95.5%), and are followed by close to 23 analysts on average. Most interestingly, the percentage of loss firms in my sample is high at 43%. This reflects the fact that material goodwill impairments, ranging from €11 million to €710 million in my sample, have a substantial negative impact on net income.

Panel B reports the Pearson correlation coefficients between the variables. Disagreement among analysts (*Disagreement A-A*) and disagreement between analysts and managers (*Disagreement A-M*) are negatively associated with the disclosure transparency index (*Index*), confirming both main hypotheses. The correlation coefficients also indicate that disagreement among analysts is higher for firms covered by more analysts, and for firms with larger amount of goodwill impairment and lower return volatility, while disagreement between analysts and managers is higher for larger firms.

[Insert Table 2-2 here]

2.4.2. Multivariate results

Table 2-3 reports the results of estimating Equation (II.1) using ordinary least squares regression. In Column (1) I report the results regarding the impact of overall disclosure transparency on disagreement among analysts. The coefficient on *Index* is negative and statistically significant at the 5 percent level (coefficient = -0.569). The results are also economically large. An increase of one standard deviation in a firm's disclosure transparency score would lead to a 15.5% percent (= 0.569 × 0.080 / 0.293) decrease from the mean in disagreement among analysts. Turning to the control variables, the results indicate that on average disagreement among analysts is higher for smaller firms and larger impairment amount. Overall, I show that disclosure transparency is negatively associated with disagreement among analysts in the context of goodwill impairment.

Column (2) presents the results of testing H3a. The coefficient on *Index_CF* is negative and statistically significant at the 1 percent level, whereas the coefficient on *Index_DR* is not significant. These results indicate that the relation between goodwill impairment disclosure and disagreement among analysts is driven by the cash-flow-related disclosure component of the disclosure transparency index.

[Insert Table 2-3 here]

Table 2-4 reports the results of estimating Equation (II.2) using a logit model. Column (1) shows that the coefficient on *Index* is negative and statistically significant at the 1 percent level, indicating that higher disclosure transparency on goodwill impairment tests lowers the probability of analysts disagreeing with managers' decision on the timing and amount of the impairment. Regarding the control variables, disagreement between analysts and managers is higher for larger firms and smaller impairment. I also find that firms covered by fewer analysts are more likely to disagree with analysts. Column (2) presents the results testing H3b. Similar to the earlier finding regarding disagreement among analysts, I document that only disclosure transparency relating to the cash flow parameter in impairment tests (*Index_CF*), but not disclosure transparency relating to the discount rate (*Index_DR*), is significantly and negatively associated with disagreement between analysts and managers. Taken together, I show that in the case of complex accounting decisions such as goodwill impairment, information uncertainty and information asymmetry among capital market participants is lower for firms with higher disclosure quality.

[Insert Table 2-4 here]

2.5. Robustness tests

To further validate my findings, I conduct additional robustness tests. First, there is no standard guideline on how firms should disclose information about the parameters used in goodwill impairment tests, resulting in a large variation of formats and length of the disclosure. To alleviate concerns that the index used in the main analyses does not sufficiently capture this variation in presentation, I use an alternative proxy for disclosure transparency. Second, a large number of observations are eliminated from the main analyses, as analysts do not express their opinion about firms' impairment decisions explicitly in their research reports. Therefore, I re-formulate the two disagreement metrics to take into account the "no mention" reports by assuming that these analysts implicitly agree with firms' actions. Finally, my sample period spans from 2006 to 2014. A relatively large number of goodwill impairments took place during the most recent financial crisis. To the extent that managers are more likely to opportunistically charge goodwill impairments during the crisis period, I re-run my analyses after excluding 2008 in the sample period. Results of the robustness tests are presented below.

Alternative measure for disclosure transparency

To supplement my main analyses, I use text readability as another measure of disclosure transparency. This alternative construct evaluates the presentation of the information about goodwill impairment tests and serves to further validate my results in the main tests as well as facilitate comparison with other studies. Following recent literature that examines readability of annual reports and analysts' reports (e.g., De Franco et al., 2015; Li 2008; Lehavy et al., 2011), I use the Fog Index (*FOG*) from the computational linguistics literature to measure readability of firms' goodwill impairment disclosure. The Fog Index is a widely used readability metric that captures text complexity as a function of syllables per word and words per sentence. A higher value of the index translates to more complex text presentation. Specifically, *FOG* is estimated by the following equation:

$$FOG = (Words\ per\ sentence + Percentage\ of\ complex\ words) \times 0.4$$

where complex words are defined as words with three or more syllables. To calculate *FOG* for each firm-year observation, I extract the goodwill impairment footnotes from annual reports into individual text files. After removing tables from the text file, I use Python to calculate the inputs to *FOG*. I then re-estimate Equations (II.1) and (II.2) after replacing *Index* by *FOG*. The results presented in Table 2-5 shows that the coefficients on *FOG* in both Column (1) (disagreement among analysts as the dependent variable) and Column (2) (disagreement between analysts and managers as the dependent variable) are positive and statistically significant at the 10 percent and 5 percent levels respectively. These results provide corroborative evidence that goodwill-impairment-related disclosure has a significant impact on the level of information asymmetry and uncertainty in the market, since both disagreement measures increase when the readability of goodwill impairment disclosure decreases (i.e., higher *FOG*).

[Insert Table 2-5 here]

Alternative way to construct the disagreement metrics

In my primary tests, I measure disagreement without taking into account analysts' reports that discuss firms' impairment decisions but without stating an opinion (i.e., *no mention opinions*.) Presumably, when analysts do not consider a major accounting decision containing any unexpected elements, they may find it unnecessary to give an opinion explicitly in their research reports. Therefore, I argue that instances in which analysts had not mentioned information about their expectations (*no mention opinions*) can be viewed as situations in which analysts had anticipated both the timing and amount of the goodwill impairments (*agreement opinions*). I re-estimate Equations (II.1) and (II.2) after including these reports with "*no mention opinions*" in the sample. Table 2-6 shows that the coefficients on *Index* remain negative and significant at the 5 percent level in Column (1) (disagreement among analysts as the dependent variable) and at the 1 percent level in Column (2) (disagreement between analysts and managers as the dependent variable). These results indicate that my main findings are not driven by a specific type of analysts who choose to discuss a major accounting decision explicitly.

[Insert Table 2-6 here]

Excluding 2008

My sample encompasses a financial crisis period that results in significant deterioration in the macroeconomic risk environment. As shown in Table 2-1, a large proportion of goodwill impairments took place in 2008. It is plausible that managers opportunistically use goodwill impairments during the financial crisis to take a big bath, thus resulting in less informative goodwill impairment disclosure. To the extent that these goodwill impairments are fundamentally different from those in other years, my main findings can be driven by the inclusion of the financial crisis period. Therefore, I eliminate observations with goodwill impairments that took place in 2008 from my sample. Table 2-7 presents the results. I lose 30 (16.4%) and 50 (16.6%) observations in Columns (1) and (2) respectively. The coefficients on *Index* remain negative and significant at conventional levels in both regressions, thus providing more confidence that my main findings are not driven by goodwill impairments that took place during the financial crisis.

[Insert Table 2-7 here]

2.6. Conclusions

This study examines the impact of disclosure transparency on disagreement in opinions among economic agents in the context of goodwill impairment. Drawing on a sample of European companies that impaired their goodwill during 2006-2014, I construct a unique dataset on the transparency of goodwill impairment disclosure and develop two novel metrics to measure disagreement among analysts and disagreement between analysts and managers based on the information extracted from the text in analysts' reports. I present three main findings: first, disagreement among analysts is lower for firms with higher disclosure transparency; second, disagreement between analysts and managers is lower for firms with higher disclosure transparency; and third, only cash-flow-related, but not discount-rate-related, disclosure transparency in the context of goodwill impairment is significantly and negatively associated with both types of disagreement. Taken together, these findings suggest that the information on goodwill impairment tests disclosed by managers is useful for analysts, but the application of the current goodwill impairment rules results in different levels of disclosure transparency that can induce disagreement in the market. However, one caveat of this study is that the findings apply only to firms that have impaired goodwill and do not extend to other firms with non-zero goodwill reported on their balance sheets.

This study complements the extant literature on corporate disclosure by showing that the same financial reporting rule can lead to variations in disclosure transparency, which then affects the level of information asymmetry and uncertainty surrounding the firms. I also bring methodological contributions by constructing two new metrics of disagreement: disagreement among analysts and disagreement between analysts and managers, on a specific accounting event using the text in analysts' reports. Finally, my results are particularly relevant to standard setters, as goodwill and goodwill impairment accounting continue to receive a lot of scrutiny from regulators and academics. Several voices demand that the IASB abolish goodwill impairment tests and revert to scheduled amortization of goodwill (EFRAG, 2014). In light of these debates, this study shows that goodwill impairment disclosure is relevant for market participants, but discretions in the application of the current rules could create high uncertainty among agents in the market.

Appendix 2-1: Examples of Analysts' Interpretation of Goodwill Impairment Losses

Goodwill impairment reports coded as "agreement opinions"

Date: 2012

Research Target: Rio Tinto

Analyst: RBC Capital Markets

Quote:

Writedown expected by market**:** At the November investor seminar Rio had already warned of additional writedowns to be taken, with a specific focus on the Aluminium division. We had expected an additional writedown of US$5-10bn, consisting mainly of the additional goodwill of US$5.8bn associated with the Aluminium division after the 2011 writedown of the RTA and other Aluminium assets. The additional ~US$5bn of asset value writedown should not be too much of a surprise considering 1) the weak performance of the Aluminium market in 2012; and 2) that most of the miners are currently taking writedowns of larger asset purchases made over the past 5 years. We would expect the aluminium division to be carried at a value of ~$15-16bn post impairment.

Date: 2012

Research Target: Telecom Italia SPA

Analyst: Deutsche Bank

Quote:

T.I. announced €2394m adjusted profit, 1.6% below consensus, -5% YoY, before a €4,432m goodwill write-down, in line with recent press reports (€3- 4bn according to Il Sole), an €319m one-off fiscal benefit and smaller adjustments. Importantly: 1) distributable reserves left are €3.8bn after the write-down, equal to eight years of dividends (though dividends are obviously expected to be paid out of profits in future years), and 2) book equity is below my SOTP valuation. The dividend is rounded to €c. 2.0/3.1 for ords/savers, yield is 3.5/6.1% with minimum guaranteed dividend of 5.4% for savers. Buy.

Goodwill impairment reports coded as "disagreement opinions"

Date: 2011

Research Target: RIO Tinto PLC

Analyst: Deutcshe Bank

Quote:

A write-down in aluminium goodwill of c. US$8bn was larger than expected but is non cash and wipes the Alcan slate clean. The write-down consisted of a US$7.4bn reduction in goodwill and a US$1.5bn reduction in PP&E. It appears that Rio management has cut deeply to prevent further write-downs in the future.

Date: 2012

Research Target: Arcelor Mital

Analyst: Morgan Stanley

Quote:

The write-down itself does not come as a big surprise, as in my view it is a fairer reflection of the company’s book value (the stock is trading at 0.5x book value). We see the write-down rather as an accounting exercise. Although the write-down itself is not a major surprise, the timing was unexpected. What is likely to surprise the market negatively is the wording about the economic outlook in the European steel sector.

Date: 2011

Research Target: Deutsche Telekom

Analyst: Warburg Research

Quote:

Unexpected impairment losses of EUR 3.3bn resulted in a high deviation at the EBIT and EPS level

Goodwill impairment report coded as “no mention opinion”

Date: 2012

Research Target: Arcelor Mital

Analyst: Unicredit

Quote:

Net income (net loss of USD 4bn vs. a net loss of USD 0.7bn in 3Q12) was further burdened by USD 4.8bn in impairments, including the USD 4.3bn in a goodwill write-down related to the company's European businesses. Net debt benefitted from working-capital-related cash releases of USD 2.1bn in the quarter that boosted FCF (USD 1.8bn) and contributed to a net debt reduction from USD 23.2bn at end-3Q12 to USD 21.8bn (i.e. slightly lower than the forecast USD 22bn).

Appendix 2-2: Items Composing the Impairment-Testing Disclosure Score

Categories	Items
(1) Number of cash generating units	Does the report include the number of CGUs?
(2) Details on the discount rate	Does the report mention alternative approaches to WACC in discount rate estimation? Does the report mention the use of an alternative approach to estimate the discount rate? Does the report mention the tax effect on the discount rate? Does the report explain the computation of the discount rate (e.g., risk premium, risk free rate)?
(3) Number of discount rates	Does the firm adjust the firm-wide discount rate for specific CGUs? Does the report mention the use of different discount rates for each CGU (if applicable)? Does the report explain the adjustments/different discount rates used (if applicable)?
(4) Discount rate components	Does the report disclose the base rate of the discount rate? Does the report disclose the risk-free rate chosen? Does the report mention the beta coefficient chosen? Does the report mention the risk premium chosen? Does the report mention management's target leverage ratio? Does the report mention the specific stock beta of the company? Does the report mention the stock beta of peer firms?
(5) Sensitivity of impairment tests	Does the report mention sensitivity tests performed on the discount rate? Does the report mention sensitivity tests performed on projected cash flows or other parameters?
(6) Explanations of the variations of the discount rate	Does the report explain the variations of discount rates from the previous year?
(7) Extrapolation	Does the report mention what is the maximum number of periods for business plans? Does the report mention an extrapolation period between the end of the business plan and terminal value? Does the report mention what is the extrapolation period after the business plan (if applicable)?
(8) Terminal value	Does the report mention if the terminal value is computed with a multiple? Does the report mention if the terminal value is computed with an infinite projection period? Does the report mention the level of the multiple applied (if applicable)? Does the report mention the terminal growth assumption (if applicable)?

Appendix 2-3: Procedures in Coding Disagreement Metrics

1. Cleaning

First, I remove tables from analysts' reports.

2. Paragraphs identification

I then extract goodwill-impairment-related paragraphs from analysts' reports.

I define a goodwill-impairment-related paragraph as one that contains at least one word from Group 1 and Group 2, Group 1 and Group 3, or Group 2 and Group 3 outlined below:

Group 1: "goodwill"

Group 2: "impair*", "one-off", "one off", "write-down*", "writedown*", "write down*", "write-off*", "writeoff*", "write off*"

Group 3: "acquisition*", "acquire*", "merge*", "M&A", "intangible"

3. Coding

Finally, I split the goodwill-impairment-related paragraphs into *agreement, disagreement* and *no mention* opinions.

A goodwill-impairment-related paragraph is coded as an *agreement opinion* if it contains one word from Group 4 within ten words from one word from Group 1 or Group 2 above.

A goodwill-impairment-related paragraph is coded as a *disagreement opinion* if it contains one word from Group 5 within ten words from one word from Group 1 or Group 2 above.

A goodwill-impairment-related paragraph is coded as a *no mention opinion* if it is neither *agreement opinion* nor *disagreement opinion*.

Group 4: "expect*", "indicate*", "anticipate*", "announce*", "match*", "in line", "in-line", "align", "estimat*", "warn*".

Group 5: "over", "overdue", "below ", "lower", "fall* short", "fell short", "unexpected ", "not anticipated", "surpris*".

Appendix 2-4: Variable Definition

Variable	Description
Disagreement A-A	Disagreement among analysts regarding the timing or amount of the reported goodwill impairment, constructed as follows: $1-[(\frac{\text{Number of agreement opinions}}{\text{Total number of opinions}})^2+(\frac{\text{Number of disagreement opions}}{\text{Total number of opinions}})^2]$ Agreement opinions refer to instances when analysts had anticipated both the timing and amount of goodwill impairment; Disagreement opinions refer to instances when analysts had not anticipated the timing or amount of goodwill impairment.
Disagreement A-M	Disagreement between analysts and managers regarding the timing or amount of the reported goodwill impairment, constructed as an indicator variable that takes the value of one if a particular analyst has a different opinion regarding the timing or amount of the reported goodwill impairment from the firm's manager.
Index	Disclosure transparency relating to goodwill impairment, which captures the information included in a firm's financial statements and financial statement footnotes about the firm's goodwill impairment tests.
Index_CF	Disclosure transparency relating to cash flow projections, which captures the information included in a company's financial statements and financial statement footnotes about the firm's projected cash flow used in the goodwill impairment tests.
Index_DR	Disclosure transparency relating to discount rate selection, which captures the information included in a firm's financial statements and financial statement footnotes about the firm's estimated discount rate used in the goodwill impairment tests.
Size	Natural logarithm of total assets at the end of the financial year.
Leverage	Total debt divided by total assets at the end of the financial year.
ROA	Net income divided by total assets at the end of the financial year.
BIG4	An indicator variable that takes the value of one if a company is audited by a Big 4 auditor and zero otherwise.
Coverage	Natural logarithm of the number of analysts covering the company.
Impairment	Natural logarithm of goodwill impairment amount.
Volatility	Total volatility of stock return, defined as the natural logarithm of the standard deviation of a stock's daily return over a 12-month period before the fiscal year end. A minimum of eleven calendar months of daily return observations are required to estimate total volatility.

Loss	An indicator variable that takes the value of one if a company reports a loss and zero otherwise.
Broker	An indicator variable that takes the value of one if the brokerage firm is included in EXTEL ratings, and zero otherwise.
Portfolio	Analysts' portfolio size, defined as the number of firms followed by an analyst in the previous year.
Experience	An analyst's forecasting experience, defined as the number of years for which an analyst provides annual forecasts for a particular firm.

Table 2-1: Goodwill impairment sample

This table reports the procedures to construct the goodwill impairment sample and its composition. This sample includes firms domiciled in European countries where the adoption of IFRS is mandatory for consolidated financial statements over the period 2006-2014. The data for goodwill impairments is obtained from Worldscope. Panel A describes the procedures to construct the sample for tests of disagreement among analysts; Panel B describes the procedures to construct the sample for tests of disagreement between analysts and managers; Panel C describes the distribution of the sample by year; Panel D describes the distribution of the sample by country.

Panel A: Sample construction for tests of disagreement among analysts

Total number of goodwill impairments reported on Worldscope over 2006-2014 for firms that are domiciled in the countries included in this study	5,395
(-) Firm-year observations in financial industries (two-digits SIC code between 60 and 69)	-3,665
(-) Firm-year observations without material goodwill impairment	-500
(-) Firm-year observations without available annual reports	-259
(-) Firm-year observations with missing analysts' reports	-611
(-) Firm-year observations with less than two different analysts' opinions	-133
(-) Firm-year observations with missing values for control variables	-40
(-) Firm-year observations with negative book value of equity	-4
Final sample	**183**

Panel B: Sample construction for tests of disagreement between analysts and managers

Total number of analyst-impairment opinions	1,117
(-) No mention opinions	-562
(-) Observations with negative book value of equity	-14
(-) Observations with missing values for control variables	-239
Final sample	**302**

Panel C: Distribution of the sample by year

Year	Frequency	Percent
2006	8	4.37
2007	9	4.92
2008	30	16.39
2009	26	14.21
2010	20	10.93
2011	25	13.66
2012	22	12.02
2013	19	10.38
2014	24	13.11
Total	183	100

Panel D: Distribution of the sample by country

Country	Frequency	Percent
Austria	13	7.10
Belgium	5	2.73
Czech Republic	3	1.64
Denmark	1	0.55
Finland	3	1.64
France	26	14.21
Greece	1	0.55
Germany	41	22.40
Hungary	2	1.09
Ireland	2	1.09
Luxembourg	4	2.18
Netherlands	16	8.74
Norway	6	3.28
Poland	1	0.55
Spain	1	0.55
Sweden	7	3.83
Switzerland	14	7.65
United Kingdom	37	20.22
Total	183	100

Table 2-2: Descriptive statistics

This table reports the descriptive statistics for variables included in the main test. Panel A provides the summary statistics; Panel B reports Pearson's correlation coefficients. * indicates the coefficients are significantly different from zero at the 5% level in two-tailed tests. All continuous variables are winsorized at the 5th and 95th percentiles (*Index, Index_CF, Index_DR* and *Disagreement A-A* are not winsorized). Detailed variable definitions are outlined in Appendix 2-4.

Panel A: Descriptive statistics

	N	Mean	Q1	Median	Q3	Stdev.	Min	Max
Disagreement A-A	183	0.293	0	0.440	0.480	0.213	0	0.500
Disagreement A-M	302	0.550	0	1	1	0.490	0	1
Index	183	0.370	0.320	0.360	0.400	0.080	0.160	0.600
Index_ CF	183	0.480	0.440	0.440	0.560	0.120	0.110	0.780
Index_DR	183	0.300	0.250	0.310	0.310	0.100	0.120	0.620
Size	183	15.530	14.110	15.290	17.070	1.850	11.340	18.380
Leverage	183	0.240	0.150	0.260	0.310	0.130	0.030	0.560
ROA	183	-0.010	-0.040	0.001	0.040	0.080	-0.290	0.080
BIG4	183	0.955	1	1	1	0.190	0	1
Coverage	183	2.950	2.480	3.040	3.530	0.660	1.390	3.780
Impairment	183	11.320	10.140	11.220	12.420	1.320	9.290	13.470
Volatility	183	0.021	0.010	0.020	0.030	0.009	0.010	0.057
Loss	183	0.430	0	0	1	0.500	0	1
Broker	302	0.240	0	0	0	0.430	0	1
Portfolio	302	4.190	3	4	6	2.110	1	10
Experience	302	3.730	1	2	5	4.230	1	15

Panel B: Pearson correlation coefficients

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
(1) Index	1															
(2) Index_CF	0.709*	1														
(3) Index_DR	0.854*	0.239*	1													
(4) Disagreement A-A	-0.249*	-0.352*	-0.083	1												
(5) Disagreement A-M	-0.126*	-0.162*	-0.048	-0.155	1											
(6) Size	0.148*	-0.172*	0.330*	0.095	0.144*	1										
(7) Leverage	0.087	0.054	0.080	-0.015	0.076	0.172*	1									
(8) ROA	0.109	0.001	0.151*	0.095	0.113	0.513*	-0.035	1								
(9) BIG4	-0.002	-0.073	0.050	-0.041	0.093	0.252*	0.031	0.121	1							
(10) Coverage	0.049	-0.197*	0.212*	0.191*	0.106	0.814*	0.075	0.489*	0.271*	1						
(11) Impairment	0.089	-0.207*	0.274*	0.188*	0.001	0.587*	0.221*	-0.033	0.129	0.451*	1					
(12) Volatility	-0.164*	-0.025	-0.209*	-0.164*	-0.095	-0.374*	0.100	-0.517*	-0.152*	-0.368*	-0.154*	1				
(13) Loss	-0.101	-0.038	-0.112	-0.034	-0.092	-0.391*	0.019	-0.728*	-0.058	-0.369*	0.383	0.381*	1			
(14) Broker	-0.051	-0.015	-0.006	-0.007	-0.010	0.060	-0.028	0.034	0.073	0.051	-0.092	0.054	0.076	1		
(15) Portfolio	-0.118	-0.070	-0.117	-0.096	0.028	-0.223	0.027	-0.118	-0.127*	-0.096	-0.068	0.108	0.132*	0.080	1	
(16) Experience	0.117	-0.001	0.181	0.037	0.061	0.140*	0.082	0.020	0.006	0.125*	0.077	-0.104	0.010	-0.036	-0.073	1

Table 2-3: The effect of disclosure transparency on disagreement among analysts

This table presents regression results regarding the effect of disclosure transparency on disagreement among analysts in the context of goodwill impairments. Column (1) presents results concerning the overall goodwill impairment disclosure transparency; Column (2) presents results regarding the cash-flow-related disclosure transparency and the discount-rate-related disclosure transparency. I measure disagreement among analysts (*Disagreement A-A*) based on analysts' discussions of goodwill impairment losses in their research reports, and disclosure transparency (*Index*, *Index_CF*, and *Index_DR*) captures goodwill-impairment-related disclosure in reported financial statements. The sample covers a set of European firms over the period 2006-2014. All continuous variables are winsorized at the 5th and 95th percentiles (*Index*, *Index_CF*, *Index_DR* and *Disagreement A-A* are not winsorized). ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively, in two-tailed tests. Standard errors, stated in parentheses, are corrected for heteroscedasticity and clustered at the firm level. Detailed variable definitions are outlined in Appendix 2-4.

	(1) *Disagreement A-A*	(2) *Disagreement A-A*
Index	**-0.569****	
	(0.251)	
Index_CF		**-0.513*****
		(0.179)
Index_DR		**0.013**
		(0.243)
Size	-0.043*	-0.050**
	(0.025)	(0.025)
Leverage	-0.115	-0.044
	(0.153)	(0.145)
ROA	0.585	0.566
	(0.358)	(0.351)
BIG4	-0.124	-0.116
	(0.081)	(0.083)
Coverage	0.074	0.074
	(0.055)	(0.055)
Impairment	0.050**	0.046**
	(0.023)	(0.023)
Volatility	-2.049	-2.438
	(2.977)	(2.797)
Loss	-0.001	-0.003
	(0.048)	(0.049)
Constant	0.571**	0.764***
	(0.267)	(0.256)
Industry fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Observations	183	183
R-squared	0.369	0.394

Table 2-4: The effect of disclosure transparency on disagreement between analysts and managers

This table presents logistic regression results regarding the effect of disclosure transparency on disagreement between analysts and managers in the context of goodwill impairments. Column (1) presents results concerning the overall goodwill impairment disclosure transparency; Column (2) presents results regarding the cash-flow-related disclosure transparency and the discount-rate-related disclosure transparency. I measure disagreement between analyst and manager (*Disagreement A-M*) as instances in which a particular analyst has a different opinion regarding the amount or timing of goodwill impairment from the firm's manager, and disclosure transparency (*Index*, *Index_CF*, and *Index_DR*) captures goodwill-impairment-related disclosure in reported financial statements. The sample covers a set of European firms over the period 2006-2014. All continuous variables are winsorized at the 5th and 95th percentiles *INDEX*, *Index_CF*, *Index_DR* and *Disagreement A-A* are not winsorized). ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively, in two-tailed tests. Standard errors, stated in parentheses, are corrected for heteroscedasticity and clustered at the analyst level. Detailed variable definitions are outlined in Appendix 2-4.

	(1) *Disagreement A-M*	(2) *Disagreement A-M*
Index	**-6.573*****	
	(2.086)	
Index_CF		**-4.151*****
		(1.315)
Index_DR		**-1.434**
		(2.198)
Size	0.574***	0.557***
	(0.212)	(0.213)
Leverage	1.281	1.437
	(1.601)	(1.626)
ROA	-0.024	0.547
	(3.822)	(3.841)
Loss	-0.307	-0.197
	(0.504)	(0.511)
Coverage	-0.839*	-0.902**
	(0.437)	(0.443)
Impairment	-0.274**	-0.313**
	(0.134)	(0.133)
Broker	0.176	0.194
	(0.311)	(0.314)
Portfolio	0.053	0.042
	(0.069)	(0.070)
Experience	0.054	0.047
	(0.035)	(0.035)
Constant	-1.036	-0.152
	(2.178)	(2.239)
Industry fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Observations	302	302
Pseudo R-squared	0.117	0.122

Table 2-5: The effect of disclosure complexity on analyst-analyst disagreement and on analyst-manager disagreement

This table presents regression results regarding the effect of disclosure complexity on disagreement among analysts and disagreement between analysts and managers in the context of goodwill impairments. Column (1) presents OLS regression results concerning the effect of disclosure complexity of goodwill impairment tests on disagreement among analysts; Column (2) presents logistic regression results regarding the effect of disclosure complexity of goodwill impairment tests on disagreement between analysts and managers. Disclosure complexity (*FOG*) is measured as a function of syllables per word and words per sentence. The sample covers a set of European firms over the period 2006-2014. All continuous variables, except *Disagreement A-A* and *FOG*, are winsorized at the 5th and 95th percentiles. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively, in two-tailed tests. Standard errors, stated in parentheses, are corrected for heteroscedasticity and clustered at the firm level in Column (1) and at the analyst level in Column (2). Detailed variable definitions are outlined in Appendix 2-4.

	(1) *Disagreement A-A*	(2) *Disagreement A-M*
FOG	**0.021***	**0.185****
	(0.011)	**(0.086)**
Size	-0.070***	0.342
	(0.022)	(0.208)
Leverage	-0.066	-0.040
	(0.158)	(1.554)
ROA	0.632*	0.314
	(0.370)	(3.904)
BIG4	-0.127	
	(0.101)	
Coverage	0.125**	-0.580
	(0.051)	(0.449)
Impairment	0.048**	-0.290**
	(0.022)	(0.140)
Volatility	-1.371	
	(3.032)	
Loss	0.009	-0.049
	(0.051)	(0.505)
Broker		0.095
		(0.308)
Poortfolio		0.038
		(0.067)
Experience		0.057
		(0.035)
Constant	0.528**	-2.631
	(0.237)	(2.107)
Industry fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Observations	181	299
(Pseudo) R-squared	0.363	0.102

Table 2-6: The effect of disclosure transparency relating to goodwill impairment on alternative measures of the disagreement metrics

This table presents regression results regarding the effect of disclosure transparency relating to goodwill impairment on alternative measures of disagreement metrics. Column (1) presents OLS regression results concerning the alternative measure for disagreement among analysts; Column (2) presents logit regression results concerning the alternative measure for disagreement between analysts and managers. The sample covers a set of European firms over the period 2006-2014. All continuous variables, except *Index* and *Disagreement A-A*, are winsorized at the 5th and 95th percentiles. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively, in two-tailed tests. Standard errors, stated in parentheses, are corrected for heteroscedasticity and clustered at the firm level in Column (1) and at the analyst level in Column (2). Detailed variable definitions are outlined in Appendix 2-4.

	(1) *Disagreement A-A*	(2) *Disagreement A-M*
Index	**-0.477****	**-4.221*****
	(0.239)	**(1.513)**
Size	-0.045**	0.165
	(0.019)	(0.138)
Leverage	-0.134	-1.174
	(0.147)	(1.086)
ROA	0.634*	2.327
	(0.335)	(3.156)
BIG4	-0.166**	
	(0.067)	
Coverage	0.023	-0.702**
	(0.046)	(0.323)
Impairment	0.063***	0.024
	(0.017)	(0.105)
Volatility	-3.541	
	(2.458)	
Loss	0.002	0.220
	(0.046)	(0.359)
Broker		0.361
		(0.233)
Portfolio		-0.001
		(0.047)
Experience		-0.003
		(0.022)
Constant	0.784**	0.641
	(0.334)	(1.483)
Industry fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Observations	244	564
(Pseudo) R-squared	0.320	0.070

Table 2-7: The effect of disclosure transparency relating to goodwill impairment on analyst-analyst disagreement and on analyst-manager disagreement, excluding the year 2008

This table presents regression results regarding the effect of disclosure transparency on disagreement among analysts and disagreement between analysts and managers in the context of goodwill impairment, excluding 2008 from the sample period. Column (1) presents OLS regression results concerning disagreement among analysts; Column (2) presents logistic regression results concerning disagreement between analysts and managers. The sample covers a set of European firms over the period 2006-2014. All continuous variables, except *Index* and *Disagreement A-A*, are winsorized, at the top and bottom 5th and 95th percentiles. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively, in two-tailed tests. Standard errors, stated in parentheses, are corrected for heteroscedasticity and clustered at the firm level in Column (1) and at the analyst level in Column (2). Detailed variable definitions are outlined in Appendix 2-4.

	(1) *Disagreement A-A*	(2) *Disagreement A-M*
Index	**-0.497***	**-5.626****
	(0.296)	**(2.418)**
Size	-0.041	0.470**
	(0.031)	(0.235)
Leverage	-0.122	0.918
	(0.188)	(1.810)
ROA	0.655	1.169
	(0.404)	(4.510)
BIG4	-0.165*	
	(0.097)	
Coverage	0.068	-0.834
	(0.070)	(0.516)
Impairment	0.052*	-0.108
	(0.030)	(0.154)
Volatility	-1.049	
	(3.969)	
Loss	-0.005	-0.144
	(0.055)	(0.604)
Broker		0.402
		(0.382)
Portfolio		-0.030
		(0.078)
Experience		0.074*
		(0.039)
Constant	0.392	-1.721
	(0.373)	(2.417)
Industry fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Observations	153	252
(Pseudo) R-squared	0.398	0.105

Chapter 3

Learning from Peers? The Spillover Effect of Goodwill Impairment on Peer Firms' Investment Behavior

3.1. Introduction

This chapter examines whether the reporting of significant goodwill impairment by a given firm (the impairment firm) affects the investment behavior of other firms in the same industry (peer firms). As an important component of the financial reporting process, goodwill impairment has required significant amounts of time and effort from standard-setters in recent years (Ayres, Campbell, Chyz, and Shipman, 2018). Giving its growing prevalence, academic researchers and practitioners have increased their focus on the value relevance of goodwill write-offs and the consequences of their reporting (Bens, Heltzer, and Segal, 2011). In particular, extant research indicates that both the market and financial analysts revise their expectations downwards at the time of the revelation of goodwill impairment losses (Chen, Krishnan, and Sami, 2014). Moreover, several studies document that goodwill impairment losses are negatively correlated with operating cash flows, sales growth, growth in operating income, and investment opportunities (Jarva, 2009; Li, Shroff, Venkataraman, and Zhang, 2011). This evidence overwhelmingly points to the negative capital-market and financial-reporting implications of goodwill impairment losses. While prior literature focuses on the consequences of goodwill impairment for the reporting firm, I examine whether the effect of goodwill impairment extends beyond the impairment firm, and whether goodwill impairments can be beneficial to the capital market participants. In doing so, I build on recent developments in the literature on intra-industry spillover effects (Badertscher, Shroff, and White, 2013; Beatty, Liao, and Yu, 2013; Durnev and Mangen, 2009).

Intra-industry spillover effects refer to the ways in which the actions of one member of a peer group impact the behavior of its peers. The underlying premise of this literature is that firms in the same industry face the same or similar states of the world, so each firm's action says something about the state of the world for its peer firms. The existing literature documents several externalities that have intra-industry effects on investments decisions, such as accounting restatements (Durnev and Mangen, 2009), MD&A disclosure (Durnev and Mangen, 2014), stock market valuation (Foucault and Fresard, 2014), and accounting frauds (Beatty et al., 2013). The results of these prior studies indicate that a firm's reported information is relevant to its peers and impacts their investment behavior. However, despite the fact that the identification of externalities and spillover effects are critical to the economic justification of disclosure and reporting mandates, little progress has been made in this direction to date (Leuz and Wysocki, 2016). This chapter addresses the gap in the literature and answers the call for research by Leuz and Wysocki (2016). Specifically, taking into account the significance of goodwill impairment in the economy, and the investment implications of intra-industry spillover effects, I posit that a firm's goodwill impairment reporting will affect peer firms' future corporate acquisition decisions.[21]

The spillover effect operates through a "learning channel" in which a firm's accounting information provides information to its peers about its unknown future investment payoffs (Badertscher et al., 2013; Beatty et al., 2013; Durnev and Mangen, 2009). Goodwill represents estimates of future economic benefits resulting from past acquisitions. Thus, goodwill impairments are essentially admissions of failure to extract value from past investments (Roychowdhury and Martin, 2013). As a result, goodwill impairment is a clear ex-post signal of poor investment (Hayn and Hughes, 2006), represents overpayment at acquisition (Gu and Lev, 2011), and contains negative information regarding future cash-flows (Bens et al., 2011).[22]

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[21] Throughout the study I use "goodwill impairment reporting" and "goodwill impairment announcement" interchangeably to denote the decision of impairment firms to report significant goodwill impairments.

[22] Moreover, goodwill impairment losses reveal information about business environments, macroeconomic conditions and growth opportunities (Li and Sloan, 2017).

Therefore, the release via goodwill impairments of information regarding the impairment firm's misevaluation of expected synergies or overpayment at acquisitions is likely to supply new information that will impact firms in the same industry (Gu and Lev, 2011).

An alternative view suggests that a firm's goodwill impairment has no impact on peer firms' subsequent investment behavior. The estimation of goodwill impairment losses relies solely on manager's estimation of future cash flow (Ramanna and Watts, 2011); thus, managers may take advantage of the subjectivity inherent in the goodwill impairment test procedure and exert their discretion opportunistically (Knauer and Wöhrmann, 2016). This argument is supported by empirical evidence suggesting that managers bias financial reporting opportunistically, which in turn translates into unreliable goodwill impairment losses (Ramanna, 2008; Ramanna and Watts, 2011). As a result, a firm's goodwill impairment decision could provide doubtful information to market participants. Therefore, if the impairment firm's goodwill impairment decision is not perceived to reveal the true value of past acquisitions, peer firms will learn no new information upon which to adjust their future investment behavior.

To empirically document evidence that significant goodwill impairment announcements impact the quality of peer firms' subsequent investment decisions (i.e., corporate acquisitions), I begin by identifying the announcements of significant goodwill impairments (impairment firms). I use these announcements as shocks that are likely to change peer firms' subsequent investment behavior. In the population of all listed European non-financial firms, I identify 72 impairment firms with unique three-digit SIC codes that report significant goodwill impairments over the period 2005-2012. The European setting provides a common adoption point of accounting for goodwill in 2005 and thus offers a unique opportunity to test the intra-industry learning effect in a transnational setting. I consider goodwill impairment significant if its reported amount is greater than €100 million.[23] Next, I employ a difference-in-differences (DID) methodology to examine the effect of significant goodwill impairments on the quality of peer firms' subsequent corporate acquisition decisions. The treatment sample consists of peer firms that share the impairment firms' three-digit SIC codes and have made acquisitions announcements over the period 2002-2015; the control sample comprises other acquiring firms that share the impairment firms' two-digit SIC codes (excluding peer firms) (Beatty et al., 2013). By employing a DID approach, I evaluate peer firms' investment quality in the periods before and after a significant goodwill impairment is reported in their industry relative to the control firms.

I find that the seven-day cumulative abnormal returns (CARs) around acquisition announcements are significantly higher for peer firms relative to control firms in the three-year window after impairment firms' decisions, as compared to a nil difference in the preceding three-year period. The results suggest that peers learn from impairment firms' goodwill impairment decisions and update their investment behavior accordingly. In addition, when I distinguish between the reasons that led to goodwill impairment loss recognition by the impairment firms, I find that the learning effect on peers' subsequent investment decisions exists only when the impairment firms provide an external reason for goodwill impairment, as opposed to an internal reason.[24] These results indicate that peer firms put more weight on the information released by the impairment firm when the information has a higher signal-to-noise ratio (Shroff, Verdi, and Yost, 2017). I conduct several additional tests to validate the main results. First, I use an alternative threshold to identify firms with significant impairment. I also test whether the findings are robust to an alternative specification of the post-announcement period and to a different CAR estimation window. Next, I eliminate from the sample countries with the largest number of observations to mitigate a potential concern that the results are driven by firms in those countries. Then, I keep only acquisitions with a with a deal size of at least €1 million euros to alleviate concerns that the results speak only for acquisitions with small deal size. Finally, I perform a set of falsification tests and I address peer and control firms assignments. Moreover, I rule out alternative explanations, namely, peer firms learning from their own behavior and other macroeconomic effects driving the main results.

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[23] I use a size-based criterion since large goodwill impairments are more likely to be able to influence peer firms' decisions. In one of the robustness tests, I use €50 million as a cutoff. The results remain qualitatively unchanged.

[24] According to IAS 36, external indicators of goodwill impairment are common factors outside a firm's control that can indicate lower future cash flows or higher discount rate sources of information (e.g., market value, technological changes, market changes, interest rates, and market-to-book value), and internal indicators are firm specific (e.g., obsolescence, physical damage, restructuring, and internal reporting).

To provide further support to the results using corporate acquisitions, I examine whether peer firms' overall investment behavior changes after the occurrence of significant goodwill impairment in the industry (Bourveau, Brochet, and Spira, 2014).[25] In line with prior studies, I measure investment efficiency as the magnitude of the deviation of actual investment from the expected level of investment given the firm's investment opportunities (Biddle, Hilary, and Verdi, 2009; Chen, Hope, Li, and Wang, 2011). I observe that significant goodwill impairment in an industry deters peer firms' over-investment in assets but not their under-investment in assets. These results indicate that the impairment firm's reporting enhances peer firms' investment efficiency and constrains managers to engage in value-destroying activities. These results suggest that impairment announcements reduce peer firms' risk-taking incentives and promote cautious investment behavior.

In the wake of standard setters' debates to revise the financial reporting rules of goodwill recognition and impairment, the results of this study are noteworthy, as they provide important empirical insights into how goodwill impairment signals valuable information that extends beyond the boundaries of the firm. Prior literature on goodwill impairment focuses on the negative consequences of a write-off on the impairment firm itself, such as investors' reaction to the write-off (Li et al., 2011), analysts' response to these losses (Chen et al., 2014), and whether a write-off is negatively associated with future performance (Jarva, 2009). While these findings are informative, the benefits of a firm's goodwill impairment on peer firms have not been investigated in the literature. These findings should be of interest to regulators, practitioners, and researchers, as the merits of International Accounting Standard (IAS) 36 and the move toward fair-value accounting are still under considerable debate.

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[25] I am looking at both investment in companies and investment in assets, as they complement each other and offer a complete overview of how a firm allocates its resources.

Second, this study contributes to the recent literature that highlights the importance of intra-industry spillovers and learning effects (Foucault and Fresard, 2014; Servaes and Tamayo, 2013). A key element of understanding how the capital markets function is to learn how new information released by one firm affects other firms in the same industry. Prior literature has considered a wide range of events that have intra-industry effects, such as earnings announcements (Ramnath, 2002), management forecasts of earnings (Baginski, 1987), bankruptcy announcements (Lang and Stulz, 1992), accounting restatements (Kedia, Koh, and Rajgopal, 2015), cross-country profit warnings among similar companies (Alves, Pope, and Young, 2009), MD&A disclosure (Durnev and Mangen, 2014), and accounting frauds (Beatty et al., 2013). I extend this literature and show that goodwill impairment contains valuable information that helps industry peer firms update their investment behavior.

Third, this study adds to the burgeoning literature on peer firms, which has been limited almost exclusively to interdependencies among domestic firms. Only a few studies examine the spillover effect on firms that are not in the same country. Firth (1996) reports information transfers associated with earnings releases in a two-country context (the United States of

America and the United Kingdom). Alves et al. (2009) find evidence of transnational information transfer associated with profit warnings for a sample of European firms. Wang (2014) shows that the harmonization of accounting standards facilitates transnational information transfer. The current study extends cross-country research by documenting a learning effect on a large set of European countries. As the global economy becomes more integrated, information released by firms in one country is increasingly relevant to firms domiciled in other countries.

The rest of the chapter is structured as follows. The next section presents related literature and hypothesis development, Section 3.3 introduces the sample selection and composition, and Section 3.4 describes the research design. Section 3.5 presents results and additional tests, followed by robustness tests in Section 3.6. Finally, Section 3.7 concludes.

3.2. Related literature and hypothesis development

3.2.1. Usefulness of Peer Firm Information

Firms in the same industry face similar economic shocks, production-technology advancements, and government regulations. Therefore, a firm's accounting information should matter to another company in the same industry. The literature on intra-industry information transfer indicates that, in general, material information released by one firm affects the share prices of other firms (Foster, 1981). Scholars have documented information transfer effects of earnings announcements (Foster, 1981; Ramnath, 2002), pre-announcements (Maletta and Zhang, 2012), management forecasts (Baginski, 1987; Kim, Lacina, and Park, 2008), bankruptcy (Lang and Stulz, 1992), dividend payouts (Howe and Shen, 1998), stock repurchases (Hertzel, 1991), and restatements (Gleason, Jenkins, and Johnson, 2008). In addition, some studies examine the information transfer effect of earnings releases (Firth, 1996), profit warnings (Alves et al., 2009) and accounting standards (Wang, 2014) on firms that are not in the same country. These aforementioned studies generally examine non-reporting firms' stock-price reactions to reporting firms' information.

Recently, and in close relation to the literature on intra-industry information transfer, a new interest in studying peer firms (or competitors/rivals) has emerged. Such studies harvest the idea that market participants, such as managers, banks, and analysts, incorporate information originating from firms in the same industry into their decisions. For instance, Leary and Roberts (2014) show the influence of peer firms on corporate capital structures and financial policies. Servaes and Tamayo (2013) find that industry peers cut capital expenditures, reduce their cash holdings and free cash flows, increase debt, and increase their payouts to shareholders when another firm in the industry is the subject of a hostile takeover attempt. In a similar vein, De Franco, Edwards, and Liao (2016) find that a firm is more likely to borrow from a bank that has lending histories with its peers, while De Franco, Hope, and Larocque (2013) show that analysts strategically select peers with high valuations, likely to legitimize their stock recommendations and target prices.

More closely related to the current study, the literature has also examined how a firm's accounting information affects other firms' real investment behavior. Prior work highlights how reporting events, such as accounting restatements (Durnev and Mangen, 2009), MD&A disclosure (Durnev and Mangen, 2014), stock market valuations (Foucault and Fresard, 2014), accounting frauds (Beatty et al., 2013), and the presence of more public firms in an industry (Badertscher et al., 2013) have intra-industry effects on investments decisions. Durnev and Mangen (2009) provide empirical evidence showing that restatements cause restating firms' peers to update their beliefs about the investment projects they undertake. Durnev and Mangen

(2014) also show that a company's investments are associated with the qualitative content of their peers' MD&A disclosure. In addition, Foucault and Fresard (2014) find that corporate investments are positively associated with the market valuation of peer firms, while Beatty et al. (2013) document a causal effect of high-profile accounting frauds on peer firms' investment. Finally, Badertscher et al. (2013) provide evidence that the presence of more public firms (which provide public financial reports) in an industry is associated with an improvement in the efficiency of private firms' investment decisions. All these findings are consistent with the idea that related firms' information is useful for a firm's financial reporting and investment decisions.

3.2.2. Consequences of goodwill impairment recognition

The literature on goodwill impairments in general examines the value relevance of goodwill write-offs and the effect of their announcements (Bens et al., 2011).[26] Goodwill impairment loss is estimated based on managers' projections about the future cash flows that the cash-generating units can generate in the future. Given that managers have more detailed and more reliable information about the performance of their company than outsiders, it is reasonable to expect that any impairment loss resulting from the impairment testing procedure conveys managers' private information about the firm's future earnings prospects to market participants (Ramanna and Watts, 2011).

Examining how the market reacts to goodwill impairment reporting, several studies show that goodwill write-offs are value relevant. These studies almost exclusively analyze goodwill write-downs under U.S. Generally Accepted Accounting Principles (GAAP). However, some papers also tackle the International Financial Reporting Standard (IFRS) setting. Value relevance studies under the U.S. GAAP show that goodwill impairments lead investors to update their expectations. Li et al. (2011) and Bens et al. (2011) find that the market reacts negatively at the time of the revelation of goodwill impairments. Ahmed and Guler (2007) show that goodwill impairments are more strongly associated with stock returns and stock prices after Statement of Financial Accounting Standards (SFAS) 142 becomes effective. Value relevance research under the IFRS also suggests that goodwill impairments convey useful information to investors. Knauer and Wöhrmann (2016) examine the information content of goodwill impairments according to IAS 36 and document a negative and significant stock market reaction to unexpected goodwill write-offs. Amel-Zadeh, Faasse, Li, and Meeks (2013) show that goodwill impairment, as opposed to goodwill amortization, negatively impacts market value. These findings indicate that goodwill impairment is informative to investors.

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[26] I discuss the literature dealing directly with the value relevance and consequences of goodwill impairment reporting, as this is the focus of the chapter. A comprehensive review of the academic literature related to IAS 36 can be found in Schatt, Doukakis, Bessieux-Ollier, and Walliser (2016) and D'Arcy and Tarca (2016). Boennen and Glaum (2014) and Wen and Moehrle (2015) also provide an overview of the literature in a U.S. setting.

Prior literature has also shown that firms that report goodwill impairments experience downward earnings forecast revisions from analysts (Bens et al., 2011; Li et al., 2011), as well as less accurate (Chen et al., 2014) and more dispersed (Chen et al., 2014) analyst earnings forecasts. Beyond these capital market effects, goodwill impairment also has important negative financial reporting consequences. Some papers have investigated whether goodwill impairment predicts future company performance. Jarva (2009) shows that goodwill impairment losses under SFAS 142 are negatively associated with operating cash flows in subsequent periods. Li et al. (2011) find that impairment losses are significantly negatively correlated with sales growth and growth in operating income in the subsequent two years. Godfrey and Koh (2009) add that goodwill write-downs are negatively associated with firms’ underlying investment opportunities.

In summary, the existing studies on goodwill impairment reveal evidence of the relevance of goodwill write-downs to capital markets participants, but they predominantly focus on the negative financial-reporting and capital-market consequences of goodwill impairment for the reporting firm.

3.2.3. Hypotheses development

When making a corporate acquisition, managers of the acquirer typically must explore the likely value of potential synergies of the acquisition and determine the maximum bid price the firm should pay for the target (Goodman, Neamtiu, Shroff, and White, 2013). The successful forecasting of these synergies and price depends on the quality of available information about the industry, the economic environment, and specific information about the target. Nonetheless, managers may lack complete information. To mitigate this shortage, they may turn to the information delivered by peer companies. While there are many information sources about peers, the likelihood of any of them affecting peer firms' behavior depends on the extent to which the sources convey general as opposed to firm-specific information (Schipper, 1990).[27] Indeed, scholars have found that peers learn about future investments from different accounting events that supply general accounting information, such as accounting restatements (Durnev and Mangen, 2009), MD&A disclosures (Durnev and Mangen, 2014), stock market valuations (Foucault and Fresard, 2014), and accounting frauds (Badertscher et al., 2013; Beatty et al., 2013). In this study, I argue that significant goodwill impairments provide information from which peers learn about other firms' past mistakes and update their views about their own future resource allocation.

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[27] Schipper (1990, p. 107) argues that "announcements made by or about specific firms—such as earnings forecasts or earnings announcements—should by definition have a substantial firm-specific component. The greater this idiosyncratic component, the smaller the potential for information transfer (other things equal)."

Previous literature debates whether significant goodwill impairments could supply general information that influences peer firms' investment behavior. On the one hand, the disclosure of goodwill impairment is an important business event (Gu and Lev, 2011), and its announcement conveys new information to the market, since the reporting firms experience a significant decline in market value (Li et al., 2011). Moreover, goodwill impairment represents a clear (ex-post) indication of unsuccessful acquisitions, attributable either to an overpayment in the purchase price or an unexpected deterioration in the fundamentals of the business acquired. As such, goodwill impairment announcements can be a source of news, communicating information regarding the misevaluation of expected synergies or the unexpected decline in acquisition synergies of the impairment firm. This information is transferred from the impairment firm to peer firms because goodwill impairment announcements contain state-of-the-world information and are predictable based on industry and economic trends (Hayn and Hughes, 2006). Therefore, an impairment firm's decisions reduce the information asymmetry between peer acquirers and their targets. As peer acquirers learn from the information released on the market, they may expect fewer synergies from future corporate acquisitions, which in turn may translate into better acquisitions quality.

On the other hand, goodwill impairments may not induce learning by peers. Prior literature documents managers' tendency to avoid or delay the recognition of goodwill impairments (Ramanna and Watts, 2011) and only report write-offs in case there is overwhelming evidence that goodwill is impaired (Li and Sloan, 2017). Consistent with this view, Hayn and Hughes (2006) and Jarva (2009) show that impairments lag behind deteriorating economic performance for several years. Therefore, the announcement of goodwill impairment could provide questionable and limited informational value to capital market participants, including peer firms. Hence, I formulate the following hypothesis:

> *H1***:** *Goodwill impairments have a positive impact on the quality of peer firms' subsequent corporate acquisition decisions.*

I further consider whether the explanation a firm provides for its goodwill write-down affects its peers' reactions to the impairment decision. IAS 36 requires firms to disclose the events and circumstances that led to the recognition of a material impairment loss. Although the standard does not enumerate a list of reasons for impairment, it specifies both external and internal indicators that should be examined for potential impairment. External indicators relate to factors outside the firm's control, such as market value, technological changes, market changes, interest rates, and market-to-book ratio, while internal indicators include firm-specific factors, such as obsolescence, physical damage, restructuring, and internal reporting.

Broadly speaking, prior literature suggests that both common and firm-specific news have distinct implications for other companies' investments (Durnev and Mangen, 2014). In the context of the current study, external indicators of impairment provide information common to all companies in the impairment firm's industry, while internal indicators of impairment offer information specific to the impairment firm. The former indicate a lower likelihood of opportunistic manipulation of the timing and amount of goodwill impairment (Knauer and Wöhrmann, 2016). Consequently, the information conveyed has a high signal-to-noise ratio. The latter relate to aspects known only to managers; therefore, the information conveyed has a low signal-to-noise ratio. Thus, when a firm announces goodwill impairment that it attributes to an external reason, peer companies could update their investment behavior and engage in higher-quality investments. In contrast, firm-specific news should not impact peer companies. In line with this argument, I expect that peers react to goodwill impairment announcements only when the firm provides an external reason for the impairment.

> *H2: Goodwill impairments have a positive impact on the quality of peer firms' subsequent corporate acquisition decisions only when the impairment is attributed to an external reason as opposed to an internal reason.*

3.3. Data and Sample selection

3.3.1. Identification of significant goodwill impairments

To empirically investigate that significant goodwill impairment announcements impact the quality of peer firms' subsequent corporate acquisitions, I begin by identifying firms with significant goodwill impairments (i.e., impairment firms). I use these announcements as shocks that are likely to change peer firms' subsequent investment behavior. I focus on listed firms in European countries that mandated the adoption of the IFRS in 2005 and that report significant goodwill impairments over the period 2005-2012.[28] Goodwill impairment data is downloaded from Thomson Reuters Eikon database, and a firm is considered to have reported significant goodwill impairment if the reported amount is greater than €100 million. The €100 million cutoff is a rounded up value of the mean of a sample of material goodwill write-downs reported by firms in the countries included in the current study. Prior literature (Jarva, 2009; Knauer and Wöhrmann, 2016) defines a goodwill write-down to be material if the write-down either represents more than 1% of total firm assets at the beginning of the year or exceeds the equivalent of €10 million. Untabulated descriptive statistics of a sample that follows the aforementioned inclusion criteria show a mean (median) of goodwill impairment of €72.21 million (€3.0 million). Using an absolute size-based criterion as a mode of defining significant goodwill impairment is important, because larger goodwill impairments are more likely to be reported by larger firms, which are usually also leading firms in their industries. Moreover, larger goodwill impairments are more visible and thus more likely to affect peers' resource-allocation decisions.

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[28] I begin the sample in 2005 because this is the year IAS 36 became effective.

I identify a total of 232 reported significant goodwill impairments between 2005 and 2012. For each industry, classified by its specific three-digit SIC codes, if there is more than one instance of significant goodwill impairment, I retain only the largest reported goodwill impairment.[29] This procedure results in a final sample of 72 significant goodwill impairments reported by firms with unique three-digit SIC codes. This represents 23% of the 316 three-digit SIC codes represented in Thomson Reuters Eikon for European firms.

Panel A of Table 3-1 outlines the sampling procedure of impairment firms, while Panel B presents the distribution of impairment firms by three-digit SIC codes, year of significant impairment, and country. The sample of impairment firms is relatively uniformly distributed across the sample period, with 2008 and 2009 having the highest levels of representation, coinciding with the worldwide economic recession. The impairment firms come from 14 European countries. Not surprisingly, the United Kingdom has the largest sample representation (20 announcements, or 28.17%), due to the significant size of its capital market, followed by Germany (13 announcements, or 18.31%), and France (12 announcements, or 12%). All other countries represent less than 10% of the sample.

[Insert Table 3-1 here]

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[29] There is another possible way of constructing the impairment firm sample, by including only the earliest identified firm that reported significant goodwill impairment. I choose to include the largest reported goodwill impairment in preference to the earliest because larger goodwill impairment is more likely to have a ripple effect.

3.3.2. Research Design

To examine the impact of significant goodwill impairment on peers' investment behavior, I employ a DID approach, which allows me to assess the investment behavior of peer firms before and after the reporting of significant goodwill impairment, relative to a set of control firms. The main assumption of the DID methodology is that prior to the treatment (i.e., significant goodwill impairment reporting) the dependent variable follows a parallel trend for both the control and treatment group (Roberts and Whited, 2012). This condition means that in the absence of the treatment, the average change in the dependent variable should be the same for both treated and non-treated groups. As a result, any relevant difference in the two groups after the treatment then can be attributed to the reporting of the significant goodwill impairment.

The main dependent variable of the analysis, cumulative market-adjusted abnormal return (CAR), is computed over seven trading days centered on the date of the merger and acquisition (M&A), with the S&P Europe 350 stock market index as the market return. The M&As announcement dates are obtained from Thomson Reuters Mergers and Acquisitions, and stock returns data comes from Thomson Reuters Eikon.

The pre- and post-goodwill impairment periods are defined as three-years before and after the significant goodwill impairment announcement respectively. If significant goodwill impairment takes place in year *t*, the post-goodwill impairment period is defined as years $t+1$, *t+2,* and $t+3$, and the pre-goodwill impairment period is defined as years *t-1, t-2,* and *t-3*. I estimate the following DID regression model:

$$\begin{aligned} CAR\ (-3,+3) = {} & \alpha_1 Peer + \alpha_2 Post + \alpha_3 Peer\ \times\ Post\ + \alpha_4 Acquirer\ size \\ & + \alpha_5 Acquirer\ leverage + \alpha_6 Acquirer\ ROA + \alpha_7 Private\ target \\ & + \alpha_8 Same\ industry + \alpha_9 Majority\ cash + \alpha_{10} Cross\ border \end{aligned}$$

$$
\begin{aligned}
&+Acquirer\ Country\ fixed\ effects\\
&+Acquirer\ Industry\ fixed\ effects\\
&+Target\ Country\ fixed\ effects\\
&+Target\ Industry\ fixed\ effects\\
&+M\&A\ Year\ fixed\ effects+\varepsilon \qquad \text{(III.1)}
\end{aligned}
$$

where *Peer* is an indicator variable equal to one for peer firms and zero for control firms, and *Post* is an indicator variable equal to one for the three years after the goodwill impairment announcement and zero for the three years prior to the significant goodwill impairment announcement. In this specification, the estimated α_3 represents the effect of significant goodwill impairment on the quality of peers' investment behavior after significant goodwill impairment occurred, relative to the control group in the same period.

I include in Equation (III.1) both acquirer-specific and deal-specific control variables to address potential correlated omitted variable concerns. Empirical evidence indicates that M&A announcement returns are lower for acquisitions by larger firms (Moeller, Schlingemann, and Stulz, 2004), firms with lower leverage (Maloney, McCormick, and Mitchell, 1993), and firms with lower return on assets (Masulis, Wang, and Xie, 2007). I measure all firm characteristics as of the last fiscal year-end preceding the acquisition announcement. Therefore, I control for firm size (*Acquirer size*), measured as the natural logarithm of total assets; leverage (*Acquirer leverage*), defined as the ratio of total debt to total assets of the firm; and return on assets (*Acquirer ROA*), measured as the ratio between net income and total assets. To control for transaction-specific characteristics, I include variables typically used in the literature as determinants of M&A announcement returns, such as target's private status (*Private target*), whether the acquisition is not a diversifying transaction (*Same industry*), the method of payment

(*Majority cash*), and whether the deal is a cross-border transaction (*Cross border*). Prior literature finds that market reaction is significantly more positive to an M&A announcement when the target is a private company (Fuller, Netter, and Stegemoller, 2002), when the acquisition is not a diversifying transaction (Masulis et al., 2007), when cash (as opposed to stock) is used as a method of payment in an acquisition (Moeller et al., 2004), and when the acquisition is a domestic (instead of cross-border) transaction (Moeller et al., 2004). Finally, I include the acquirer firm's country and industry (two-digit-SIC) fixed effects, the target firm's country and industry (two-digit-SIC) fixed effects, acquisition year fixed effects, and cluster the standard errors at the firm level to account for within-firm variation.[30] Details on the construction of the variables are provided in the Appendix 3-1. If applicable, I convert values denominated in currencies other than euros into euros.

To test H2, I split the sample based on the reasons provided by the impairment firms behind the goodwill impairment decisions and separately re-estimate Equation (III.1). For this purpose, I collect managers' explanations for goodwill impairment from firms' annual reports, and code each reason as either external or internal. The coding scheme used is in line with the reasons listed in IAS 36. If I cannot identify the reason for impairment in the annual report, I drop the impairment firm and the associated peer and control firms from the analysis.

3.3.3. Sample construction: Peers and control group firms

Following Beatty et al. (2013), I define peer firms as listed firms in European countries that have the same three-digit SIC codes as the impairment firms and have made M&A

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[30] In Equation (III.1) and in the followings, I include *Post* for completeness of the DID effect; however, the α_2 parameter is subsumed by year fixed effects.

announcements over the period 2002-2015.[31] I use firms in the same two-digit SIC codes as the impairment firm (excluding peer firms) as a control group.

I start the sample period from 2002 and end it in 2015 due to the construction of the three-year pre-announcement post-announcement periods. Panel A of Table 3-2 reports the construction procedure for the peer firm sample. The initial sample, downloaded from Thomson Reuters Mergers and Acquisitions, comprises 37,388 M&A transactions announced by public non-financial European firms over the period 2002-2015. I eliminate a significant number of M&A transactions because the acquirer does not have an identifier on Thomson Reuters Eikon. I further exclude incomplete transactions, duplicate observations, observations with different three-digit SIC code from the ones identified in Section 3.3.1. Finally, I restrict the sample to three years before and three years after each reporting of significant goodwill impairment, eliminate observations with missing stock price data and control variables data on Thomson Reuters Eikon, and observations with negative book value of equity. This process resulted in a final peer sample of 5,233 M&A transactions. The control sample, comprising 7,336 M&A transactions, combined with the treatment sample results in a test sample of 12,569 M&A transactions, that includes 2,382 unique firms.[32]

[Insert Table 3-2 here]

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[31] I use firms' three-digit SIC codes to define peer firms. There are other possible ways of classifying firms as "peers," including firms that share the same country of origin, geographic region, legal system, language, or common analyst coverage, etc. I use three-digit SIC codes because firms in the same three-digit SIC code undertake similar business activities using similar resources (Hoberg and Phillips, 2016), and are affected by similar economic forces (e.g., common demand/supply shocks). Thus, these firms are also more likely to target comparable corporate acquisitions.

[32] In certain cases, there is more than one instance of significant goodwill impairment in the industry denoted by the same two-digit SIC codes, which complicates the way control firms are defined. For example, in the two-digit SIC code 48, there are three instances of significant goodwill impairments: SIC code 481 in 2006, SIC code 483 in 2008, and SIC code 489 in 2011. Based on the definitions above, peer firms for the impairment firm in SIC code 481 are those that have the same three-digit SIC code, that is, 481. Control firms have the same two-digit-SIC code (48), excluding those in the three-digit SIC code 481. Given that control firms should not pertain at the same time to the peer sample, I exclude firms in SIC codes 483 and 489 from the control sample.

Panel B of Table 3-2 presents the distribution of the treatment and control samples per year, differentiating between pre- and post-goodwill impairment announcement periods. Concerning the distribution of M&As over time, the majority of the sample falls in 2007 and 2008 in the pre–announcement period and 2011 and 2012 in the post-announcement period. These periods largely coincide with the M&A waves. Panel C presents the distribution of the treatment and control samples by country, differentiating between pre- and post-goodwill impairment announcement periods. The largest sample representation pertains to the largest European capital market, the United Kingdom (treatment sample: 26.75%, controls sample: 24.73%), followed by France (treatment sample: 14.05%, control sample: 12.68%) and Germany (treatment sample: 10.57%, control sample: 10.41%).

3.4. Empirical results

3.4.1. Univariate results

Panel A of Table 3-3 presents statistics on the distribution of the dependent and independent variables for the full sample. The mean and median values of *CAR* are negative, but close to zero. However, the range between the first quartile (Q1 = -0.015) and the third quartile (Q3 = 0.020) indicates that there is considerable variation in the market responses to announcements.

With regard to the control variables, the sample firms are relatively large, as expected for acquirer firms, with average total assets over €5.7 billion. These firms also have low financial leverage (mean *Acquirer leverage* = 21%). Moreover, the return on assets (*Acquirer ROA*) has a median (mean) value of 5.4% (3.7%). Private targets (*Private target*) make up 57% of the sample, and 36% of the deals are settled by cash (*Majority cash*). Approximately 54% of the transactions involve acquirers and targets from the same industry (*Same industry*), and 57.4% of the transactions are cross-border (*Cross border*).

[Insert Table 3-3 here]

In Panel B of Table 3-3, I examine the characteristics of the treatment and control groups in the absence of the treatment. I compare each variable, presenting the means for the treated and control groups and the significance of the difference in their means using a t-test. The tests indicate that there is no significant difference in *CAR*, suggesting that in the absence of the treatment, peer and the control groups make acquisitions of comparable quality. That is, the dependent variable of the Equation (III.1) follows a parallel trend for both the treatment and control groups. Although the DID methodology mainly requires that prior to the treatment, the dependent variable follows a parallel trend for both groups (Roberts and Whited, 2012), I also test whether the difference in means of the rest of acquirer level and deal level variables in Equation (III.1) is statistically significant in the pre-treatment period. The tests show that there is no significant difference in the deal characteristics (method of payment and the indicator variable for cross border transactions), suggesting that peers and the control group are comparable regarding the acquisitions they make. There are some differences in terms of the acquirers' size, leverage, and return on assets. Specifically, as compared with the control group, peer firms are larger, less leveraged and have lower return on assets.

Panel C of Table 3-3 describes the differences in variables for the peer group and control group in the post-treatment period. The univariate results indicate that firms in the control group are smaller, more leveraged, have higher return on assets, engage more in acquisitions of private targets, and in less diversifying deals. More importantly, firms in the peer group have higher announcement returns, suggesting that they make better quality acquisitions than firms in the control group.

Panel D of Table 3-3 reports the Pearson correlation coefficients between the dependent and independent variables of Equation (III.1). The correlation coefficients indicate that acquirer returns are significantly higher for firms that are larger, more leveraged, and with higher return on assets. Acquirer returns are also significantly higher for acquisitions of private targets, stock-financed acquisitions, and cross-border deals.

3.4.2. Multivariate results

Table 3-4 presents the regression results from estimating Equation (III.1) while sequentially adding more controls. In Column (1), I report a base model. In Column (2), I add acquirer firm-level controls and deal-level controls, while in Column (3), I present the full model, including the acquirer firm's industry and country fixed effects, the target firm's industry and country fixed effects, and acquisition year fixed effects. Consistent with my expectation, the coefficients on *Peer* × *Post* are positive and statistically significant at the 10 percent level, and 5 percent level respectively (t-statistics =1.91, t-statistics =2.01, and t-statistics = 2.24, two-tailed). The coefficient of 0.006 on all the three specified models indicates an increase of 0.6% in the cumulative abnormal returns for the peer firms after the reporting of significant goodwill impairment relative to what it would have been in the absence of it. The coefficient on *Peer* alone captures whether peer firms engage in better quality acquisitions in the pre-treatment period as compared to the control group.[33] However, the coefficient is statistically insignificant. Turning to the control variables in Column (3), CAR is higher for acquisitions that are made by larger acquirers, acquisitions of private firms, and acquisitions that are not settled with cash.[34] Overall, the results suggest that market assessment of deal quality is higher in the three-year period following a significant goodwill impairment announcement in a given industry as compared to a control group. The results support the argument that the decisions leading to significant goodwill impairment convey valuable information to peers that helps them engage in better quality acquisitions.

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[33] Based on the Chow test, the sum of the *Peer* coefficient and the coefficient of the interaction between *Peer* and *Post* (-0.002+0.006=0.004) is significantly greater than zero. F-statistics=2.54, p-value=0.07.

[Insert Table 3-4 here]

Table 3-5 presents the results of testing H2 using ordinary least squares regression. Column (1) reports the results when impairment firms provide external reasons for the occurrence of the significant goodwill impairments. The coefficient on *Peer* × *Post* is positive and statistically significant at the 5 percent level (t-statistics =2.30, two-tailed). Regarding the control variables, CAR is higher for firms with higher return on assets, diversified acquisitions, acquisitions not settled with cash, and domestic acquisitions. Column (2) reports the results when impairment firms provide internal reasons for the occurrence of the significant goodwill impairments. The coefficient on *Peer* × *Post* is positive but not statistically significant. The difference between the coefficients on *Peer* × *Post* in Column (1) and Column (2) is also statistically significant at the 5% level. In other words, significant goodwill impairment announcements have a positive impact on peers' subsequent investment behavior only when external reasons for impairment are provided. Overall, the results support the argument that the information conveyed when a firm announces a goodwill impairment that it attributes to an external reason has a higher level of signal-to-noise ratio, as compared to the information related to goodwill impairment that it attributes to an internal reason.

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[34] The direction for the variable size (*Acquirer size*) is unexpected. However, several previous papers, such as Dhaliwal, Lamoreaux, Litov, and Neyland (2016) and Bourveau et al. (2014) find that the returns are higher for acquisitions that are made by larger acquirers.

[Insert Table 3-5 here]

3.4.3. Extensions

I further expand the scope of the analysis and examine whether peer firms' total investment behavior changes after a significant goodwill impairment is reported in the industry. To do so, I first estimate the level of expected investment by using a regression that relates total investment to growth opportunities, with sales growth as an accounting proxy for growth opportunities.

$$Investment_{it+1} = \alpha_1 Sales\ growth_{it} + Industry\ fixed\ effects + Year\ fixed\ effects + \mathcal{E} \qquad \text{(III.2)}$$

In this model, *Investment* is the sum of research and development (R&D) expenditures, capital expenditures, and acquisition expenditure less cash receipts from the sale of fixed assets, scaled by lagged total assets; *Sales growth* is the percentage change in annual sales. Although the prior literature estimated the model by industry year (Biddle et al., 2009), I run a pooled sample using industry and year fixed effects, because industry is the level of analysis of the current study. Panel A of Table 3-6 reports the estimations of the Equation (III.2).

[Insert Table 3-6 here]

Next, I use the difference between actual and expected investment as a measure of over- or under-investment, i.e., abnormal investment (*Abnormal investment)*. In other words, abnormal investment equals the absolute value of the residual from Equation (III.2) with higher values of abnormal investment representing a higher absolute deviation from the predicted level. To test whether peer firms' total investment behavior changes after a significant goodwill impairment announcement in the industry, I run the following model:

$$\begin{aligned} Abnormal\ investment = {} & \alpha_1 Peer + \alpha_2 Post + \alpha_3 Peer \times Post + \alpha_4 Acquirer\ size \\ & + \alpha_5 Acquirer\ leverage + \alpha_6 Acquirer\ loss \\ & + \alpha_7 Acquirer\ CFO + \alpha_8 Acquirer\ ROA \\ & + \alpha_9 Acquirer\ tangibility + \alpha_{10} Acquirer\ financial\ slack \\ & + Country\ fixed\ effects + Industry\ fixed\ effects \\ & + Year\ fixed\ effects + \varepsilon \qquad \text{(III.3)} \end{aligned}$$

where, *Abnormal investment, Peer,* and *Post* are defined above. I also include in Equation (III.3) lagged acquirer characteristics that have been documented to affect firm's investment and hence potentially cofound my results (Chen, Hope, Li, and Wang, 2011). I thus control for firm size (*Acquirer size*), leverage (*Acquirer leverage*), whether a firm reports negative net income (*Acquirer loss*), operating cash flow (*Acquirer CFO*), return on assets (*Acquirer ROA*), tangibility (*Acquirer tangibility*), and financial slack (*Acquirer slack).* Moreover, the model includes country, industry (two-digit SIC code), and year fixed effects, and cluster standard errors at the firm level. Panel B of Table 3-6 presents descriptive statistics of the variables included in Equation (III.3). The coefficient of interest in Equation (III.3), α_3 captures whether firms deviate from the expected investment level in the period after significant goodwill impairment has been announced in their industry relative to the control group in the same period.

Next, I examine under-investment and over-investment separately, by creating subsamples based on the sign of abnormal investment. In particular, negative residual from Equation (III.2) means that the firm is making investments at a lower rate than expected according to sales growth, and thus it will under-invest. Conversely, positive residual from Equation (III.2) means that the firm is making investments at a higher rate than expected according to sales growth, and thus it will over-invest. I then re-estimate Equation (III.3) after replacing the dependent variable by the negative residual of the investment model (*Under-investment*) or the positive residual of the investment model (*Over-investment*).

Column (1) of Table 3-7 presents the results obtained from estimating Equation (III.3). The coefficient on *Peer* × *Post* is negative but not statistically significant (t-stat = -1.35). Furthermore, Column (2) and Column (3) of Table 3-7 present the results obtained from separately estimating Equation (III.3) for the under-investment group and the over investment group. Model 2 presents the results regarding under-investment (*Under-I*). The coefficient on *Peer* × *Post* has a positive but statistically insignificant sign (t-stat = -0.02). Model 3 presents the results regarding over-investment (*Over-I*). The coefficient on *Peer* × *Post* has a negative and statistically significant sign at the 10 percent level (t-stat = -1.68). Turning to the control variables in Column (3), the results show that smaller firms, loss-making firms, firms that have lower cash flow from operations, firms that have higher return on assets, and higher financial slack are more likely to over-invest. These results indicate that the reporting of significant goodwill impairment reduces the likelihood of over-investment in assets of peer firms. Overall, the findings suggest that impairment firms' announcements curb peer firms' incentives to engage in value-destroying activities, such as empire building.[35]

[Insert Table 3-7 here]

3.5. Robustness tests

I next examine the robustness of my primary findings. For these tests, I focus on the effect of significant goodwill impairment reporting on corporate acquisition behavior (Table 3-4). To do so, I use an alternative threshold to identify firms with significant impairment; I vary the length of the post-announcement period; I vary the CAR window estimation; I exclude U.K., German and French firms from the peer and control firm samples; I include only M&As with a deal size of at least €1 million; I address peer and control firms assignments; I perform a set of falsification tests.

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[35] These results are in line with Cedergren, Lev, and Zarowin (2015), who shows that after the introduction of SFAS 142 firms decrease their risk-taking investment behavior.

3.5.1. Identification of significant goodwill impairments

To alleviate concerns that the results are driven by design choices, I first use an alternative threshold to identify firms with significant impairment. I vary the threshold by considering goodwill impairment significant if its amount is larger than €50 million. Consequently, I identify 92 relevant cases of significant goodwill impairments, which correspond to 92 unique three-digits SIC codes for the period 2005-2012. I use these industries to construct the peer firm sample and re-estimate Equation (III.1) under the new conditions. As shown in Column (1) of Table 3-8, the coefficient on *Peer* × *Post* remains positive and statically significant at the 10% level (t-statistic = 1.90), suggesting that the results are not affected by the definition of significant goodwill impairment.

[Insert Table 3-8 here]

3.5.2. Variables measurement: Post-announcement period definition

Further, I vary the length of the post-announcement period. In the main test, I define the post-announcement period as three years after the announcement of significant goodwill impairment. As a robustness test, I set the post-announcement period to two years after the announcement of significant goodwill impairment. Although, varying the post-announcement period reduces the significance level of the estimation, the coefficient on *Peer* × *Post*, tabulated in Column (2) of Table 3-8 remains positive and statically significant at the 10% level (t-statistic = 1.76). These results indicate that the main findings are not driven by the design choice with respect to the post- announcement period definition.

3.5.3. Variables measurement: CAR window

In this section, I vary the CAR window estimatiin and use five-day *CAR (-2,+2)* as a dependent variable. In the main test, I report the results using seven-day *CAR (-3,+3)* window, where event day 0 is the announcement date. I have provided results for the five-day *CAR (-2,+2)* in Column (3) of Table 3-8. The coefficient on *Peer* × *Post* is positive and statically significant at the 5% level (t-statistic = 2.20). Overall, the results are not affected by the CAR window selection criteria.

3.5.4. Excluding the United Kingdom, France and Germany

I next address potential concerns about sample composition. I acknowledge that the sample is not balanced across countries and thus one concern could be that the results are primarily driven by the corporate acquisition behavior in a small set of countries that represent a large portion of observations. I eliminate the countries with the largest number of observations to mitigate a potential concern that the results are driven by firms in those countries. As indicated in Table 3-1 and Table 3-2, a large proportion of the impairment firms (58.48%) and peer firms (49.30%) comes from the United Kingdom, France and Germany. Thus, it is possible that the results might be overrepresented by firms in these countries. Moreover, the results could be interpreted as domestic spillover rather than cross-country spillover if the impairment firms from United Kingdom, Germany and France that have a spillover effect on the peer firms from the

United Kingdom, Germany and France drive the results. Ultimately, this also raises the concern of a potential lack of generalizability. Therefore, I replicate Equation (III.1) after excluding peer and control firms from the United Kingdom, France and Germany. Estimation results are tabulated in Column (4) of Table 3-8. The coefficient on *Peer* × *Post* is positive and statistically significant at the 10 percent level (t statistic = 1.71). Overall, the findings do not seem to be greatly affected by the largest sample countries; if anything, the full sample analyses produce slightly better results than after excluding these countries.

3.5.5. Deal size

Prior literature has shown that acquirers announcement returns may vary with the size of the deals. In particular, consistent with prior work, major acquisitions generate significantly lower announcement returns (Moeller et al., 2004). Given that there are a lot of missing data related to deal size, I fail to include this variable in the list of covariates of Equation (III.1). However, in order to alleviate one potential concern that the results are driven by acquisitions with small deal size, I further re-estimate Equation (III.1) keeping only acquisitions with a deal size of at least €1 million. Column (5) of Table 3-8 presents the estimates of this variation of Equation (III.1). The coefficient on *Peer* × *Post* is positive and statistically significant at the 5 percent level (t statistic = 2.36), indicating that the findings are not driven by a subset of acquisitions with small deal size.

3.5.6. Falsification tests

The validity of DID estimations relies on the parallel trends assumption for the control and treatment groups. While it is difficult to test this assumption directly, I build on Gipper, Leuz, and Maffett (2015) and perform a series of falsification tests. The tests consist of re-estimating the Equation (III.1) by varying the timing of the treatment window. The analysis assures that the changes in investment behavior are due to the impact of the significant goodwill impairments. To this end, I vary the timing of the significant goodwill impairment announcements by year, from one year prior to one year after the actual cutoff date. In other words, the tests consist of re-estimating Equation (III.1) with an intervention that occurs one year before significant goodwill impairment happened and one year after significant goodwill impairment happened. For instance, if in the main model a significant goodwill impairment occurs in year t, in this test I consider goodwill impairment as being in either year *t-1* or year *t+1*. Results of this falsification tests are reported in Column (1) and Column (2) of Table 3-9. Around the placebo significant goodwill impairment reporting, there is no statistically significant changes in corporate acquisition behavior between peer firms and control firms. The results from these falsification tests corroborate my earlier analyses on the validity of the parallel trends assumption prior to the reporting of significant goodwill impairment and further suggest that the differences in corporate acquisition behavior I document can be attributed to the reporting of significant goodwill impairment.

[Insert Table 3-9 here]

3.5.7. Propensity score matched sample

One concern about Equation (III.1) is that the characteristics of peer firms differ from those of control firms and that these differences might drive observed corporate acquisition differences. To ensure that peer and control firms are comparable in observable firm-level characteristics, I employ propensity score matching. I model the probability of being a peer conditional on covariates through a logit regression. The list of covariates includes acquirer-level characteristics such as acquirer size, acquirer leverage, acquirer ROA, and deal-level characteristics such as private target, same industry, majority cash and cross border. I employ propensity score matching without replacements and set the caliper to 0.2 × the standard deviation of the propensity score from the logit model. The balancing property, by which observations with the same propensity score have the same distribution of observable covariates independently of treatment status, is satisfied. The results in Column (1) of Table 3-10 confirm my earlier results: the coefficient on *Peer* × *Post* is positive and statistically significant at the 10 percent level.

[Insert Table 3-10 here]

3.6. Addressing alternative explanations

3.6.1. Learning by doing as an alternative explanation

It is plausible that the main documented results suggest that acquirers learn from their own experience to better execute M&A transactions. To the extent that acquirers learn by doing, they may want to avoid bad outcomes and become more skillful about their investment behavior. Therefore, I replicate Equation (III.1) after including in the list of covariates a variable that measures acquirers experience (*LBD). LBD* takes the value of 1 for years in which the acquirers are first-time acquirers and zero otherwise. The results tabulated in Table 3-11 show that the coefficient on *Peer* × *Post* remains positive and statistically significant at the 5 percent level (t statistic = 2.28). These results provide more confidence that the main findings indicate that the learning effect comes from the peers' experience and not from the acquirers' own experience.

[Insert Table 3-11 here]

3.6.2. Other macroeconomic effects as an alternative explanation

There are, at least theoretically, other correlated macroeconomic shocks coinciding with the reporting of significant goodwill impairment that also affect the acquisition behavior I documented. I view this possibility as remote, as it requires such macroeconomic shocks to coincide with 72 significant goodwill impairments in my sample staggered over a period of eight years. Nevertheless, I further address this potential confounding effect in this section. To do so, I first include in the list of covariates of Equation (III.1), acquirers' gross domestic product (*GDP*) and thus directly control for the macroeconomic conditions in which the acquirer firms operate. Second, I modify the fixed effects structure and include acquirer industry × year interactive fixed effects instead of acquirer industry and year fixed effects. This specification allows me to fully control for the effect of any time-varying acquirer industry factors. The results of these analyzes presented in Table 3-12 show that the coefficients on *Peer* × *Post* remain positive and significant at the 5 percent level in Column (1) (*GDP* included in the list of covariates) and at the 10 percent level in Column (2) (acquirer industry × year interactive fixed effects). These results indicate that my main findings are not driven by other macroeconomic effects.

[Insert Table 3-12 here]

3.7. Conclusion

The current study tests whether significant goodwill impairment has a spillover effect on the resource allocation of peer firms. Specifically, I examine whether significant goodwill impairment by one firm affects the corporate investment behavior of other firms in the same industry. I first construct a sample of impairment firms by collecting European public firms that have announced goodwill impairments larger than €100 million over the period 2005-2012 (i.e., impairment firms). I use these announcements as shocks that are likely to change peer firms' subsequent investment behavior and employ a difference-in-differences approach, where peers share the impairment firms' three-digit SIC codes and have made acquisitions over the period 2002-2015, and control firms share the impairment firms' two-digit SIC codes (excluding peer firms). I find that acquirers' CARs are higher for peer firms relative to the control group in the three-year window after the impairment period as compared to the three-preceding-year control period. The results suggest that peers learn from the impairment firm's experience and update their investment decisions by engaging in better quality corporate acquisitions. The robustness analyses ensure that the association is not driven by possible confounding factors, design choices, sample selection, sample composition, or alternative explanations.

In addition, when I split the sample based on the reasons behind goodwill impairment reporting, I find that the main relation holds only when external reasons for impairment are provided. I also provide evidence showing that peer firms adjust their over-investments to the level predicted by their growth opportunities.

The analysis is subject to several caveats. First, the definition of significant goodwill impairment is subjective, which may potentially introduce noise in the empirical tests. Another source of noise that might influence the results is that data collection also relies on content analysis with regard to explanations for goodwill impairment losses. Further, significant goodwill-impairment reporting may coincide with other macroeconomic events or M&A waves that may potentially affect the results. Finally, my definition of peer firms can be challenged, as firms in different countries are subject to different market structures and economic rules.

Despite these limitations, this study makes several contributions. First, it complements the existing research and highlights that goodwill impairment loss announcements convey valuable information to market participants (Jarva, 2009; Li et al., 2011). Moreover, it contributes to the recent literature that highlights the importance of intra-industry learning effects (Foucault and Fresard, 2014; Servaes and Tamayo, 2013) by identifying goodwill impairment as a channel through which the allocation of resources is determined. Finally, this study presents evidence on learning effects in a cross-country setting, while previous research has mainly focused on domestic intra-industry effect (Beatty et al., 2013; Durnev and Mangen, 2009).

Appendix 3-1: Variable definition

Variable	Description
CAR (-3,+3)	Acquirers' cumulative abnormal returns (market adjusted) over seven trading days, calculated by subtracting the daily return of the S&P Europe 350 stock market index from the acquirer's daily stock return each day over the interval beginning three trading days before and ending three trading days after the announcement date of the acquisition.
Peer	An indicator variable equal to one for firms in the same three-digit-SIC codes as the impairment firms, and zero for control firms that have the same two-digit SIC codes as the impairment firms, but different three-digit SIC codes.
Post	An indicator variable equal to one for the three years after the goodwill impairment announcement and zero for the three years prior to the goodwill impairment announcement.
Acquirer size	Firm size, defined as the natural logarithm of total assets.
Acquirer leverage	Leverage, defined as total debt divided by total assets.
Acquirer ROA	Return on assets, defined as net income divided by total assets at the end of the financial year.
Private target	An indicator variable that takes the value of one if the target is a private firm and zero otherwise.
Same industry	An indicator variable that takes the value of one if the two-digit SIC code of the target is different from the two-digit SIC code of the acquirer and zero otherwise.
Majority cash	An indicator variable that takes the value of one if the deal implies that the acquisition is paid for 100% with cash and zero otherwise.
Cross border	An indicator variable that takes the value of one if the M&A is cross-border and zero otherwise.
Investment	Investment, defined as the sum of R&D expenditures, capital expenditures, and acquisition expenditures less cash receipts from the sale of fixed assets scaled by lagged total assets.
Sales growth	Sales growth, defined as sales in year *t* minus sales in year *t-1* divided by sales in year *t-1*.
Abnormal investment	Abnormal investment, defined as the difference between actual investment and expected investment, is the absolute value of the residual from the estimation of Equation (III.2).

Under-investment	Under-investment, defined as the negative residual of the investment model.
Over-investment	Over-investment, defined as the positive residual of the investment model.
Acquirer loss	An indicator variable that takes the value of one if net income is negative and zero otherwise.
Acquirer CFO	Operating cash flow, defined as cash flow from operations divided by total assets at the end of the financial year.
Acquirer tangibility	Property, plant, and equipment divided by total assets.
Acquirer financial slack	The ratio of cash to total assets.
LBD	An indicator variable that takes the value of 1 for years in which the acquirers in the sample are first time acquirers and zero otherwise.
GDP	Gross Domestic Product of the firm's country m in year t (€ per capita).

Table 3-1: Identification of the significant goodwill impairments (Impairment firms)

This table reports the procedures to construct the impairment firms sample and its composition. This sample includes firms domiciled in European countries over the period 2005-2012. The data for goodwill impairments is obtained from the Thomson Reuters Eikon database. Panel A describes the procedures to construct the sample. Panel B describes the distribution of the sample by year, three-digit SIC code, and country.

Panel A: Sample construction

Total number of goodwill impairments reported on Thomson Reuters Eikon by public non-financial European firms over the period 2005-2012	4,216
(-) Total goodwill impairments smaller than €100 million	-3,984
(-) Goodwill impairments that occur more than once in a unique three-digit SIC code	-156
(-) Goodwill impairments that were reported following U.S. GAAP	-4
Final number of goodwill impairments in unique three-digit SIC codes	**72**

Panel B: Distribution of the impairment firms by year, three-digit SIC code, and country

Year	3-digit-SIC code	3-digit SIC codes name	Country	Goodwill impairment amount (millions)
2006	481	Telephone communications	United Kingdom	33,703.6
2011	489	Communication Services not elsewhere classified	Italy	7,364.0
2011	101	Iron ores	United Kingdom	3,390.2
2008	483	Radio and Television Broadcasting Stations	United Kingdom	3,380.3
2012	331	Steel Works, Blast Furnaces, and Rolling and Finishing Mills	Netherlands	3,337.7
2008	491	Electric Services	Germany	3,315.0
2011	541	Grocery stores	France	1,966.0
2009	343	Heating Equipment, except Electric and Warm Air; and Plumbing Fixtures	Ireland	1,844.2
2009	357	Computer and Office Equipment	Ireland	1,597.0
2011	384	Surgical, Medical, and Dental Instruments and Supplies	Netherlands	1,355.0
2008	301	Tires and Inner Tubes	Germany	1,230.0
2009	291	Petroleum Refining	United Kingdom	1,160.0
2012	381	Search, Detection, Navigation, Guidance, Aeronautical, and Nautical Systems, Instruments, and Equipment	Italy	1,148.0
2010	351	Engines and Turbines	Germany	1,145.0
2011	366	Communication Equipment	Finland	1,090.0
2010	203	Canned, Frozen, and Preserved Fruits, Vegetables, and Food Specialties	Greece	903.1
2008	153	Operative Builders	United Kingdom	877.7
2009	372	Aircraft and Parts	United Kingdom	830.8
2012	262	Paper Mills	Finland	783.0
2008	365	Household Audio and Video Equipment	France	739.0
2006	472	Arrangement of passenger transportation	Germany	709.5
2012	287	Agricultural Chemicals	Netherlands	697.2
2011	737	Computer Programming, Data Processing, and other Computer Related Services	Italy	696.2
2008	316	Luggage	Luxembourg	659.9

2009	562	Women’s Clothing Stores	France	652.0
2008	431	Postal Service	Germany	610.0
2011	273	Books	France	584.0
2007	206	Sugar and confectionery products	Germany	580.4
2008	736	Personnel Supply Services	Netherlands	555.8
2011	267	Converted Paper and Paperboard Products, except Containers and Boxes	Sweden	547.2
2011	495	Sanitary Services	France	502.8
2012	520	Building Materials, Hardware, Garden Supply, and Mobile Home Dealers	United Kingdom	446.0
2010	274	Miscellaneous Publishing	Sweden	444.4
2005	283	Drugs	United Kingdom	426.5
2009	324	Cement, Hydraulic	Germany	420.5
2008	208	Beverages	Switzerland	345.4
2011	211	Cigarettes	United Kingdom	310.7
2011	503	Lumber and other Construction Materials	France	309.0
2009	701	Hotels and Motels	France	304.0
2005	451	Air Transportation, Scheduled, and Air Courier	Germany	300.0
2008	512	Drugs, Drug Proprietaries, and Druggists’ Sundries	Germany	287.0
2012	302	Rubber and Plastics Footwear	Germany	265.0
2009	385	Ophthalmic Goods	Italy	257.7
2008	103	Lead and Zinc Ores	Belgium	254.8
2012	364	Electric Lighting and Wiring Equipment	France	251.0
2011	289	Miscellaneous Chemical Products	Netherlands	249.0
2008	371	Motor Vehicles and Motor Vehicle Equipment	France	247.9
2008	209	Miscellaneous Food Preparations and Kindred Products	United Kingdom	243.8
2009	282	Plastics Materials and Synthetic Resins, Synthetic Rubber	Germany	220.0
2009	271	Newspapers: Publishing, or Publishing and Printing	United Kingdom	214.9
2008	131	Crude Petroleum and Natural Gas	Netherlands	211.6
2007	265	Paperboard Containers and Boxes	Finland	201.0
2010	873	Research, Development, and Testing Services	France	183.3

2012	505	Metals and Minerals, except Petroleum	Germany	170.0
2009	734	Services to Dwellings and other Buildings	Denmark	167.4
2008	285	Paints, Varnishes, Lacquers, Enamels, and Allied Products	Switzerland	155.1
2012	154	General Building Contractors-Nonresidential	Netherlands	150.4
2008	104	Gold and Silver Ores	United Kingdom	147.4
2009	521	Lumber and other Building Materials Dealers	United Kingdom	142.1
2005	581	Eating and Drinking Places	United Kingdom	139.4
2011	349	Miscellaneous Fabricated Metal Products	United Kingdom	139.1
2009	233	Women’s, Misses’, and Juniors’ Outerwear	United Kingdom	133.1
2005	284	Soap, Detergents, and Cleaning Preparations; Perfumes, Cosmetics, and Other Toilet Preparations	United Kingdom	131.4
2009	272	Periodicals: Publishing, or Publishing and Printing	United Kingdom	126.0
2006	394	Dolls, Toys, Games and Sporting and Athletic	France	125.4
2009	325	Structural Clay Products	Austria	123.3
2012	871	Engineering, Architectural, and Surveying	United Kingdom	120.0
2009	731	Advertising	France	120.0
2009	122	Bituminous Coal and Lignite Mining	United Kingdom	117.8
2012	769	Miscellaneous Repair Shops and Related Services	Sweden	103.1
2009	353	Construction, Mining, and Materials Handling	Germany	100.3

Table 3-2: Identification of the peers and control group firms

This table reports the procedures used to construct the peer firm sample, its composition, and the composition of the control group firms. The peer firm sample includes M&A deals for which the acquirer is domiciled in European countries over the period 2002-2015. The data for M&A deals is obtained from Thomson Reuters Mergers and Acquisitions database. I use the industries identified in the impairment firm sample described in Table 3-1 to construct the peer firm sample. Panel A describes the procedures used to construct the peer firm sample. Panel B describes the distribution of the peers and the control group firms by year, differentiating between the pre-announcement period and the post-announcement period. Panel C describes the distribution of the peers and the control group firms by country, differentiating between the pre-announcement period and the post-announcement period. The pre-announcement period is defined as the three years prior to the announcement of significant goodwill impairment, and the post-announcement period is defined as the three years after the goodwill impairment announcement.

Panel A: Peer firm sample construction

M&A transactions reported by public non-financial European firms over the period 2002-2015	37,388
Less: Observations without an identifier in Thomson Reuters Eikon	-8,905
Less: Incomplete M&A transactions	-6,368
Less: Duplicates observations	-1,120
Les: Observations with different two-digit SIC code from that identified in Table 3-1	-336
Less: M&A transactions where the impairment firm is the acquirer	-988
Less Observations with different three-digit SIC code from that listed in Table 3-1	-6,958
Less: M&A transactions that are outside of the test period	7,110
Less: Observations with missing stock price data in Thomson Reuters Eikon database and control variables	-280
Less: Observations with negative book value of equity	-90
Peer firm sample	**5,233**

Panel B: Distribution of the peers and the control group firms by year

	Pre-announcement period					**Post-announcement period**			
	Treatment		Control			Treatment		Control	
M&A year	Freq.	Percent	Freq.	Percent	**M&A year**	Freq.	Percent	Freq.	Percent
2002	69	2.51	32	0.81	2006	93	3.74	53	1.56
2003	87	3.17	45	1.15	2007	236	9.50	89	2.61
2004	114	4.15	59	1.50	2008	181	7.28	108	3.17
2005	251	9.13	289	7.36	2009	218	8.77	289	8.48
2006	401	14.59	739	18.81	2010	317	12.76	597	17.52
2007	509	18.52	962	24.49	2011	354	14.25	748	21.95
2008	578	21.03	818	20.82	2012	446	17.95	566	16.61
2009	302	10.99	421	10.72	2013	279	11.23	412	12.12
2010	388	14.12	390	9.93	2014	333	13.40	390	11.44
2011	49	1.78	171	4.40	2015	28	1.13	155	4.55
Total	2,748	100	3,928	100		2,485	100	3,408	100

Panel C: Distribution of the peers and the control group firms by country

	Pre-announcement period				Post-announcement period			
	Treatment		Control		Treatment		Control	
Acquirer Country	Freq.	Percent	Freq.	Percent	Freq.	Percent	Freq.	Percent
Austria	48	1.75	83	2.11	44	1.77	53	1.56
Belgium	57	2.07	66	1.68	58	2.33	55	1.61
Bulgaria	0	0	1	0.03	2	0.08	0	0
Croatia	3	0.11	3	0.08	6	0.24	14	0.41
Cyprus	9	0.33	0	0	8	0.32	7	0.21
Czech Republic	11	0.40	0	0	9	0.36	0	0
Denmark	46	1.67	21	0.53	44	1.77	15	0.44
Estonia	1	0.04	3	0.08	2	0.08	2	0.06
Finland	104	3.78	154	3.92	92	3.70	106	3.11
France	364	13.25	506	12.88	371	14.93	424	12.44
Germany	315	11.46	424	10.79	238	9.58	340	9.98
Greece	30	1.09	64	1.63	20	0.80	19	0.56
Hungary	23	0.84	8	0.20	2	0.08	7	0.21
Iceland	12	0.44	9	0.33	5	0.20	1	0.03
Ireland	109	3.97	19	0.48	92	3.70	68	2.00
Italy	121	4.40	1161	4.10	102	4.10	127	3.73
Lithuania	4	0.15	3	0.08	9	0.36	5	0.15
Luxembourg	6	0.22	18	0.46	4	0.16	24	0.70
Malta	0	0	0	0	4	0.16	0	0
Netherlands	104	3.78	114	2.90	103	4.14	134	3.93
Norway	93	3.38	115	2.93	80	3.22	33	0.97
Poland	109	3.97	92	2.34	87	0.50	95	2.79
Portugal	32	1.16	16	0.41	13	0.52	11	0.32

Romania	1	0.04	3	0.08	3	0.12	3	0.09
Serbia	0	0	1	0.03	0	0	2	0.06
Slovakia	3	0.11	0	0	0	0	0	0
Slovenia	2	0.07	3	0.08	8	0.32	0	0
Spain	96	3.49	199	5.07	74	2.98	187	5.49
Sweden	202	7.35	602	15.33	186	7.48	546	16.02
Switzerland	135	4.91	266	6.77	127	5.11	290	8.15
United Kingdom	378	25.76	974	24.80	692	27.85	840	24.65
Total	2,748	100	3,928	100	2,485	100	3,408	100

Table 3-3: Descriptive statistics

This table reports the descriptive statistics and the univariate tests for the variables included in the main test. Panel A provides the summary statistics for the full sample. Panel B describes the differences in variables for the peer group and the control group in the pre-announcement period. Panel C describes the differences in variables for the peer group and the control group in the post-announcement period. Panel D reports Pearson's correlation coefficients for the full sample. * indicates the coefficients are significantly different from zero at the 5% level in two-tailed tests. All continuous variables, except *CAR (-3,+3)*, are winsorized at the 1st and 99th percentiles. Detailed variable definitions are outlined in Appendix 3-1.

Panel A: Descriptive statistics for the full sample

	(1) N	(2) Mean	(3) Q1	(4) Median	(5) Q3	(6) Stdev.
CAR(-3,+3)	12,569	-0.015	-0.042	-0.008	0.020	0.067
Acquirer size	12,569	13.351	11.642	13.447	15.183	2.383
Acquirer leverage	12,569	0.211	0.089	0.198	0.319	0.152
Acquirer ROA	12,569	0.037	0.024	0.054	0.083	0.128
Private target	12,569	0.570	0	1	1	0.495
Same industry	12,569	0.541	0	1	1	0.498
Majority cash	12,569	0.358	0	0	1	0.480
Cross border	12,569	0.574	0	1	1.	0.494

Panel B: Pre-treatment period (three-year period before the announcement of significant goodwill impairment)

		Control group *Peer=0*	Treatment group *Peer=1*	Mean diff.
	N	Mean	Mean	t-statistic
CAR (-3,+3)	6,676	-0.014	-0.015	0.169
Acquirer size	6,676	13.180	13.286	-1.814*
Acquirer leverage	6,676	0.219	0.197	5.884***
Acquirer ROA	6,676	0.044	0.035	3.203***
Private target	6,676	0.583	0.551	2.615***
Same industry	6,676	0.509	0.579	-5.681***
Majority Cash	6,676	0.366	0.364	0.152
Cross border	6,676	0.558	0.575	-1.381

Panel C: Post-treatment period (three-year period after the announcement of significant goodwill impairment)

		Control group *Peer=0*	Treatment group *Peer=1*	Mean diff.
	N	Mean	Mean	t-statistic
CAR (-3,+3)	5,893	-0.017	-0.012	-3.005***
Acquirer size	5,893	13.474	13.521	-0.735
Acquirer leverage	5,893	0.225	0.193	7.963***
Acquirer ROA	5,893	0.038	0.025	3.659**
Private target	5,893	0.579	0.554	1.860**
Same industry	5,893	0.511	0.589	-5.907***
Majority Cash	5,893	0.345	0.356	-0.896
Cross border	5,893	0.592	0.572	1.576

Panel D: Pearson correlation for the full sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) CAR(-3,+3)	1,000									
(2) Peer	0,017	1,000								
(3) Post	-0,005	0,010	1,000							
(4) Acquirer size	0,148*	0,017	0,057*	1,000						
(5) Acquirer leverage	0,040*	-0,087*	0,006	0,312*	1,000					
(6) Acquirer ROA	0,048*	-0,044*	-0,029*	0,309*	-0,010	1,000				
(7) Private target	0,021*	-0,028*	-0,001	-0,141*	-0,057*	0,016	1,000			
(8) Same industry	0,007	0,073*	0,006	0,028*	0,028*	-0,001	-0,044*	1,000		
(9) Majority cash	-0,026*	0,004	-0,016	0,044*	0,067*	0,039*	-0,176*	0,025*	1,000	
(10) Cross border	0,028*	-0,000	0,019*	0,293*	0,017	0,087*	-0,019*	0,088*	0,027*	1,000

Table 3-4: Market reaction around M&A deals

This table presents the regression results regarding the market reaction around M&A deals for the peer firms in the years following a significant goodwill impairment announcement as compared to the control group. *CAR (-3,+3)* (market adjusted) is computed over seven trading days, where the event day zero is the announcement date of the transaction. *Peer* is an indicator variable equal to one for peer firms and zero for control firms. *Post* is an indicator variable equal to one for the three-year period after the goodwill impairment occurred and zero for the three years prior to the goodwill impairment. The sample covers a set of European acquirers over the period 2002-2015. All continuous variables, except *CAR (-3,+3)*, are winsorized at the 1st and 99th percentiles. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively, in two-tailed tests. I report t-statistics based on standard errors clustered at the firm level in parentheses. Detailed variable definitions are outlined in Appendix 3-1.

	(1) *CAR (-3,+3)*	(2) *CAR (-3,+3)*	(3) *CAR (3,+3)*
Peer	-0.000	-0.001	-0.003
	(-0.129)	(-0.311)	(-1.214)
Post	-0.003	-0.004**	-0.003
	(-1.421)	(-2.086)	(-1.505)
Peer* × *Post	**0.006***	**0.006****	**0.006****
	(1.918)	**(2.010)**	**(2.244)**
Acquirer Size		0.005***	0.005***
		(10.349)	(10.217)
Acquirer leverage		-0.002	-0.006
		(-0.347)	(-0.817)
Acquirer ROA		0.000	-0.008
		(0.023)	(-0.787)
Private target		0.005***	0.005***
		(3.028)	(2.594)
Same industry		0.001	-0.001
		(0.467)	(-0.259)
Majority cash		-0.003*	-0.004**
		(-1.884)	(-2.195)
Cross border		-0.002	-0.001
		(-1.371)	(-0.681)
Constant	-0.014***	-0.075***	-0.259***
	(-9.013)	(-11.405)	(-3.483)
Acquirer Country fixed effects	No	No	Yes
Acquirer Industry fixed effect	No	No	Yes
Target Country fixed effects	No	No	Yes
Target Industry fixed effects	No	No	Yes
M&A Year fixed effects	No	No	Yes
R-squared	0.001	0.025	0.078
Observations	12,569	12,569	12,569
Number of clusters	2,382	2,382	2,382

Table 3-5: Market reaction around M&A deals based on the reasons for goodwill impairment

This table presents the regression results regarding the market reaction around M&A deals for the peer firms in the years following a significant goodwill impairment announcement as compared to the control group, also considering the reasons that led to the goodwill impairment losses. Column (1) presents the results when external reasons for impairment loss are provided; Column (2) presents the results when internal reasons for impairment loss are provided. CAR (-3,+3) (market adjusted) is computed over seven trading days, where the event day zero is the announcement date of the transaction. *Peer* is an indicator variable equal to one for peer firms and zero for control firms. *Post* is an indicator variable equal to one for the three years window after the goodwill impairment occurred and zero for the three years prior to the goodwill impairment. The sample covers a set of European acquirers over the period 2002-2015. All continuous variables, except CAR (-3,+3), are winsorized at the 1st and 99th percentiles. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively, in two-tailed tests. I report t-statistics based on standard errors clustered at the firm level in parentheses. I report p-values from χ^2 test of the difference in the coefficients for *Peer* × *Post* across Column (1) and Column (2). Detailed variable definitions are outlined in Appendix 3-1.

	(1) *CAR (-3,+3)*	(2) *CAR (-3,+3)*
Peer	-0.002	-0.008
	(-0.769)	(-1.284)
Post	-0.002	0.002
	(-1.575)	(0.456)
Peer* × *Post	**0.015****	**0.003**
	(2.302)	**(1.265)**
Acquirer Size	-0.009	0.010
	(-1.236)	(0.830)
Acquirer leverage	-0.002	-0.003
	(-0.171)	(-0.174)
Acquirer ROA	0.006***	0.002
	(3.064)	(0.690)
Private target	-0.000	-0.008*
	(-0.204)	(-1.677)
Same industry	-0.004**	-0.008***
	(-2.209)	(-2.844)
Majority cash	-0.004*	0.001
	(-1.752)	(0.419)
Cross border	-0.198***	-0.020
	(-7.556)	(-0.980)
Constant	-0.198***	-0.020
	(0.026)	(0.020)
Acquirer Country fixed effects	Yes	Yes
Acquirer Industry fixed effect	Yes	Yes
Target Country fixed effects	Yes	Yes
Target Industry fixed effects	Yes	Yes
M&A Year fixed effects	Yes	Yes
R-squared	0.085	0.091
Observations	10,610	4,089
Number of clusters	2,057	926
Peer × Post (1) =		
Peer × Post (2) [p-value]:	*[0.058]*	

Table 3-6: Deviation from the expected investment level

This table presents the results regarding the test of the deviation from the expected investment level. Panel A presents the regression results regarding the estimation of the expected investment. *Investment* is the sum of R&D expenditures, capital expenditures, and acquisition expenditures less cash receipts from sale of fixed assets scaled by lagged total assets. *Sales growth* is the percentage change in annual sales. Panel B reports the summary statistics for variables included in Equation (III.3). The sample covers the same set of European acquirers over the period 2002-2015. All continuous variables are winsorized at the 1st and 99th percentiles. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively, in two-tailed tests. I report t-statistics based on standard errors clustered at the firm level in parentheses. Detailed variable definitions are outlined in Appendix 3-1.

Panel A: Regression results regarding the estimation of the expected investment

	(1) $Investment_{t+1}$
$Sales\ growth_t$	0.021***
	(3.215)
Constant	0.058**
	(1.975)
Industry fixed effects	Yes
Year fixed effects	Yes
R-squared	9,915
Observations	0.086

Panel B: summary statistics for variables included in Equation (III.3)

	(1) N	(2) Mean	(3) Q1	(4) Median	(5) Q3	(6) Stdev.
Abnormal investment	9,915	0.074	0.025	0.053	0.086	0.084
Acquirer size	9,915	13.903	12.373	13.891	15.438	2.131
Acquirer leverage	9,915	0.229	0.116	0.221	0.331	0.146
Acquirer loss	9,915	0.107	0.000	0.000	0.000	0.309
Acquirer CFO	9,915	0.091	0.046	0.089	0.149	0.162
Acquirer ROA	9,915	0.049	0.027	0.055	0.081	0.073
Acquirer tangibility	9,915	0.217	0.077	0.158	0.314	0.183
Acquirer financial slack	9,915	1.248	-0.118	0.169	0.961	4.139

Table 3-7: Deviation from the expected investment level

This table presents the regression results regarding the deviation from the expected investment level for the peer firms in the years following a significant goodwill impairment announcement as compared to the control group. Column (1) presents the results concerning the absolute value of the abnormal investment; Column (2) presents the results regarding the under-investment; Column (3) presents the results regarding the over-investment. *Abnormal investment* is the absolute value of the residuals from the estimation of the regression presented in Panel A of Table 3-6. *Under-investment* is defined as the negative residual of investment model. *Over-investment* is defined as the negative residual of investment model. *Peer* is an indicator variable equal to one for peer firms, and zero for control firms; *Post* is an indicator variable equal to one for the three years after the goodwill impairment occurred and zero for the three years prior to the goodwill impairment. The sample covers the same set of European acquirers over the period 2002-2015. All continuous variables are winsorized at the 1st and 99th percentiles. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively, in two-tailed tests. I report t-statistics based on standard errors clustered at the firm level in parentheses. Detailed variable definitions are outlined in Appendix 3-1.

	(1) *Abnormal investment*	(2) *Under-investment*	(4) *Over-investment*
Peer	0.009*	-0.003	0.025*
	(1.906)	(-0.896)	(1.955)
Post	-0.000	0.002	-0.004
	(-0.110)	(0.951)	(-0.413)
Peer× Post	**-0.007**	**-0.000**	**-0.025***
	(-1.354)	**(-0.019)**	**(-1.683)**
Acquirer size	-0.009***	0.004***	-0.019***
	(-9.075)	(6.728)	(-6.446)
Acquirer leverage	0.010	-0.027***	0.044
	(0.770)	(-3.419)	(1.202)
Acquirer loss	0.018***	-0.001	0.053***
	(2.942)	(-0.336)	(2.896)
Acquirer CFO	-0.030**	0.012	-0.066*
	(-2.100)	(1.276)	(-1.951)
Acquirer ROA	0.110***	0.065***	0.403***
	(2.917)	(3.111)	(3.688)
Acquirer tangibility	0.013	0.039***	0.011
	(0.910)	(5.069)	(0.322)
Acquirer financial slack	0.002***	-0.000	0.003***
	(3.858)	(-1.518)	(2.978)
Constant	0.083***	-0.144***	0.271***
	(3.443)	(-11.890)	(3.996)
Country fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
R-squared	0.172	0.317	0.221
Observations	9,915	6,471	3,444
Number of clusters	1,767	1,365	868

Table 3-8: Robustness tests

This table reports the robustness tests. Column (1) presents the results regarding the re-estimation of the main model, where a goodwill impairment is significant if its amount is larger than €50 million. Column (2) presents the results regarding the re-estimation of the main model, where the pre-announcement period is three years before the announcement of significant goodwill impairment and the post-announcement period is two years after the goodwill impairment announcement. Column (3) presents the results regarding the re-estimation of the main model, where CAR is estimated using a (-2,+2) window centered around the M&A transaction. Column (4) presents the results regarding the re-estimation of the main model, excluding peer and control firms from the United Kingdom, France, and Germany. Column (5) presents the results regarding the re-estimation of the main model, excluding deals with a size lower than €1 million. All continuous variables, except *CAR (-3,+3)* and *CAR (-2,+2)*, are winsorized at the 1st and 99th percentiles. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively, in two-tailed tests. I report t-statistics based on standard errors clustered at the firm level in parentheses. Detailed variable definitions are outlined in Appendix 3-1.

	(1) *CAR (-3,+3)*	(2) *CAR (-3,+3)*	(3) *CAR (-2,+2)*	(4) *CAR (-3,+3)*	(5) *CAR (-3,+3)*
Peer	-0.001	-0.003	-0.003	-0.002	-0.006*
	(-0.610)	(-1.410)	(-1.295)	(-0.508)	(-1.682)
Post	-0.003	-0.002	-0.003	-0.001	-0.001
	(-1.207)	(-0.949)	(-1.505)	(-0.300)	(-0.437)
Peer × Post	**0.005***	**0.005***	**0.006****	**0.007***	**0.011****
	(1.904)	**(1.767)**	**(2.206)**	**(1.711)**	**(2.369)**
Acquirer size	0.005***	0.005***	0.005***	0.005***	0.007***
	(9.555)	(10.022)	(10.048)	(6.296)	(8.351)
Acquirer leverage	-0.008	-0.010***	-0.007	-0.011	-0.017
	(-1.037)	(-8.412)	(-0.949)	(-1.112)	(-1.622)
Acquirer ROA	-0.005	-0.007	-0.008	-0.022	-0.010
	(-0.432)	(-0.623)	(-0.727)	(-1.252)	(-0.684)
Private target	0.005***	0.005**	0.005**	0.006**	0.007**
	(2.602)	(2.478)	(2.535)	(2.454)	(2.549)
Same industry	0.001	0.000	-0.000	-0.002	-0.002
	(0.553)	(0.031)	(-0.214)	(-0.814)	(-0.701)
Majority cash	-0.004**	-0.004**	-0.004**	-0.003	-0.001
	(-1.965)	(-2.157)	(-2.341)	(-1.389)	(-0.268)
Cross border	0.000	-0.002	-0.001	-0.002	-0.003
	(0.191)	(-0.893)	(-0.567)	(-0.448)	(-0.817)
Constant	-0.099***	-0.046	-0.134***	-0.119	-0.074*
	(-4.439)	(-1.305)	(-10.253)	(-1.604)	(-1.739)
Acquirer Country fixed effects	Yes	Yes	Yes	Yes	Yes
Acquirer Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Target Country fixed effects	Yes	Yes	Yes	Yes	Yes
Target Industry fixed effects	Yes	Yes	Yes	Yes	Yes
M&A Year fixed effects	Yes	Yes	Yes	Yes	Yes
R-squared	0.091	0.087	0.080	0.110	0.121
Observations	12,757	10,630	12,569	6,373	5,379
Number of clusters	2,286	2,199	2,382	1,213	1,581

Table 3-9: Falsification tests shifting the timing of the announcement of significant goodwill impairment

This table presents falsification tests shifting the timing of the announcement of significant goodwill impairment. Column (1) reports the re-estimations of Equation (III.1) using one-year lag as the cutoff date; Column (2) reports the re-estimations of Equation (III.1) using one-year forward as the cutoff date. All continuous variables, except *CAR (-3,+3)*, are winsorized at the 1st and 99th percentiles. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively, in two-tailed tests. I report t-statistics based on standard errors clustered at the firm level in parentheses. Detailed variable definitions are outlined in Appendix 3-1.

	(1)	(2)
	CAR (-3,+3)	*CAR (-3,+3)*
Peer	-0.002	-0.000
	(-0.705)	(-0.142)
Post	-0.001	-0.001
	(-0.382)	(-0.315)
Peer* × *Post	**0.003**	**0.003**
	(1.248)	**(0.895)**
Acquirer Size	0.005***	0.005***
	(9.579)	(9.212)
Acquirer Leverage	-0.009	-0.003
	(-1.246)	(-0.445)
Acquirer ROA	-0.001	0.002
	(-0.046)	(0.213)
Private target	0.005**	0.005***
	(2.525)	(2.688)
Same industry	-0.002	-0.002
	(-1.002)	(-1.067)
Majority cash	-0.004**	-0.002
	(-2.093)	(-1.084)
Cross border	-0.003	-0.001
	(-1.235)	(-0.641)
Constant	0.033	-0.061
	(0.898)	(-1.568)
Acquirer Country fixed effects	Yes	Yes
Acquirer Industry fixed effects	Yes	Yes
Target Country fixed effects	Yes	Yes
Target Industry fixed effects	Yes	Yes
M&A Year fixed effects	Yes	Yes
R-squared	13,147	12,438
Observations	0.067	0.075
Number of clusters	2,377	2,433

Table 3-10: Market reaction around M&A deals based on a matched sample

This table presents the regression results regarding the market reaction around M&A deals for the peer firms in the years following a significant goodwill impairment announcement as compared to a matched control group. *CAR (-3,+3)* (market adjusted) is computed over seven trading days, where the event day zero is the announcement date of the transaction. *Peer* is an indicator variable equal to one for peer firms and zero for control firms. *Post* is an indicator variable equal to one for the three years after the goodwill impairment occurred and zero for the three years prior to the goodwill impairment. The sample covers a set of European acquirers over the period 2002-2015. All continuous variables, except *CAR (-3,+3)*, are winsorized at the 1st and 99th percentiles. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively, in two-tailed tests. I report t-statistics based on standard errors clustered at the firm level in parentheses. Detailed variable definitions are outlined in Appendix 3-1.

	(1) *CAR (-3,+3)*
Peer	-0.004
	(-1.520)
Post	-0.002
	(-0.868)
Peer × Post	**0.006***
	(1.936)
Acquirer Size	0.005***
	(10.086)
Acquirer leverage	-0.009
	(-1.296)
Acquirer ROA	0.001
	(0.058)
Private target	0.004**
	(2.401)
Same industry	-0.001
	(-0.564)
Majority cash	-0.005**
	(-2.491)
Cross border	-0.002
	(-1.062)
Constant	-0.145***
	(-4.313)
Acquirer Country fixed effects	Yes
Acquirer Industry fixed effect	Yes
Target Country fixed effects	Yes
Target Industry fixed effects	Yes
M&A Year fixed effects	Yes
R-squared	0.081
Observations	10,394
Number of clusters	2,297

Table 3-11: Learning by doing

This table presents the regression results regarding the market reaction around M&A deals for the peer firms in the years following a significant goodwill impairment announcement as compared to the control group, controlling for acquirers' own experience. *CAR (-3,+3)* (market adjusted) is computed over seven trading days, where the event day zero is the announcement date of the transaction. *Peer* is an indicator variable equal to one for peer firms and zero for control firms. *Post* is an indicator variable equal to one for the three years after the goodwill impairment occurred and zero for the three years prior to the goodwill impairment. The sample covers a set of European acquirers over the period 2002-2015. All continuous variables, except *CAR (-3,+3)*, are winsorized at the 1st and 99th percentiles. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively, in two-tailed tests. I report t-statistics based on standard errors clustered at the firm level in parentheses. Detailed variable definitions are outlined in Appendix 3-1.

	(1) *CAR (-3,+3)*
Peer	-0.003
	(-1.301)
Post	-0.003
	(-1.537)
Peer* × *Post	**0.006****
	(2.280)
Acquirer Size	0.005***
	(10.112)
Acquirer leverage	-0.006
	(-0.824)
Acquirer ROA	-0.008
	(-0.767)
Private target	0.005***
	(2.587)
Same industry	-0.001
	(-0.268)
Majority cash	-0.004**
	(-2.213)
Cross border	-0.001
	(-0.666)
LBD	-0.003
	(-0.990)
Constant	-0.262***
	(-3.487)
Acquirer Country fixed effects	Yes
Acquirer Industry fixed effect	Yes
Target Country fixed effects	Yes
Target Industry fixed effects	Yes
M&A Year fixed effects	Yes
R-squared	0.078
Observations	12,569
Number of clusters	2,382

Table 3-12: Other macroeconomic effects

This table presents the regression results regarding the market reaction around M&A deals for the peer firms in the years following a significant goodwill impairment announcement as compared to the control group, controlling for other macroeconomic effects. *CAR (-3,+3)* (market adjusted) is computed over seven trading days, where the event day zero is the announcement date of the transaction. *Peer* is an indicator variable equal to one for peer firms and zero for control firms. *Post* is an indicator variable equal to one for the three years after the goodwill impairment occurred and zero for the three years prior to the goodwill impairment. The sample covers a set of European acquirers over the period 2002-2015. All continuous variables, except *CAR (-3,+3)*, are winsorized at the 1st and 99th percentiles. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively, in two-tailed tests. I report t-statistics based on standard errors clustered at the firm level in parentheses. Detailed variable definitions are outlined in Appendix 3-1.

	(1) *CAR (-3,+3)*	(2) *CAR (-3,+3)*
Peer	-0.003	-0.002
	(-1.092)	(-0.809)
Post	-0.004*	-0.003*
	(-1.899)	(-1.715)
Peer × Post	**0.006****	**0.006***
	(1.981)	**(1.670)**
Acquirer Size	0.005***	0.005***
	(9.717)	(10.219)
Acquirer Leverage	-0.006	-0.005
	(-0.769)	(-0.627)
Acquirer ROA	-0.005	-0.008
	(-0.492)	(-0.769)
Private target	0.005**	0.005***
	(2.552)	(2.591)
Same industry	-0.000	-0.000
	(-0.114)	(-0.218)
Majority cash	-0.004**	-0.003**
	(-2.319)	(-1.970)
Cross border	-0.002	-0.001
	(-0.764)	(-0.652)
GDP	0.000*	
	(1.942)	
Constant	0.023	0.078
	(0.338)	(1.112)
Acquirer Country fixed effects	Yes	Yes
Acquirer Industry fixed effects	Yes	No
Target Country fixed effects	Yes	Yes
Target Industry fixed effects	Yes	Yes
M&A Year fixed effects	Yes	No
Acquirer Industry × M&A Year fixed effects	No	Yes
R-squared	12,016	12,569
Observations	0.075	0.104
Number of clusters	2,167	2,382

Chapter 4

Do Managers Respond to Auditors' Red Flags?

4.1. Introduction

The current form and scope of the auditor report has been highly criticized by investors because it provides little company specific information to financial statement users (PCAOB, 2016). These criticisms motivated audit regulators worldwide including the Financial Reporting Council (FRC) in the United Kingdom (U.K.), the International Auditing and Assurance Standards Board (IAASB) and the Public Company Accounting Oversight Board (PCAOB) in the United States of America (U.S.) to narrow the information gap by moving away from the traditional boilerplate "black and white" report and implementing an expanded model of audit reporting.

In 2013, the U.K. was the first country to adopt the expanded audit report model, with the introduction of International Standard on Auditing (ISA) 700 (U.K and Ireland): *The Independent Auditor's Report on Financial Statements,* by the FRC. The recent adoption of this standard has significantly increased the amount of external auditor information, as auditors must disclose client-specific information on the risks of material misstatements, which had the greatest effect on the overall audit strategy, allocation of resources during the audit, and efforts of the audit engagement team (FRC, 2013).[36] This regulatory change is likely to make managers more accountable, as their actions would be more strongly scrutinized by third parties. Consequently, the new standard is expected to shape the manner and nature of managerial communications.

Despite a growing attention of the literature in assessing the information content of the expanded audit report, the majority of prior papers have focused either on the capital market consequences of the new auditor disclosures, such as lack of incremental information content (Lennox, Schmidt, and Thompson, 2018), decline in bid-ask spread, lower analyst forecast dispersion (Smith, 2017), or on the audit consequences, such as higher audit fees (Gutierrez, Minutti-Meza, Tatum, and Vulcheva, 2018), decreased opportunistic earnings management, and increased auditors' legal liability (Backof, Bowlin, and Goodson, 2018; Brasel, Doxey, Grenier, and Reffett, 2016; Gimbar, Hansen, and Ozlanski, 2016; Kachelmeier, Schmidt, and Valentine, 2018). The effect of the introduction of expanded audit reports on firms' disclosure decisions, however, was largely ignored so far.[37] Brian Croteau, a deputy chief accountant at the SEC, stated that "*an effect of the increased disclosures in the audit report may be that management thinks more carefully about disclosures they've already made, and perhaps enhances disclosures they've made as a result of the auditor's highlighting a particular area*" (Katz, 2013). In this chapter, I, therefore, examine whether managers change the levels of disclosure on items flagged by auditors in the expanded audit report. This investigation bears particular relevance since corporate disclosure is crucial in reducing information asymmetry and improving market efficiency (Healy and Palepu, 2001).

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[36] The Financial Reporting Council also requires auditors to disclose materiality thresholds (FRC, 2013). This study focuses on risk disclosures rather than materiality disclosures because risk disclosures are common concerns in the proposed or effective revisions to audit reporting standards issued by major standard-setters and regulators (i.e., PCAOB, IAASB, and European Commission).

To investigate this research question, I focus on goodwill impairment, one of the most complex accounting estimates over which managers have considerable discretion. Given the discretion, corporate disclosures of the subjective valuation used in impairment tests are particularly important for different stakeholders, although the degree of these disclosures vary significantly across companies (Amiraslani, Iatridis, and Pope, 2013). Consequently, the role of auditors in assuring that sufficient information regarding the impairment tests is provided is more pronounced (Lobo, Paugam, Zhang, and Casta, 2017). In addition, the PCAOB recognizes the auditing of goodwill impairments as an important area for research, as their inspections identified chronic deficiencies in the audits of impairment (PCAOB, 2012). Goodwill impairment also fits the description of a critical audit matter by (PCAOB, 2016).[38] In line with this view, the results of a survey conducted by the FRC in January 2016 on FTSE 350 companies reveal that the risk related to goodwill impairment is the most common risk, as it has been included in 43% of their sampled audit reports (FRC, 2016). Given that goodwill impairment is ranked among the most substantial asset write-offs, and its visibility has increased in recent years (Francis, Hanna, and Vincent, 1996), it is economically meaningful to examine whether and how firms react to a potential deficiency in goodwill impairment tests.

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[37] I am aware of one study that uses an experimental research design to investigate whether greater transparency of the key audit matter sections lead to an improvement of financial reporting quality (Klueber, Gold, and Pott, 2018). Unlike their paper, I examine the impact of the key audit matters on firms' disclosure decisions.

Taking into account the complexity of goodwill impairment and the prevalence of goodwill impairment risk disclosed in the expanded audit report, my main set of analyses examines whether firms enhance the levels of disclosure on goodwill impairment tests when auditors flag goodwill impairment as a risk of material misstatements in the expanded audit reports.[39] Provided that auditors have substantial information about their clients' financial statements, the reporting requirements of ISA (U.K. and Ireland) 700 put auditors in a unique position to report on clients' financial reporting risks, and grant them with greater leverage over the managers. When auditors articulate concerns in their public disseminated report, investors and others market participants likely increase scrutiny over the flagged firms. Consequently, the manager may perceive lower net costs of enhancing the degree of disclosure as behaving otherwise may be detrimental to the firm.

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[38] The PCAOB mentions that the expanded report should provide information regarding "*especially challenging, subjective, or complex aspects of the audit as they relate to the relevant financial statement accounts and disclosures*" and that "*critical audit matters are likely to be identified in areas that investors have indicated would be of particular interest to them, such as significant management estimates and judgments made in preparing the financial statements; areas of high financial statement and audit risk; unusual transactions; and other significant changes in the financial statements*." (PCAOB, 2016).

[39] I use goodwill impairment risk to refer to both goodwill valuation and goodwill impairment audit risk.

On the other hand, managers might not respond to auditors' risk disclosures for several reasons. One reason is that these disclosures may be uninformative, failing to reflect relevant risks (Lennox et al., 2018). Uninformative repetition of what third parties already learnt from other sources would not affect managers' disclosure behavior. Further, managers' incentives to obscure the level of information may arise due to the proprietary costs of disclosures.[40] Intuitively, if the disclosure costs outweigh the benefits, firms would not increase disclosure levels on the items flagged by the auditors.

The U.K.'s expanded model of audit reporting became effective for fiscal years ending on or after September 30th, 2013 and applies to companies with a premium listing on the London Stock Exchange (LSE).[41] I examine a sample of non-financial companies listed on the premium segment of the LSE with goodwill on their balance sheet for fiscal years 2013 through 2017. I begin by showing that managers provide more goodwill impairment disclosure when auditors indicate this account as a risk of material misstatements (Appendix 4-1). To provide some sense for the economic significance, on average a firm uses 7.6% more words in their goodwill impairment note after auditors mention goodwill impairment as a key audit risk. I further provide evidence that managers' response is stronger when the goodwill amount is material and when the associated audit risk is disclosed for the first time. Taken together, this evidence suggests that the risk section in the expanded audit report facilitates more complete corporate disclosure by committing managers to enhance the levels of information on the flagged items.

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[40] According to disclosure theories, the higher the levels of disclosures, the higher the amount of both proprietary and non-proprietary information provided to financial statements users (Dye, 1986). Goodwill impairment disclosure contains proprietary information on future cash flows.

[41] According to information on LSE's website, "*a Premium Listing is only available to equity shares issued by trading companies and closed and open-ended investment entities. Issuers with a Premium Listing are required to meet the U.K.'s super-equivalent rules which are higher than the EU minimum requirements. A Premium Listing means the company is expected to meet the U.K.'s highest standards of regulation and corporate governance – and as a consequence may enjoy a lower cost of capital through greater transparency and through building investor confidence.*" (http://www.londonstockexchange.com/companies-and-advisors/main-market/companies /primary-and-secondary-listing/listing-categories.htm, accessed on 8 November 2018)

I conduct several additional analyses to reinforce my main inferences and provide new insights. First, I find that when economic conditions indicate that goodwill is likely to be impaired, the probability of firms booking a goodwill impairment loss is higher if goodwill impairment is flagged in the audit risk disclosure. Second, I show that the levels of goodwill impairment disclosure are higher in the subsequent period when both the external auditor and internal audit committee include goodwill impairment as a business risk. Third, I show that managers respond to auditor risk disclosure by increasing not only the goodwill impairment disclosure levels, but also the disclosure transparency and readability.

To date, research on the consequences of expanded audit reports has mostly focused on the cost of audit (Reid, Carcello, Li, and Neal, 2018) and market participants' responses to the adoption of the new audit report (Gutierrez et al., 2018; Lennox et al., 2018). For instance, Lennox et al. (2018) show that the risk disclosures lack incremental information, whereas Reid et al. (2018) find the opposite. Moreover, in terms of audit fees, Gutierrez et al. (2018) and Reid et al. (2018) find that audit fees do not increase significantly. While these findings are informative, the effect of the expanded audit report on firms' financial disclosure has not been investigated in the literature. I extend this stream of research by documenting the mechanism through which the expanded audit report brings additional information to market participants. The conclusions of this study align with the findings of Reid et al. (2018), indicating that the introduction of the expanded audit report in the U.K. is associated with an improvement in the financial reporting quality.

Second, this study contributes to the recent literature on the impact of external reporting on internal decision-making. For instance, Hemmer and Labro (2008) offer analytical evidence that attributes of the financial reporting system impact the quality of the managerial accounting system. Similarly, Shroff (2017), Goodman, Neamtiu, Shroff, and White (2013), and Cheng, Cho, and Yang (2018) provide arguments and evidence linking changes in external reporting rules to firms' investment decisions, capital allocation decisions, and internal information environment. I complement these studies by documenting a relation between external auditors' disclosure and managers' internal decision on firm disclosure.

Moreover, this study contributes to the audit regulation literature by highlighting that the new auditor disclosure rule triggers managerial disclosure, which in turn improves the market-wide information environment. Prior literature shows that audit quality enhances the credibility of financial reporting (Ball, Jayaraman, and Shivakumar, 2012; Balsam, Krishnan, and Yang, 2003). However, only a few studies have directly examined whether audit enhances disclosure quality or quantity. A plausible reason for the paucity of research in this area might be that there is a rich disclosure environment that limits the incremental effect of audit on disclosure quality or quantity (Healy and Palepu, 2001). In this study, I identify a setting where corporate disclosures are crucial, as they reveal forward looking information based on managers' unobservable private information and specific knowledge.

Finally, the findings of the chapter have implications for audit regulations. By documenting evidence on the informational benefits of the expanded audit report, I offer guidance for standard setters to improve the communicative value and relevance of the current audit report (IAASB, 2015; PCAOB, 2017; EU law, 2014).

The rest of the paper is organized as follows. Section 4.2 discusses the institutional background, the related literature, and hypotheses development. Section 4.3 explains the sample selection process and presents the research design. Section 4.4 describes the main results and the cross-sectional test while Section 4.5 discusses additional analyses. Finally, Section 4.6 concludes.

4.2. Background and related literature

4.2.1. Changes in the auditing reporting regimes

In 2013, the U.K. was the first country to adopt the expanded audit report model, with the introduction of ISA (U.K. and Ireland) 700 by FRC. The new standard mandates significant changes to auditor's reports for premium listed companies on the LSE with fiscal years ending on or after September 30th, 2013. These changes to the auditing standards require auditors to provide additional information on the risks of material misstatements that have the greatest effect on their audit strategy, the application of the materiality threshold, and the audit scope. These developments came as a response to the financial crisis and concerns raised by academics (e.g., Church, Davis, and McCracken, 2008) and investors regarding the lack of informativeness of the audit report. Indeed, prior surveys of sophisticated financial statement users indicate that market participants complain about the standardized nature of the audit report, and that they require more client-specific content, more informative disclosures regarding management's significant judgments and estimates, and audit risks as well (Carcello, 2012).

Proponents of the new regulation claim that the expanded audit report will convey useful information to investors, as auditors will need to provide more details about the approaches they had adopted and the judgments they had made (Touche, 2014). On the other hand, opponents argue that the additional information will add little incremental value to stakeholders and decrease audit quality, as auditors will focus on reporting rather than their oversight duties (BDO, 2013).

In an attempt to improve the communicative value and relevance of the auditor' report, the IAASB and PCAOB likewise have set standards which are broadly consistent with the existing auditor requirements in the U.K. (PCAOB, 2014). Mirroring the U.K. requirements on significant risks of material misstatements, the IAASB and PCAOB also require enhancements in the auditor's report of key audit matters or critical audit matters.[42] The IAASB's new and revised auditor reporting standard became effective for fiscal years ended on or after December 15, 2016. In the U.S., auditors will have to disclose critical audit matters in their expanded audit report of large accelerated companies in fiscal years that end on or after June 30, 2019; and for all other companies in fiscal years that end on or after December 15, 2020.

4.2.2. Economic consequences of expanded audit

The introduction of ISA (U.K. and Ireland) 700 provides a unique opportunity for auditors to discuss audit risks and determine audit scope. So far researchers focus on how capital market participants react to the information content of the new audit report and its implications on the cost of audit and audit quality (Gutierrez et al., 2018; Lennox et al., 2018; Reid et al., 2018). With regard to the capital market consequences, the existing evidence is mixed. Gutierrez et al. (2018) and Lennox et al. (2018) find that these risk disclosures do not provide new information to investors. In particular, Gutierrez et al. (2018) show that the price (measured by the three-day cumulative absolute abnormal returns) and volume reaction (measured by the abnormal trading volume around the date of the public distribution of the annual report) to the expanded audit report are insignificant, consistent with the results documented by Lennox et al. (2018). However, when they focus on long-window equity valuation models, they find that the risk disclosures reflect uncertainty in accounting estimates. In addition, Lennox et al. (2018) also find that auditors' disclosures lack incremental content because investors learnt about them from other sources, such as earnings announcements and conference calls. In contrast, (Bens, Chang, and Huang, 2018) document evidence of a decline in the bid-ask spread and analyst forecast dispersion at the time an annual report is filed, and these declines are greater when materiality levels are lower and more key audit matters are disclosed. Moreover, Smith (2017) shows that the communication value of the audit report increases following the introduction of ISA (U.K. and Ireland) 700. Specifically, she shows that following the passage of ISA (U.K. and Ireland) 700 audit reports have become more readable.

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[42] PCAOB's "critical audit matters (CAMs)", are similar but not identical to the IAASB's "key audit matters (KAMs)." CAMs are those areas in the audit of the financial statements of most significant auditor difficulty, whereas KAMs are those areas of the audit that demanded the most significant auditor attention.

Studies that examine the effect of the expanded audit report on the cost of audit and audit quality also yield mixed results. Gutierrez et al. (2018) show that the audit risk disclosures do not cause a change in audit fees or audit quality. In the same vein, Reid et al. (2018) do not find significant changes in audit fees and audit delay in response to the adoption of the new reporting requirements. However, they find that both abnormal accruals and propensity to meet or beat analyst forecasts decreased after the expanded audit report rule became mandatory.

Experimental studies have also examined the impact of critical audit matter (CAM) disclosures on auditors' legal liability and investor decisions. Kachelmeier et al. (2018) find that CAM disclosures decrease users' confidence in the associated financial statement areas, but they argue that auditors are also less responsible for a misstatement should one occur in the same areas as the CAM disclosure. This is in line with Brasel et al. (2016) who find that CAM disclosures reduce auditor liability for undetected misstatements that are difficult to anticipate. Conversely, Gimbar et al. (2016) show that in a rules-based setting, auditors are perceived more liable when they disclosed CAMs as compared to a similar situation in a principles-based setting. Moreover, Christensen, Glover, and Wolfe (2014) find that investors are more likely to change their investment decisions in the presence of a CAM paragraph than in the absence of it.

4.2.3. Audit and financial reporting

To date, the extant literature largely ignored the potential impact of the expanded audit report on firms' disclosure decisions. This study offers to fill this gap, building on a broader stream of literature of how audit is associated with financial reporting (Carcello and Nagy, 2004; Dunn and Mayhew, 2004). Prior literature suggests that higher audit quality enhances the credibility of financial reporting. In particular, this literature shows that audit quality is associated with lower levels of abnormal accruals (Carcello and Nagy, 2004), less aggressive earnings management (Francis, Maydew, and Sparks, 1999), lower likelihood of firms just meeting analyst expectation (Reichelt and Wang, 2010), lower probability of restatements (Romanus, Maher, and Fleming, 2008), lower level of fraudulent financial reporting (Carcello and Nagy, 2004), higher earnings response coefficient (Balsam et al., 2003), greater accounting conservatism in strong enforcement countries (Francis and Wang, 2008), and more frequent, timely and informative management forecasts (Ball et al., 2012). On the other hand, while audit quality constrains accrual-based earnings management, it does not constrain earnings management from real activities (Chi, Lisic, and Pevzner, 2011).

Only a few studies have directly investigated whether audit improves disclosure quality. For instance, Zhou (2007) finds that following the introduction of new auditing standards in China, firms experienced a reduction in information asymmetry, which the author interprets as an increase in information quality. A more closely related paper by Dunn and Mayhew (2004) shows that firms with higher audit quality have better disclosure quality. A possible reason for the dearth of research in this area could be attributed to the rich information environment that may limit the incremental effect of audit on disclosure quality (Healy and Palepu, 2001).

4.2.4. Hypotheses development

The inclusion of key audit matters in audit reports is likely to impact the perception of the company among stakeholders. Therefore, it is not surprising that firms plan how to respond to the risk disclosures contained in the expanded audit report. However, it is not a priori clear if and how managers answer in their communications to capital market participants. On the one hand, firms are likely to change their disclosure patterns and increase the degree of disclosure on the items flagged by the auditors, for at least two reasons. First, auditors have substantial information about their clients' financial statements, and thus they are in a unique position to reveal financial reporting risks that might attract the attention of investors and other capital market participants. The ability of auditors to report on such risks enhances their leverage over management (Wells Fargo, 2016), as auditors' commentary will guide users to parts of the financial statements that are referred to in the auditor's report. Being under third parties' scrutiny, a firm potentially feels accountable for its actions and may, in turn, augment its disclosures (PCAOB, 2016) [43]. Second, the enhanced information content of the audit reports could act as a mechanism that increases the accountability of auditors (Peecher, Solomon, and Trotman, 2013). Specifically, for accounts involving greater estimation risks, the auditors are likely to spend additional time discussing with the management to achieve concessions. Put differently, auditors have stronger incentives to reduce the financial reporting risk in the disclosed areas.

I acknowledge that it is possible that the expanded audit report may have no impact on managers' disclosure behavior. First, auditors' risk disclosures may be uninformative, as they fail to reflect relevant risks for the client's financial statements (Lennox et al., 2018). Uninformative repetition of what third parties already learnt from other sources would not affect managers' disclosure behavior. Second, managers may refrain from more disclosure as it may imply making public valuable proprietary information to competitors. Finally, anecdotal evidence shows that managers may believe their additional disclosures would lead to more uncertainty in light of the auditor's report (Schwarz, 2016). Therefore, I formulate the first hypothesis in the alternative form:

> *H1: Managers increase the levels of goodwill impairment disclosure in the financial statement notes when auditors mention goodwill impairment issues as key audit risks.*

Next, I exploit cross-sectional variations in the magnitude of goodwill to reinforce my main hypothesis. Technically, higher goodwill balance may indicate overdue or upcoming impairment and this scenario will draw more investors' attention to the auditors' mention of goodwill impairment as a risk of material misstatements. Consequently, when auditors mention goodwill impairment as a risk of material misstatements, firms with higher goodwill will give more attention to the disclosure on goodwill and goodwill impairment test, as they are more concerned with the potential loss of market confidence on the reported goodwill than firms with immaterial amounts of goodwill. Indeed, prior literature shows that firms with material goodwill provide more complete information regarding the goodwill impairment test (Gros and Koch, 2015). I thus predict that when the magnitude of goodwill is greater, managers will provide more information on the goodwill impairment test, and state the following hypothesis:

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[43] Paul Haaga, the former chairman of the Capital Group, stated at a PCAOB Roundtable: "*The mere fact that there's more to say than pass or fail … would give the auditors a stronger hand. They would win more arguments, and we think that would be a good thing…Simply the ability to say something there is an additional tool*." (PCAOB, 2011).

> *H1a: Managers of firms with more material goodwill increase the levels of goodwill-impairment disclosure in the financial statement notes by a greater extent when auditors mention goodwill impairment issues as key audit risks.*

I also examine whether managers' response differs when a key audit risk is mentioned for the first time vs. subsequent mentions. On the one hand, managers may not respond to risks that have been previously disclosed by the auditors, because they took actions in previous years. On the other hand, the repeated mentions of a particular audit risk over time could indicate a severe misstatement of the account concerned, and thus mangers may have a stronger response to the risk mention. I, therefore, hypothesize that the first time mention of goodwill impairment as an audit risk has a greater impact on managers' disclosure behavior than subsequent mentions, and state the following hypothesis in the alternative form:

> *H1b: Managers increase more the levels of goodwill-impairment disclosure in the financial statement notes when auditors mention goodwill impairment issues as key audit risks for the first time.*

4.3. Sample and research design

4.3.1. Sample description

My initial sample comprises 1,579 non-financial firm-years of premium listings on the London Stock Exchange for fiscal years ending on or after September 30, 2013 until June 30, 2017 available on Thomson Reuters Eikon database.[44] I drop 583 observations that do not report goodwill, and lose 23 observations due to annual reports unavailability, 23 observations without available audit risk disclosures, 33 observations with negative book-to-market ratio, 289 observations due to computing changes, and 31 observations with missing values for the independent variables, resulting in a final sample of 597 firm-year observations, corresponding to 244 unique firms. Table 4-1 reports the sample construction procedure.

[Insert Table 4-1 here]

4.3.2. Measurement of goodwill impairment disclosure levels

I collect firms' annual reports and extract the note to the financial statements that relates to goodwill and/or goodwill impairment test. I construct three textual measures of disclosure levels: total word count, total sentence count, and unique word count. To calculate these measures for each firm-year observation, I extract the goodwill impairment footnote from the annual report into individual text file. After removing tables from each text file, I use Python Natural Language Toolkit to calculate the number of words, sentences and unique words.[45] A higher level of the textual measures proxies for more complete disclosure.

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[44] I eliminate financial firms (SIC = 6xxx) due to the requirement for these firms to follow industry-specific impairment rules and disclosures (Lobo et al., 2017).

[45] The Python Natural Language Toolkit is a platform for analyzing human language in Python. http://www.nltk.org/

4.3.3. Regression models

To test H1 I estimate Equation (IV.1) stated below:

$$
\begin{aligned}
\Delta Disclosure_{i,t1\rightarrow t} = \alpha_0 + \alpha_1 Impairment\ risk_{i,t-1} + \alpha_2 \Delta Size_{i,t-1\rightarrow t} \\
+\alpha_3 \Delta Leverage_{i,t-1\rightarrow t} + \alpha_4 \Delta BTM_{i,t-1\rightarrow t} + \alpha_5 Loss_{i,t-1} \\
+\alpha_6 Loss_{i,t} + \alpha_7 \Delta Log(Goodwill)_{i,t-1\rightarrow t} \\
+\alpha_8 \Delta Log(1 + Impairment)_{i,t-1\rightarrow t} \\
+\alpha_9 \Delta Log(1 + \#Segments)_{i,t-1\rightarrow t} + \alpha_{10} EY_{i,t} + \alpha_{11} PWC_{i,t} \\
+ \alpha_{12} \Delta Log(1 + \#Analysts)_{i,t-1\rightarrow t} + \varepsilon \qquad \text{(IV.1)}
\end{aligned}
$$

where the subscripts *i* and *t* index firms and years. *Disclosure* refers to the three metrics that proxy for the levels of disclosure on goodwill impairment tests, namely *Log(#Words), Log(#Sentences), and Log(#Unique Words).*[46] In all cases, the dependent variable is the change in the degree of disclosure in year *t* relative to year *t-1*. $Impairment\ risk_{t-1}$ is an indicator variable that takes the value of one if auditors disclose goodwill impairment as an audit risk and zero otherwise. In this specification, the coefficient of interest is the estimated α_1. A positive (negative) and significant α_1 suggests that when auditors disclose goodwill impairment as an audit risk, managers increase (decrease) disclosure quantity related to goodwill impairment tests.

I control for several factors that have been documented to affect corporate disclosure quantity and hence potentially cofound my results. Prior research indicates that corporate disclosure is higher for firms that are bigger, less leveraged, with lower book-to-market ratio (Li, 2008), loss-making, and firms with multiple business segments (Smith, 2017). It also

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[46] I use the logarithm to account for skewness in the data. The results remain qualitatively unchanged if I use the levels instead.

positively relates to the amount of goodwill and goodwill impairment, audit quality (Smith, 2017) and analyst coverage (Ayres, Campbell, Chyz, and Shipman, 2018). Therefore, I control for firm size (*Size*), measured as the logarithm of total assets; leverage (*Leverage*), measured as the ratio of total debt to total assets; book–to-market ratio (*BTM*), defined as the balance sheet value of common equity divided by its market value; whether a firm reports a loss (*Loss*), an indicator variable that takes the value of one if net income is negative and zero otherwise; goodwill amount (*Log(Goodwill)*), measured as the natural logarithm of the goodwill amount; goodwill impairment charges (*Log*(*1+Impairment)*), measured as the natural logarithm of one plus the goodwill impairment amount; number of segments (*Log*(*1+#Segments)*), measured as the natural logarithm of one plus the number of business segments; auditor *EY(PWC)*, an indicator variable that takes the value of one if the auditor is Ernst & Young (PricewaterhouseCoopers); and analyst coverage (*Log(1+#Analysts)*), measured as the natural logarithm of one plus the number of analysts covering a company.[47] I winsorize continuous variables at the top and bottom 1% to reduce the influence of outliers, and cluster standard errors at the firm level to control for within-firm variation. Appendix 4-2 provides details on the construction of the variables. If applicable, values denominated in non-euro amounts are converted into euros.

4.4. Empirical results

4.4.1. Univariate results

Panel A of Table 4-2 reports the descriptive statistics on the distribution of key variables. Over 61% of the sample firms have goodwill impairment flagged as a risk of material misstatement. On average a goodwill financial statement note has roughly 517 words, 214 unique words, and 20 sentences. With regard to the control variables, the sample firms are relatively large, as expected for acquirers, with average total assets of €8,048 million and covered by over eleven analysts. They have an average amount of goodwill of €1,338 million and goodwill impairments of €13 million. Surprisingly, the percentage of loss-making observations is relatively high at 18%. Most of the sample firms are audited by the Big four auditors, with EY taking 15% share and PWC taking 24% share.

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[47] Prior research, analysts and regulatory bodies have observed variation in the quality of audit risk disclosures. Citi Research (2014) shows that the reports generated by EY are characterized as having fewer risk disclosures (i.e., lower audit quality) than the other Big 4 auditors, whereas Smith (2017) shows that the reports generated by PWC are more readable (i.e., higher audit quality). Therefore, I include *EY* and *PWC* as proxies for audit quality.

[Insert Table 4-2 here]

Panel B reports the Pearson correlation coefficients between the variables. All three measures of disclosure quantity ($Log(\#Words)_t$, $Log(\#Sentences)_t$, and $Log(\#Unique\ Words)_t$) are positively correlated with the mention of goodwill impairment as a risk of material misstatements in the audit report ($Impairment\ Risk_{t-1}$). The correlation coefficients also indicate that the degree of disclosure on goodwill impairment is greater for firms that are larger, more leveraged, and reporting a loss. It is also higher for firms with more goodwill and goodwill impairment amounts, more diversified in terms of business segments, and followed by more analysts.

4.4.2. Multivariate results

Table 4-3 presents the results of estimating Equation (IV.1) using ordinary least square regressions. I conduct the analyses using three different proxies for the change in disclosure levels. The coefficients on $Impairment\ risk_{t-1}$ are positive and statistically significant at the 1% or 5% level across all three specifications. To provide some sense for the economic significance, the coefficient on *Impairment risk*$_{t-1}$ in Column (1) (0.073) suggests that firms use 7.6% (= exp(0.073)) more words in their goodwill impairment note after auditors mentioned goodwill impairment as an audit risk in the previous year. Turning to the control variables, firms increase their extent of disclosure on goodwill impairment when they experience an increase in impairment charges and a surge in analyst coverage. There is some evidence that firms that reported a loss in the previous year and firms audited by PWC disclose more goodwill impairment information. Overall, these results support the hypothesis that managers respond to auditors' inclusion of goodwill impairment as a potential risk of material misstatements by increasing the levels of disclosure on goodwill impairment.

[Insert Table 4-3 here]

If a higher goodwill account balance potentially indicates overdue or upcoming impairment, it will draw more investor attention to the auditor's mention of goodwill impairment as a key audit risk in the expanded audit report. Therefore, I examine whether managers' response in goodwill impairment disclosure is stronger in such a case. I construct an indicator variable, *High Goodwill*$_t$, that takes the value of one if goodwill is higher than the sample third-quartile value and zero otherwise. I then add the interaction of *High Goodwill*$_t$ with *Impairment risk*$_{t-1}$ to Equation (IV.1) and expect a positive coefficient on this interaction variable. Consistent with my expectation, Table 4-4 shows that the coefficients on this variable are indeed significantly positive in Column (1) and Column (3), though not in Column (2), with the coefficients ranging from 0.097 to 0.139. Converting these coefficients to their economic meanings, I show that for firms with a smaller amount of goodwill, the auditor's mention of goodwill impairment as a key audit risk is associated with an increase of the number of words in the goodwill impairment note by 4% only, but the effect surges to 19.6% for firms with a large amount of goodwill.

[Insert Table 4-4 here]

Next, I examine whether managers' response in goodwill impairment disclosure is stronger when goodwill impairment is mentioned as an audit risk for the first time. I construct two indicator variables, *First* and *Others, with First* taking the value of one if goodwill impairment risk is mentioned for the first time for a given company, and zero otherwise, and *Others* taking the value of one if goodwill impairment risk is not mentioned for the first time during the sample period, and zero otherwise. Table 4-5 shows that only the coefficients on *First*, but not those on *Others,* are statistically significant. Taking Column (1) as an example, I find that managers increase the number of words in the goodwill impairment note by 11.4% after goodwill impairment risk is flagged in the expanded audit report for the first time. Given that the average number of words in the goodwill impairment note among sample firms is 516, this result translates to nearly an increase of 60 words.

[Insert Table 4-5 here]

4.5. Additional analyses

4.5.1. Goodwill impairment timeliness

In this section, I examine whether the probability of firms impairing goodwill that has potentially lost value is higher for firms that have goodwill impairment mentioned as a risk of material misstatements. The inclusion of goodwill impairment as an audit risk could be interpreted as auditors' desire to minimize the bias in management's goodwill impairment testing and to provide investors with reliable information. On the one hand, this could result in firms making more timely impairment decisions. However, on the other hand, auditors' and managers' incentives could be misaligned, as managers prefer to delay recording an impairment to avoid potential market loss (Ayres et al., 2018). Following (Beatty and Weber, 2006), I use the book-to-market ratio with a value above unity (BTM>1) as an indication that the market expects the firm to impair its goodwill. With the market value of equity less than its book value, a firm's assets are perceived to have a value lower than the carrying value, suggesting that assets are impaired. To test this conjecture, I estimate Equation (IV.2) stated below using logistic regression:

$$\begin{aligned} Impair_{i,t} = \beta_0 &+ \beta_1 Impairment\ Risk_{i,t-1} + \beta_2 Expected\ Impair_{i,t-1} \\ &+ \beta_3 Impairment\ Risk_{i,t-1} x Expected\ Impair_{i,t-1} + \beta_4 Size_{i,t-1} \\ &+ \beta_5 Leverage_{i,t-1} + \beta_6 BTM_{i,t-1} + \beta_7 Log(Goodwill)_{i,t-1} \\ &+ \beta_8 Log(1 + \#Segments)_{i,t-1} + \beta_9 EY_{i,t} + \beta_{10} PWC_{i,t} \\ &+ \beta_{11} Log(1 + \#Analysts)_{i,t} + \varepsilon \end{aligned} \qquad \text{(IV.2)}$$

where *Impair* equals one if goodwill is impaired in a given firm-year, and zero otherwise. *Expected Impair* equals one if book-to-market ratio is above one, and zero otherwise; *Impairment Risk* is defined as above. In this specification, the coefficient of interest is the estimated β_2. A positive and significant β_2 indicates that firms whose goodwill has potentially lost value are more likely to impair goodwill when auditors mention goodwill impairment risk in the expanded audit report.

I control for several factors that have been documented in prior literature to affect goodwill impairment. Firms are more likely to book an impairment if they are larger and less leveraged (Glaum, Landsman, and Wyrwa, 2018), have a greater book to market ratio (Ramanna and Watts 2012), more goodwill and less segments (Ramanna and Watts 2012), better audit quality and greater analyst coverage (Ayres et al., 2018). In Table 4-6, the results in columns (1) and (2) show that firms are more likely to impair goodwill in the following year after auditors mention goodwill impairment as a potential risk of material misstatements, but surprisingly not when the market considers goodwill having lost value. In Column (3), I include the interaction between *Impairment risk*$_{t-1}$ and *Expected Impair*$_{t-1}$ in the regression, and the coefficient on this interaction term is positive and statistically significant at the 1 percent level. This result indicates that firms book goodwill impairment in a timelier manner when auditors find goodwill at risk of being impaired. It is also consistent with the suggestion that after the introduction of the expanded audit report, auditors have become better monitors.

[Insert Table 4-6 here]

4.5.2. Goodwill impairment disclosure transparency and goodwill impairment disclosure complexity

One could argue that the main results, which indicate that managers respond to audit risk disclosure on goodwill impairment by increasing the length of disclosure, may not necessarily translate to an improvement in the reporting environment, as suggested by the managerial obfuscation hypothesis. In line with this view, Li (2008) shows that longer reports are associated with lower profitability and lower earnings persistence. I thus supplement my main analysis with a measure of goodwill impairment disclosure transparency and a measure of goodwill impairment complexity. These alternative measures allow me to alleviate the preceding concern. I use the index developed by Lobo et al. (2017) and Paugam and Ramond (2015) to measure disclosure transparency of firms' goodwill impairment disclosure. This measure is constructed by counting the number of elements disclosed in the goodwill-impairment note to the financial statements out of 25 possible items that cover aspects related to the technical valuation of goodwill and the impairment test, such as information related to the carrying amount of goodwill allocated to a unit (group of units), the basis on which the unit's (group of units') recoverable amount has been determined (i.e., value in use or fair value less costs of disposal), and the discount rate(s) applied to the cash flow projections. I attribute one point to each item belonging to the index disclosed in the financial statements and compute the index as the average numbers of items disclosed:

$$Disclosure\ transparency_{i,t} = \frac{1}{25}\sum_{i=1}^{25}(Category(i)\_items)$$

To measure disclosure complexity, I use the Fog Index from the computational linguistic literature to captures text complexity as a function of syllables per word and words per sentence. A higher value of the Fog index represents more complex (or less readable) text. Specifically, Fog (*Disclosure complexity*) is estimated by the following equation:

$$Disclosure\ complexity = (Words\ per\ sentence + Percentage\ of\ complex\ words) \times 0.4$$

I then re-estimate Equation (IV.1) after replacing the dependent variable by changes in disclosure transparency or changes in disclosure complexity. For the disclosure transparency specification, I randomly select 80 observations to be included in the analysis due to high costs in manually coding goodwill impairment disclosure transparency. The results presented in Column (1) of Table 4-7 shows that the coefficient on *Impairment risk*$_{t-1}$ is positive and statistically significant at the 5 percent level. Concerning disclosure complexity, presented in Column (2) of Table 4-7, the coefficient on *Impairment risk*$_{t-1}$ is negative and statistically significant, also at the 5 percent level. Both results provide consistent evidence that disclosure transparency and disclosure readability improve upon auditors' mention of goodwill impairment as a key audit risk, thus offering some comfort that the main results indicate an improvement in firm's reporting environment.

[Insert Table 4-7 here]

4.5.3. The role of the audit committee

Concurrently with the FRC' regulatory actions, the U.K. Corporate Governance Code required firms' audit committee to include, among others, significant issues that they consider relevant regarding the financial statements and how these issues are addressed.[48] Although there is nothing in either the auditing standards or the Corporate Governance Code that requires these significant issues identified by the audit committee to be identical with those reported by the external auditor, it is reasonable to expect some overlap between them. In my sample, in 55% of the cases both the external auditor and the internal audit committee report goodwill impairment as a business risk in the same reporting period, while in only 6% (12%) of the observations the external auditor (the internal audit committee) is the only party reporting the risk. This is consistent with Lennox et al. (2018) who find that a large majority of the auditor-disclosed risks are aligned with the audit committee's disclosed risks. The primary role of the audit committee is to oversee the firms' financial reporting process. As such, I posit that managers are more likely to enhance the levels of disclosure on goodwill impairment when both the external auditors and the internal audit committee include this account as a business risk. I manually collect the business risks disclosed by audit committees in annual reports and identify instances in which goodwill impairment risk is mentioned. I then create three indicator variables, *Both, Only Auditor* and *Only Committee. Both* takes the value of one if both the auditor and the audit committee include goodwill impairment as a business risk, and zero otherwise; *Only Auditor (Only Committee)* takes the value of one if only the auditor (audit committee) includes goodwill impairment as a business risk, and zero otherwise. The results in Table 4-8 show that only the coefficients on *Both* are positive and significant at the 1 percent level, whereas the coefficients on *Only Auditor* and *Only Committee* are not significantly different from zero. The insignificant results on these two variables could be due to their low occurrence. Although I acknowledge that it is difficult to disentangle the effect of the external audit report from that of the internal audit committee report, these results suggest that firms' response in enhancing the levels of disclosure is greater when both the external auditor and the internal audit committee include goodwill impairment as a business risk.

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[48] These changes are effective for fiscal years ending on or after September 30, 2013.

[Insert Table 4-8 here]

4.6. Conclusion

This study exploits the changing auditing environment in the U.K. since 2013 and examines whether managers respond to the red flags raised by auditors with respect to goodwill impairment by changing their disclosure behavior. I find that managers enhance goodwill impairment disclosure levels when auditors flag this accounting event as a risk of material misstatements. The improvement in corporate disclosure is stronger when the goodwill amount is material and when the audit risk is disclosed for the first time. Further, I also find that managers book timelier goodwill impairment when auditors include goodwill impairment as a risk of material misstatements in the expanded audit reports. Overall, these results support the view that auditors play an enhanced monitoring role following the adoption of the expanded audit report.

My results are subject to several caveats. First, I acknowledge that the results could be driven by other concurring regulatory changes, including the issuance of International Financial Reporting Standard (IFRS) 13 on fair value measurement that became mandatory for fiscal year ends beginning on or after January 1, 2013. The issuance of IFRS 13 had the largest impact on companies with substantial amounts of goodwill on their balance sheet and therefore these companies may potentially increase the levels of disclosure on goodwill impairment tests. However, the issuance of this standard would confound my results only if it would evenly affect all the firms with non-zero goodwill. This provides some comfort that my results are not driven by the issuance and amendment of IFRS 13.

Second, this study focuses on only one type of asset-related risks, and thus the results should be interpreted with caution and not generalized for other types of risks disclosed in the audit report. However, my results should be of primary importance given that 82% of the audit reports name risk related to assets as one of the key audit matters (Bens et al., 2018).

Despite these limitations, this study complements the extant literature on the expanded audit report by identifying the mechanism through which expanded audit report conveys useful information to market participants. By improving corporate disclosure, firms provide the market with more information, potentially proprietary, that aid investors in their assessment of the firm value. The results are particularly relevant to standard setters, as the IAASB, the European Commission, and the PCAOB have recently followed the U.K. example by approving or proposing similar changes to audit reports within their power. By showing that more extensive external auditor disclosures are associated with internal managers disclosures, I also contribute to the recent literature on the impact of external reporting on internal decision making, and to the literature on the association between audit quality and financial reporting.

Appendix 4-1: Example of goodwill impairment mentions in expanded audit reports

Firm: Evraz

Year: 2015

Auditor: Ernst & Young

Area of focus: Goodwill Impairment

At 31 December 2015 the carrying value of goodwill was US$1,176 million (2014: US$1.541 million). The Group recognised impairment charges in respect of goodwill, other intangible assets and items of PP&E during the year of US$441 million (2014: US$539 million). In accordance with IAS 36 management disclosed that in addition to the impairment charge already recognised a reasonably possible change in discount rates, sales prices, sales volumes and cost control measures could lead to impairments in other CGUs where no impairment is currently recognised. We focused on this area due to the significance of the carrying value of the assets being assessed, the number and size of recent impairments, the current economic environment in the Group's operating jurisdictions and because the assessment of the recoverable amount of the Group's Cash Generating Units ("CGUs") involves significant judgements about the future results of the business and the discount rates applied to future cash flow forecasts. In particular we focused our effort on those CGU's with the largest carrying values, those for which an impairment had been recognised in the year and those with the lowest headroom.

Our audit approach

We performed audit procedures on all impairment models relating to material cash generating units. Our audit procedures were performed mainly by the Group audit team with the exception of certain location specific inputs to management's models which were assessed by the component teams. Our audit procedures included the verification of management's assumptions used in their impairment models. The assumptions to which the models were most sensitive and most likely to lead to further impairments were: Decreases in steel prices; Increases in production costs and Discount rates. We corroborated management's assumptions with reference to historical data and, where applicable, external benchmarks noting the assumptions used fell within an acceptable range. We tested the integrity of models with the assistance of our own specialists and carried out audit procedures on management's sensitivity calculations. We assessed the historical accuracy of management's budgets and forecasts, and sought appropriate evidence for any anticipated improvements in major assumptions such as production volumes or cost reductions. We corroborated previous forecasts with actual data. We tested the appropriateness of the related disclosures provided in the Group Financial Statements. In particular we tested the completeness of the disclosures regarding those CGUs with material goodwill balances and where a reasonably possible change in certain variables could lead to impairment charges.

What we have reported to the Audit Committee

We consider the accuracy of management's estimates to have been reasonable for the current year with assumptions within an acceptable range. Management have also reflected known changes in the circumstances of each CGU in their forecasts for forthcoming periods. We concluded that the related disclosures provided in the Group Financial Statements are appropriate.

Appendix 4-2: Variable definition

Variable	Description
Log(#Words)	Natural logarithm of the number of words in the goodwill impairment financial statement note.
Log(#Sentences)	Natural logarithm of the number of sentences in the goodwill impairment financial statement note.
Log(#Unique Words)	Natural logarithm of the number of unique words in the goodwill impairment financial statement note.
Impairment Risk	A binary indicator variable that takes the value of one if auditors mention goodwill impairment as an audit risk and zero otherwise.
Size	Natural logarithm of total assets at the end of the financial year.
Leverage	Total debt divided by total assets.
BTM	Balance sheet value of common equity divided by market value of common equity.
Loss	An indicator variable that takes the value of one if net income is negative, and zero otherwise.
Log(Goodwill)	Natural logarithm of the goodwill amount.
Log(1+Impairment)	Natural logarithm of one plus the goodwill impairment amount.
Impair	An indicator variable that takes the value of one if the company impairs goodwill and zero otherwise.
Expected impair	An indicator variable that takes the value one if BTM is above one, and zero otherwise.
Log(1+#Segments)	Natural logarithm of one plus the number of segments.
Log(1+#Analysts)	Natural logarithm of one plus the number of analysts following the firm.
EY	An indicator variable that takes the value of one if a company is audited by Ernst & Young and zero otherwise.
PWC	An indicator variable that takes the value of one if a company is audited by PricewaterhouseCoopers and zero otherwise.

First	An indicator variable that takes the value of one if goodwill impairment risk is mentioned for the first time for a given company, and zero otherwise.
Others	An indicator variable that takes the value of one if goodwill impairment audit risk is mentioned in years other than the first year, and zero otherwise.
Disclosure transparency	An index that captures the amount of information included in a firm's financial statement footnotes about its goodwill impairment tests.
Log(Fog)	Natural logarithm of the FOG index, which is measured as a function of syllables per word and words per sentence.
Both	An indicator variable that takes the value of one if both the external auditor and internal audit committee include goodwill/goodwill impairment as a business risk, and zero otherwise.
Only Auditor	An indicator variable that takes the value of one if only the external auditor includes goodwill impairment as a business risk, and zero otherwise.
Only Committee	An indicator variable that takes the value of one if only the internal audit committee includes goodwill impairment as a business risk, and zero otherwise.

Table 4-1: Sample construction

This table reports the sample construction and composition.

Total number of non-financial firm-year observations of premium listings on LSE over 2013-2017 available on Thomson Reuters Eikon	1,579
(-) Firm-year observations without goodwill	583
(-) Firm-year observations with unavailable annual reports	23
(-) Firm-year observations without available audit risk disclosure	23
(-) Firm-year observations with negative book-to-market ratio	33
(-) Firm-year observations due to computing change specifications	289
(-) Firm-year observations with missing values for control variables	31
Final sample	**597**

Table 4-2: Descriptive statistics

This table reports the descriptive statistics of main variables. Panel A provides the summary statistics; Panel B reports Pearson's correlation coefficients. * indicates the coefficients are significantly different from zero at the 5% level in two-tailed tests. All continuous variables, except *Log(#Words), Log(#Sentences), and Log(#Unique Words)* are winsorized at the 1st and 99th percentiles. Refer to Appendix 4-2 for variable definitions.

Panel A: Descriptive statistics

	(1) N	(2) Mean	(3) p25	(4) Median	(5) p75	(6) Stdev.	(7) Min	(8) Max
$\#Words_t$	597	516.58	311	450	645	290.79	31	2,076
$\#Sentences_t$	597	19.87	12	17	24	10.85	2	83
$\#Unique\ Words_t$	597	214.16	160	205	254	81.64	25	588
$Impairment\ Risk_{t-1}$	597	0.616	0	1	1	0.487	0	1
$Size_t$	597	14.205	12.884	14.131	15.318	1.737	10.740	18.670
$Leverage_t$	597	0.212	0.087	0.206	0.307	0.155	0	0.826
BTM_t	597	0.484	0.233	0.410	0.641	0.339	0.001	1.786
$Loss_t$	597	0.181	0	0	0	0.385	0	1
$Goodwill_t$ (€million)	597	1,337.73	74.80	276.60	953.48	3,022.30	1.09	16,239.75
$Impairment_t$ (€million)	597	13.17	0	0	0	57.67	0	482.50
$\#Segments_t$	597	3.300	2	4	5	1.918	0	10
EY_t	597	0.151	0	0	0	0.358	0	1
PWC_t	595	0.243	0	0	0	0.429	0	1
$\#Analysts_t$	597	11.415	5	10	17	7.804	0	30

Panel B: Pearson correlation.

	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*	*(10)*	*(11)*	*(12)*	*(13)*	*(14)*	*(15)*
(1) Log(#Words)$_t$	1														
(2) Log(Sentences)$_t$	0.964*	1													
(3) Log(#Unique Words)$_t$	0.978*	0.948*	1												
(4) Impairment Risk$_{t-1}$	0.384*	0.365*	0.362*	1											
(5) Size$_t$	0.221*	0.190*	0.202*	0.024	1										
(6) Leverage$_t$	0.125*	0.101*	0.127*	0.067	0.361*	1									
(7) BTM$_t$	0.057	0.042	0.027	0.104*	0.041	-0.122*	1								
(8) Loss$_{t-1}$	0.021	0.031	0.009	0.070	0.005	0.076	0.246*	1							
(9) Loss$_t$	0.104*	0.112*	0.093*	0.111*	-0.040	0.080	0.271*	0.378*	1						
(10) Log(Goodwill)$_t$	0.412*	0.396*	0.394*	0.233*	0.801*	0.304*	0.019	0.009	0.000	1					
(11) Log(1+Impairment)$_t$	0.279*	0.283*	0.262*	0.196*	0.165*	0.084*	0.051	0.095*	0.266*	0.214*	1				
(12) Log(1+#Segments)$_t$	0.143*	0.128*	0.139*	0.085*	0.162*	0.117*	-0.042	0.017	-0.022	0.216*	0.036	1			
(13) EY$_t$	0.076	0.067	0.060	-0.053	0.063	0.097*	-0.016	0.009	0.021	0.011	-0.025	0.008	1		
(14) PWC$_t$	-0.073	-0.060	-0.088*	-0.051	-0.069	-0.059	0.010	0.031	-0.002	-0.078	0.018	-0.052	-0.239*	1	
(15) Log(1+#Analysts)$_t$	0.192*	0.173*	0.181*	0.004	0.806*	0.302*	-0.175*	-0.051	-0.078	0.651*	0.113*	0.139*	0.123*	-0.057	1

Table 4-3: Manager's response to the identification of goodwill impairment as an audit risk

This table presents the effects of the inclusion of goodwill impairment as a risk of material misstatements in expanded audit reports on the levels of goodwill impairment disclosure. Models are estimated using a pooled OLS regression specification over the period 2013-2017. All continuous variables, except *Log(#Words), Log(#Sentences), and Log(#Unique Words),* are winsorized at the 1st and 99th percentiles. ***, **, and * indicate significance level at the 1%, 5%, and 10% level, respectively, in two tailed tests. I report t-statistics based on standard errors clustered at the firm level in parentheses. Refer to Appendix 4-2 for variable definitions.

	(1) $\Delta Log(\#Words)_{t-1->t}$	(2) $\Delta Log(\#Sentences)_{t-1->t}$	(3) $\Delta Log(\#Unique\ Words)_{t-1->t}$
Impairment Risk $_{t-1}$	**0.073*****	**0.062****	**0.057*****
	(2.761)	**(2.380)**	**(3.143)**
$\Delta Size_{t-1->t}$	0.068	0.020	0.056
	(0.714)	(0.203)	(0.804)
$\Delta Leverage_{t-1->t}$	0.058	-0.072	-0.046
	(0.224)	(-0.284)	(-0.244)
$\Delta BTM_{t-1->t}$	0.092	0.085	0.055
	(1.350)	(1.284)	(1.120)
$Loss_{t-1}$	-0.070*	-0.052	-0.052*
	(-1.697)	(-1.198)	(-1.673)
$Loss_{t}$	0.035	0.023	0.038
	(0.758)	(0.493)	(1.211)
$\Delta Log(Goodwill)_{t-1->t}$	-0.000	-0.000	-0.000
	(-0.443)	(-0.410)	(-0.189)
$\Delta Log(1+Impairment)_{t-1->t}$	0.011***	0.011***	0.007***
	(2.863)	(2.925)	(2.838)
$\Delta Log(1+\#Segments)_{t-1->t}$	0.034	0.057*	0.026
	(1.145)	(1.733)	(1.152)
EY_{t}	0.030	0.024	0.018
	(0.724)	(0.553)	(0.662)
PWC_{t}	0.060**	0.049*	0.032*
	(2.191)	(1.839)	(1.671)
$\Delta Log(1+\#Analysts)_{t-1->t}$	0.121***	0.104**	0.083***
	(2.961)	(2.453)	(2.843)
Constant	-0.041*	-0.031	-0.033**
	(-1.780)	(-1.401)	(-2.058)
Observations	597	597	597
R-squared	0.064	0.048	0.060

Table 4-4: The role of goodwill materiality on manager’s response to the identification of goodwill impairment as an audit risk

This table presents the role of goodwill materiality on the effect of the inclusion of goodwill impairment as a risk of material misstatements on the levels of goodwill impairment disclosure. Models are estimated using a pooled OLS regression specification over the period 2013-2017. All continuous variables, except *Log(#Words), Log(#Sentences), and Log(#Unique Words),* are winsorized at the 1st and 99th percentiles. ***, **, and * indicate significance level at the 1%, 5%, and 10% level, respectively, in two tailed tests. I report t-statistics based on standard errors clustered at the firm level in parentheses. Refer to Appendix 4-2 for variable definitions.

	(1) Δ*Log(#Words)*$_{t-1->t}$	(2) Δ*Log(#Sentences)*$_{t-1->t}$	(3) Δ*Log(#Unique Words)*$_{t-1->t}$
Impairment Risk$_{t-1}$	0.040	0.035	0.034*
	(1.533)	(1.256)	(1.898)
High Goodwill$_{t}$	-0.071	-0.052	-0.044
	(-0.959)	(-0.786)	(-0.892)
***Impairment Risk*$_{t-1}$ *x High Goodwill*$_{t}$**	**0.139***	**0.110**	**0.097***
	(1.775)	**(1.613)**	**(1.806)**
Δ*Size*$_{t-1->t}$	0.066	0.018	0.054
	(0.714)	(0.189)	(0.806)
Δ*Leverage*$_{t-1->t}$	0.061	-0.071	-0.044
	(0.232)	(-0.276)	(-0.235)
Δ*BTM*$_{t-1->t}$	0.094	0.086	0.056
	(1.379)	(1.303)	(1.153)
Loss$_{t-1}$	-0.066	-0.049	-0.050
	(-1.511)	(-1.076)	(-1.519)
Loss$_{t}$	0.039	0.026	0.041
	(0.861)	(0.569)	(1.322)
Δ*Log(Goodwill)*$_{t-1->t}$	-0.000	-0.000	-0.000
	(-0.597)	(-0.592)	(-0.572)
Δ*Log(1+Impairment)*$_{t-1->t}$	0.011***	0.011***	0.007***
	(2.851)	(2.903)	(2.817)
Δ*Log(1+#Segments)*$_{t-1->t}$	0.030	0.053	0.023
	(0.982)	(1.597)	(0.981)
EY$_{t}$	0.017	0.013	0.009
	(0.443)	(0.325)	(0.361)
PWC$_{t}$	0.050*	0.041	0.025
	(1.858)	(1.541)	(1.326)
Δ*Log(1+#Analysts)*$_{t-1->t}$	0.120***	0.103**	0.083***
	(2.872)	(2.387)	(2.799)
Constant	-0.023	-0.017	-0.020
	(-1.148)	(-0.800)	(-1.465)
Observations	597	597	597
R-squared	0.072	0.053	0.068

Table 4-5: The role of first-time mention of goodwill impairment as an audit risk on manager's response

This table presents the difference in the effect of the first-time mention vs. subsequent mentions of goodwill impairment as a risk of material misstatements on the levels of goodwill impairment disclosure. Models are estimated using a pooled OLS regression specification over the period 2013-2017. All continuous variables, except *Log(#Words), Log(#Sentences), and Log(#Unique Words)***,** are winsorized at the 1st and 99th percentiles. ***, **, and * indicate significance level at the 1%, 5%, and 10% level, respectively, in two tailed tests. I report t-statistics based on standard errors clustered at the firm level in parentheses. Refer to Appendix 4-2 for variable definitions.

	(1) $\Delta Log(\#Words)_{t-1->t}$	(2) $\Delta Log(\#Sentences)_{t-1->t}$	(3) $\Delta Log(\#Unique\ Words)_{t-1->t}$
$First_{t-1}$	**0.108*****	**0.102*****	**0.078*****
	(3.253)	**(3.240)**	**(3.419)**
$Others_{t-1}$	**0.025**	**0.006**	**0.029**
	(0.969)	**(0.217)**	**(1.608)**
$\Delta Size_{t-1->t}$	0.037	-0.018	0.038
	(0.392)	(-0.194)	(0.552)
$\Delta Leverage_{t-1->t}$	0.084	-0.041	-0.032
	(0.332)	(-0.166)	(-0.173)
$\Delta BTM_{t-1->t}$	0.095	0.088	0.057
	(1.403)	(1.346)	(1.158)
$Loss_{t-1}$	-0.065	-0.046	-0.049
	(-1.576)	(-1.068)	(-1.571)
$Loss_{t}$	0.032	0.020	0.036
	(0.696)	(0.420)	(1.157)
$\Delta Log(Goodwill)_{t-1->t}$	-0.000	-0.000	-0.000
	(-0.269)	(-0.204)	(-0.030)
$\Delta Log(1+Impairment)_{t-1->t}$	0.011***	0.011***	0.007***
	(2.905)	(2.998)	(2.864)
$\Delta Log(1+\#Segments)_{t-1->t}$	0.034	0.057*	0.026
	(1.135)	(1.761)	(1.133)
EY_{t}	0.024	0.017	0.015
	(0.588)	(0.407)	(0.532)
PWC_{t}	0.061**	0.051*	0.033*
	(2.236)	(1.890)	(1.708)
$\Delta Log(1+\#Analysts)_{t-1->t}$	0.112***	0.092**	0.078***
	(2.774)	(2.239)	(2.649)
Constant	-0.034	-0.023	-0.029*
	(-1.524)	(-1.063)	(-1.861)
Observations	597	597	597
R-squared	0.071	0.058	0.064

Table 4-6: Goodwill impairment timeliness

This table presents the logistic regression results regarding goodwill impairment timeliness over the period 2013-2017. All continuous variables are winsorized at the 1st and 99th percentiles. ***, **, and * indicate significance level at the 1%, 5%, and 10% level, respectively, in two tailed tests. I report z-statistics based on standard errors clustered at the firm level in parentheses. Refer to Appendix 4-2 for variable definitions.

	(1) *Impair*$_t$	(2) *Impair*$_t$	(3) *Impair*$_t$
Impairment Risk$_{t-1}$	**1.129*****		1.005***
	(3.125)		(2.749)
Expected Impair$_{t-1}$		**0.628**	-13.389***
		(1.170)	(-16.829)
Impairment Risk$_{t-1}$**×*Expected Impair***$_{t-1}$			**14.234*****
			(16.232)
Size$_{t-1}$	0.101	-0.062	0.128
	(0.455)	(-0.304)	(0.574)
Leverage$_{t-1}$	-0.094	0.064	-0.214
	(-0.074)	(0.052)	(-0.169)
BTM$_{t-1}$	0.379	0.184	-0.058
	(0.807)	(0.353)	(-0.111)
Loss$_{t-1}$	0.374	0.348	0.409
	(1.093)	(1.049)	(1.206)
Log(Goodwill)$_{t-1}$	0.266*	0.428***	0.261*
	(1.925)	(3.149)	(1.903)
Log(1+#Segments)$_{t-1}$	-0.235	-0.164	-0.241
	(-0.770)	(-0.561)	(-0.780)
EY$_t$	-0.280	-0.305	-0.262
	(-0.654)	(-0.741)	(-0.626)
PWC$_t$	0.053	0.107	0.046
	(0.140)	(0.287)	(0.119)
Log(1+#Analysts)$_t$	-0.161	-0.176	-0.177
	(-0.507)	(-0.573)	(-0.562)
Constant	-6.933***	-5.974***	-6.918***
	(-4.062)	(-3.674)	(-3.917)
Observations	597	597	597
Pseudo R-squared	0.101	0.076	0.111
Year FE	Yes	Yes	Yes

Table 4-7: Disclosure transparency (disclosure complexity) and audit risk disclosure

This table presents the effect of the inclusion of goodwill impairment as a risk of material misstatements on goodwill impairment disclosure transparency and goodwill impairment disclosure readability. Models are estimated using a pooled OLS regression specification over the period 2013-2017. All continuous variables, except *ΔDisclosure transparency* and *ΔLog(Disclosure complexity)* are winsorized at the 1st and 99th percentiles. ***, **, and * indicate significance level at the 1%, 5%, and 10% level, respectively, in two tailed tests. I report t-statistics based on standard errors clustered at the firm level in parentheses. Refer to Appendix 4-2 for variable definitions.

	(1) $\Delta Disclosure\ transparency_{t-1->t}$	(2) $\Delta Log(Disclosure\ complexity)_{t-1->t}$
$\boldsymbol{Impairment\ Risk_{t-1}}$	**0.050****	**-0.061****
	(2.557)	**(-2.221)**
$\Delta Size_{t-1->t}$	-0.065	0.035
	(-1.029)	(0.720)
$\Delta Leverage_{t-1->t}$	0.313*	0.061
	(2.110)	(0.416)
$\Delta BTM_{t-1->t}$	0.052	0.020
	(0.459)	(0.449)
$Loss_{t-1}$	-0.026	-0.006
	(-0.636)	(-0.149)
$Loss_{t}$	0.058**	0.027
	(2.212)	(0.952)
$\Delta Log(Goodwill)_{t-1->t}$	-0.000*	-0.000
	(-2.120)	(-1.557)
$\Delta Log(1+Impairment)_{t-1->t}$	-0.004*	0.001
	(-2.169)	(0.604)
$\Delta Log(1+\#Segments)_{t-1->t}$	-0.062	0.038
	(-1.517)	(1.183)
EY_{t}	-0.008	-0.022
	(-0.148)	(-0.670)
PWC_{t}	0.023*	0.041
	(1.909)	(1.181)
$\Delta Log(1+\#Analysts)_{t-1->t}$	0.041	-0.022
	(0.682)	(-0.715)
Constant	0.011	2.126***
	(0.593)	(79.828)
Observations	80	597
R-squared	0.294	0.044

Table 4-8: Manager’s response to the identification of goodwill impairment as a business risk by both the auditor and the audit committee

This table presents the effect of the inclusion of goodwill impairment as a business risk by both the external auditor and internal audit committee on the levels of goodwill impairment disclosure. Models are estimated using a pooled OLS regression specification over the period 2013-2017. All continuous variables, except *Log(#Words), Log(#Sentences), and Log(#Unique Words),* are winsorized at the 1st and 99th percentiles. ***, **, and * indicate significance level at the 1%, 5%, and 10% level, respectively, in two tailed tests. I report t-statistics based on standard errors clustered at the firm level in parentheses. Refer to Appendix 4-2 for variable definitions.

	(1) $\Delta Log(\#Words)_{t-1->t}$	(2) $\Delta Log(\#Sentences)_{t-1->t}$	(3) $\Delta Log(\#Unique\ Words)_{t-1->t}$
$Both_{t-1}$	**0.083*****	**0.079*****	**0.063*****
	(3.393)	**(2.924)**	**(3.743)**
$Only\ auditor_{t-1}$	**-0.057**	**-0.047**	**-0.038**
	(-0.819)	**(-0.709)**	**(-0.717)**
$Only\ committee_{t-1}$	**-0.011**	**0.016**	**-0.012**
	(-0.243)	**(0.377)**	**(-0.398)**
$\Delta Size_{t-1->t}$	0.069	0.020	0.056
	(0.723)	(0.206)	(0.815)
$\Delta Leverage_{t-1->t}$	0.101	-0.029	-0.015
	(0.405)	(-0.121)	(-0.088)
$\Delta BTM_{t-1->t}$	0.088	0.081	0.052
	(1.289)	(1.219)	(1.056)
$Loss_{t-1}$	-0.069*	-0.051	-0.050*
	(-1.693)	(-1.189)	(-1.670)
$Loss_{t}$	0.035	0.023	0.038
	(0.759)	(0.486)	(1.211)
$\Delta Log(Goodwill)_{t-1->t}$	0.000	-0.000	0.000
	(0.028)	(-0.003)	(0.349)
$\Delta Log(1+Impairment)_{t-1->t}$	0.011***	0.011***	0.007***
	(2.981)	(3.017)	(2.989)
$\Delta Log(1+\#Segments)_{t-1->t}$	0.033	0.055*	0.026
	(1.122)	(1.672)	(1.123)
EY_{t}	0.040	0.034	0.025
	(0.947)	(0.777)	(0.888)
PWC_{t}	0.063**	0.053**	0.034*
	(2.332)	(2.006)	(1.807)
$\Delta Log(1+\#Analysts)_{t-1->t}$	0.122***	0.102**	0.084***
	(2.941)	(2.390)	(2.840)
Constant	-0.042**	-0.041*	-0.032**
	(-1.986)	(-1.813)	(-2.142)
Observations	597	597	597
R-squared	0.075	0.057	0.071

Chapter 5

General conclusion

5.1. Conclusion and limitations

This thesis contains three stand-alone essays on the disclosure of goodwill impairment information. Each essay aims to improve our collective understanding about managers' reporting strategies regarding goodwill impairment by examining the role of the information disclosed on goodwill impairment for firm stakeholders (i.e., financial analysts, peer firms, and auditors). Information about goodwill impairment reporting is important because it allows capital market participants to gain a deeper understanding of managers' private information about the firm's future earnings prospects (Ramanna and Watts, 2011).

This dissertation concludes with the following main findings. In chapter 2, I find that disclosure transparency is negatively associated with disagreement among analysts and disagreement between analysts and managers, in the context of goodwill impairment, suggesting that disclosure transparency reduces information asymmetry and information uncertainty among economic agents. I also find that in order to form their opinions regarding goodwill impairment, analysts demand more information on cash flow compared to information of discount rate, as only cash-flow-related, but not discount-rate-related, disclosure transparency is significantly associated with the disagreement metrics.

In Chapter 3, I find that managers learn from their peers' admissions of failure to extract value from past investments, measured by the reporting of a significant goodwill impairment, and (1) improve the quality of their corporate acquisitions (2) adjust their over-investments in assets to the level predicted by their growth opportunities. The learning effect prevails only when the impairment occurs due to an external reason, as opposed to an internal reason. The results are robust to alternative sample selection, variables measurement, and are not driven by acquirers learning from their own experience or by other macroeconomic effects.

In Chapter 4, I find that firms (1) adjust the levels of disclosure on goodwill impairment and (2) book goodwill impairment in a timelier fashion when auditors flag goodwill impairment as a risk of material misstatements in the expanded audit report. Additional analyses show that the increase in the level of disclosure becomes stronger when the goodwill amount is larger and when the associated audit risk is disclosed for the first time. The results are not driven by other concurring regulatory changes and do not support the manager obfuscation hypothesis.

At many stages of this dissertation, I encounter empirical and theoretical challenges. While several challenges have been addressed, others remain unresolved leading to this dissertation subject to some limitations.

First, the data collection in chapter 2 and chapter 4 relies on a content analysis of the text in the financial statement note on goodwill impairment to construct goodwill-impairment-related disclosure transparency and the levels of disclosure. Although this approach allows me to work with unique datasets and the results using the constructed variables are in line with prior literature and consistent with my expectation, the inherent subjectivity may potentially introduce noise to the empirical proxies.

Another source of noise that might explain the results in chapter 3 is that other correlated macroeconomic shocks coinciding with the reporting of significant goodwill impairment also affect the acquisition behavior of the peers. Although, I used several solutions to allay these concerns, this alternative explanation cannot be entirely ruled out.

Moreover, in chapter 4 I focus only on the mentions of goodwill impairment as a risk of material misstatements, which represents a single type of asset-related risks, and thus the results should be interpreted with caution and not generalized for other types of risks disclosed in the audit report. However, given that goodwill impairments represent significant corporate events for firms and more importantly 82% of the audit reports mention risk related to assets as one of the key audit matters (Bens et al. 2018), my findings should be of main relevance.

References

AbuGhazaleh, N. M., Al-Hares, O. M., & Haddad, A. E. (2012). The value relevance of goodwill impairments: U.K. evidence. International Journal of Economics and Finance, 4(4), 206-216.

Ahmed, A. S., & Guler, L. (2007). Evidence on the effects of SFAS 142 on the reliability of goodwill write-offs. Available at SSRN 989056.

Alves, P., Pope, P. F., & Young, S. (2009). Cross-border information transfers: Evidence from profit warnings issued by European firms. Accounting and Business Research, 39(5), 449-472.

Amel-Zadeh, A., Faasse, J., Li, K., & Meeks, G. (2013). Has accounting regulation secured more valuable goodwill disclosures? Available at SSRN 2306584.

Amiraslani, H., Iatridis, G. E., & Pope, P. F. (2013). Accounting for asset impairment: a test for IFRS compliance across Europe. Centre for Financial Analysis and Reporting Research (CeFARR).

André, P., Dionysiou, D., & Tsalavoutas, I. (2018). Mandated disclosures under IAS 36 impairment of assets and IAS 38 intangible assets: value relevance and impact on analysts’ forecasts. Applied Economics, 50(7), 707-725.

Andre, P., Filip, A., & Paugam, L. 2016. Examining the Patterns of Goodwill Impairments in Europe and the US. Accounting in Europe 13 (3), 329–52.

Asquith, P., Mikhail, M. B., & Au, A. S. (2005). Information content of equity analyst reports. Journal of Financial Economics, 75(2), 245-282.

Ayres, D. R., Campbell, J. L., Chyz, J., & Shipman, J. E. (2018). Do Financial Analysts Compel Firms to Make Accounting Decisions? Evidence from Goodwill Impairments. Available at SSRN 2656844.

Backof, A., Bowlin, K., & Goodson, B. (2018). The impact of proposed changes to the content of the audit report on jurors’ assessments of auditor negligence. Available at SSRN 2446057.

Badertscher, B., Shroff, N., & White, H. D. (2013). Externalities of public firm presence: Evidence from private firms' investment decisions. Journal of Financial Economics, 109(3), 682-706.

Baginski, S. P. (1987). Intraindustry information transfers associated with management forecasts of earnings. Journal of Accounting Research, 25(2), 196-216.

Ball, R., Jayaraman, S., & Shivakumar, L. (2012). Audited financial reporting and voluntary disclosure as complements: A test of the confirmation hypothesis. Journal of Accounting Economics, 53(1-2), 136-166.

Balsam, S., Krishnan, J., & Yang, J. (2003). Auditor industry specialization and earnings quality. Auditing: A Journal of Practice Theory, 22(2), 71-97.

BDO. (2013). Comment Letter on FRC Revision to ISA (U.K. and Ireland) 700: Requiring the auditor's report to address risks of material misstatement, materiality and a summary of audit scope.

Beatty, A., & Weber, J. (2006). Accounting discretion in fair value estimates: An examination of SFAS 142 goodwill impairments. Journal of Accounting Research, 44(2), 257-288

Beatty, A., Liao, S., & Yu, J. J. (2013). The spillover effect of fraudulent financial reporting on peer firms' investments. Journal of Accounting and Economics, 55(2), 183-205.

Behn, B. K, Choi, J.H., & Kang, T. 2008. Audit Quality and Properties of Analyst Earnings Forecasts. The Accounting Review 83 (2), 327–49.

Bens, D. A., Heltzer, W., & Segal, B. (2011). The information content of goodwill impairments and SFAS 142. Journal of Accounting, Auditing & Finance, 26(3), 527-555.

Bens, D., Chang, W.-J., & Huang, S. (2018). The Association Between the Expanded Audit Report and Investor Uncertainty. Working paper.

Beyer, A., Cohen, D. A., Lys, T. Z., & Walther, B. R. (2010). The financial reporting environment: Review of the recent literature. Journal of Accounting and Economics, 50(2), 296-343.

Biddle, G. C., Hilary, G., & Verdi, R. S. (2009). How does financial reporting quality relate to investment efficiency? Journal of Accounting and Economics, 48(2), 112-131.

Boennen, S., & Glaum, M. (2014). Goodwill accounting: A review of the literature. Available at SSRN 2462516.

Botosan, C. A. (1997). Disclosure level and the cost of equity capital. The Accounting Review, 72(3), 323-349.

Bourveau, T., Brochet, F., & Spira, S. M. (2014). Do M&A Lawsuits Discipline Managers' Investment Behavior? Available at SSRN 2506516.

Bozanic, Z., & Thevenot, M. (2015). Qualitative disclosure and changes in sell-side financial snalysts' information environment. Contemporary Accounting Research, 32(4), 1595-1616.

Bradshaw, M. T, & Sloan, R.G. 2002. GAAP versus The Street: An Empirical Assessment of Two Alternative Definitions of Earnings. Journal of Accounting Research, 40(1), 41–66.

Bradshaw, M. T. (2011). Analysts’ forecasts: what do we know after decades of work? Available at SSRN 1880339.

Brasel, K., Doxey, M. M., Grenier, J. H., & Reffett, A. (2016). Risk disclosure preceding negative outcomes: The effects of reporting critical audit matters on judgments of auditor liability. The Accounting Review, 91(5), 1345-1362.

Bricker, R., Previts, G., Robinson, T., & Young, S. (1995). Financial analyst assessment of company earnings quality. Journal of Accounting, Auditing & Finance, 10(3), 541-554.

Byard, D., & Shaw, K. W. (2003). Corporate disclosure quality and properties of analysts' information environment. Journal of Accounting, Auditing & Finance, 18(3), 355-378.

Carcello, J. (2012). What do investors want from the standard audit report? The CPA Journal, 82(1), 22.

Carcello, J., & Nagy, A. (2004). Audit firm tenure and fraudulent financial reporting. Auditing: A Journal of Practice Theory, 23(2), 55-69.

Cazavan-Jeny, A., & Jeanjean, T. (2007). Levels of voluntary disclosure in IPO prospectuses: An empirical analysis. Review of Accounting and Finance, 6(2), 131-149.

Cedergren, M. C., Lev, B., & Zarowin, P. (2015). SFAS 142, Conditional conservatism, and acquisition profitability and risk. Available at SSRN 2695055.

Chen, F., Hope, O.-K., Li, Q., & Wang, X. (2011). Financial reporting quality and investment efficiency of private firms in emerging markets. The Accounting Review, 86(4), 1255-1288.

Chen, L. H., Krishnan, J., & Sami, H. (2014). Goodwill impairment charges and analyst forecast properties. Accounting Horizons, 29(1), 141-169.

Cheng, Q., Cho, Y. J., & Yang, H. (2018). Financial reporting changes and the internal information environment: Evidence from SFAS 142. Review of Accounting Studies, 23(1), 347-383.

Chi, W., Lisic, L. L., & Pevzner, M. (2011). Is enhanced audit quality associated with greater real earnings management? Accounting Horizons, 25(2), 315-335.

Christensen, B. E., Glover, S. M., & Wolfe, C. (2014). Do critical audit matter paragraphs in the audit report change nonprofessional investors' decision to invest? Auditing: A Journal of Practice & Theory, 33(4), 71-93.

Church, B. K., Davis, S. M., & McCracken, S. A. (2008). The auditor's reporting model: A literature overview and research synthesis. Accounting Horizons, 22(1), 69-90.

Citi Research, C. (2014). New U.K. Auditor’s Reports. A Review of New Information.

Clement, M. B., Koonce, L., & Lopez, T. J. (2007). The roles of task-specific forecasting experience and innate ability in understanding analyst forecasting performance. Journal of Accounting and Economics, 44(3), 378-398.

Core, J. E., Hail, L., & Verdi, R. S. (2015). Mandatory disclosure quality, inside ownership, and cost of capital. European Accounting Review, 24(1), 1-29.

D’Arcy, A., & Tarca, A. (2016). Reviewing goodwill accounting research: What do we really know about IFRS 3 and IAS 36 implementation effects. Available at https://www.sciencesouthtyrol.net/blob/118651,,,UNIBZ,90,61.pdf

Darrough, M. N., Guler, L., & Wang, P. (2014). Goodwill Impairment Losses and CEO Compensation. Journal of Accounting, Auditing & Finance, 29(4), 435-463.

Daske, H., Hail, L., Leuz, C., & Verdi, R. (2008). Mandatory IFRS reporting around the world: Early evidence on the economic consequences. Journal of Accounting Research, 46(5), 1085-1142.

De Franco, G., Edwards, A., & Liao, S. (2016). Product Market Peers in Lending: Information Processing Efficiencies and Proprietary Costs. Available at SSRN 2200995.

De Franco, G., Hope, O. K., Vyas, D., & Zhou, Y. (2015). Analyst report readability. Contemporary Accounting Research, 32(1), 76-104.

De Franco, G., Hope, O.-K., & Larocque, S. (2013). Analysts’ choice of peer companies. Review of Accounting Studies, 20 (1), 82-109.

De Franco, G., Kothari, S., & Verdi, R. S. (2011). The benefits of financial statement comparability. Journal of Accounting Research, 49(4), 895-931.

Dhaliwal, D. S., Lamoreaux, P. T., Litov, L. P., & Neyland, J. B. (2016). Shared auditors in mergers and acquisitions. Journal of Accounting and Economics, 61(1), 49-76.

Dhaliwal, D. S., Li, O. Z., Tsang, A., & Yang, Y. G. (2011). Voluntary nonfinancial disclosure and the cost of equity capital: The initiation of corporate social responsibility reporting. The Accounting Review, 86(1), 59-100.

Diamond, D. W., & Verrecchia, R. E. (1991). Disclosure, liquidity, and the cost of capital. The Journal of Finance, 46(4), 1325-1359.

Duff, & Phelps. (2016). 2016 European Goodwill Impairment Study. Available at http://www.duffandphelps.com/assets/pdfs/publications/valuation/gwi/2016-euro-gwi-study-final.pdf. doi: 10.1098/rstb.2005.1736

Dunn, K. A., & Mayhew, B. W. (2004). Audit firm industry specialization and client disclosure quality. Review of Accounting Studies, 9(1), 35-58.

Durnev, A., & Mangen, C. (2009). Corporate investments: Learning from restatements. Journal of Accounting Research, 47(3), 679-720.

Durnev, A., & Mangen, C. (2014). The Spillover Effects of MD&A Disclosures for Real Investment: The Role of Product Market Competition. Available at SSRN 1984956.

Dye, R. A. (1985). Disclosure of nonproprietary information. Journal of Accounting Research, 23(1), 123-145.

Dye, R. A. (1986). Proprietary and nonproprietary disclosures. Journal of Business, 331-366.

EFRAG. (2014). Should goodwill still not be amortised? Accounting and disclosure for goodwill. Available at: http://www.efrag.org/Assets/Download?assetUrl=%2Fsites%2Fwebpublishing%2FSiteAssets%2F140725_Should_goodwill_still_not_be_amortised_Research_Group_paper.pdf.

European Union (EU) law. (2014). Regulation (EU) no. 537/2014 of the European Parliament and of the Council of 16 April 2014 on specific requirements regarding statutory audit 38 of public-interest entities and repealing Commission Decision 2005/909/EC. Available at http://publications.europa.eu/en/publication-detail/-/publication/567809be-e656-11e3-8cd4-01aa75ed71a1/language-en.

Filip, A., Jeanjean, T., & Paugam, L. (2015). Using real activities to avoid goodwill impairment losses: Evidence and effect on future performance. Journal of Business Finance & Accounting, 42(3-4), 515-554.

Financial Reporting Council, (FRC). (2013). International Standard on Auditing (U.K. and Ireland) 700: The independent auditor's report on financial statements. London,England: The Financial Reporting Council Limited.

Financial Reporting Council, (FRC). (2016). Extended auditor’s reports. A further review of experience.

Firth, M. (1996). Dividend changes, abnormal returns, and intra-lndustry firm valuations. Journal of Financial and Quantitative Analysis, 31(2), 189-211.

Foster, G. (1979). Briloff and the capital market. Journal of Accounting Research, 17(1), 262-274.

Foster, G. (1981). Intra-industry information transfers associated with earnings releases. Journal of Accounting and Economics, 3(3), 201-232.

Foucault, T., & Fresard, L. (2014). Learning from peers' stock prices and corporate investment. Journal of Financial Economics, 111(3), 554-577.

Francis, J., Hanna, J. D., & Vincent, L. (1996). Causes and effects of discretionary asset write-offs. Journal of Accounting Research, 34, 117-134.

Francis, J. R., Maydew, E. L., & Sparks, H. C. (1999). The role of Big 6 auditors in the credible reporting of accruals. Auditing: A Journal of Practice & Theory, 18(2), 17-34.

Francis, J. R., & Wang, D. (2008). The joint effect of investor protection and Big 4 audits on earnings quality around the world. Contemporary Accounting Research, 25(1), 157-191.

Fuller, K., Netter, J., & Stegemoller, M. (2002). What do returns to acquiring firms tell us? Evidence from firms that make many acquisitions. The Journal of Finance, 57(4), 1763-1793.

Gimbar, C., Hansen, B., & Ozlanski, M. E. (2016). The effects of critical audit matter paragraphs and accounting standard precision on auditor liability. The Accounting Review, 91(6), 1629-1646.

Gipper, B., Leuz, C., & Maffett, M. (2015). Public audit oversight and reporting credibility: Evidence from the PCAOB inspection regime. National Bureau of Economic Research.

Glaum, M., Baetge, J., Grothe, A., & Oberdörster, T. (2013). Introduction of International Accounting Standards, disclosure quality and accuracy of analysts' earnings forecasts. European Accounting Review, 22(1), 79-116.

Glaum, M., Landsman, W. R., & Wyrwa, S. (2018). Goodwill Impairment: The Effects of Public Enforcement and Monitoring by Institutional Investors. The Accounting Review - In press.

Gleason, C. A., Jenkins, N. T., & Johnson, W. B. (2008). The contagion effects of accounting restatements. The Accounting Review, 83(1), 83-110.

Godfrey, J. M., & Koh, P. S. (2009). Goodwill impairment as a reflection of investment opportunities. Accounting & Finance, 49(1), 117-140.

Goodman, T. H., Neamtiu, M., Shroff, N., & White, H. D. (2013). Management forecast quality and capital investment decisions. The Accounting Review, 89(1), 331-365.

Gros, M., & Koch, S. (2015). Goodwill impairment test disclosures under IAS 36: Disclosure quality and its determinants in Europe. Available at SSRN 2636792.

Gu, F., & Lev, B. (2011). Overpriced shares, ill-advised acquisitions, and goodwill impairment. The Accounting Review, 86(6), 1995-2022.

Gutierrez, E., Minutti-Meza, M., Tatum, K., & Vulcheva, M. (2018). Consequences of adopting an expanded auditor’s report in the United Kingdom. Review of Accounting Studies, 23(4), 1543-1587.

Hamberg, M., Paananen, M., & Novak, J. (2011). The adoption of IFRS 3: The effects of managerial discretion and stock market reactions. European Accounting Review, 20(2), 263-288.

Hayn, C., & Hughes, P. J. (2006). Leading indicators of goodwill impairment. Journal of Accounting, Auditing & Finance, 21(3), 223-265.

Healy, P. M., & Palepu, K. G. (2001). Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature. Journal of Accounting and Economics, 31(1), 405-440.

Heflin, F. L., Shaw, K. W., & Wild, J. J. (2005). Disclosure policy and market liquidity: Impact of depth quotes and order sizes. Contemporary Accounting Research, 22(4), 829-865.

Hemmer, T., & Labro, E. (2008). On the optimal relation between the properties of managerial and financial reporting systems. Journal of Accounting Research, 46(5), 1209-1240.

Hertzel, M. G. (1991). The effects of stock repurchases on rival firms. The Journal of Finance, 46(2), 707-716.

Hoberg, G., & Phillips, G. (2016). Text-based network industries and endogenous product differentiation. Journal of Political Economy, 124(5), 1423-1465.

Hodgdon, C., Tondkar, R. H., Harless, D. W., & Adhikari, A. (2008). Compliance with IFRS disclosure requirements and individual analysts’ forecast errors. Journal of International Accounting, Auditing and Taxation, 17(1), 1-13.

Hope, O. K. (2003). Disclosure practices, enforcement of accounting standards, and analysts' forecast accuracy: An international study. Journal of Accounting Research, 41(2), 235-272.

Horton, J., Serafeim, G., & Serafeim, I. (2013). Does Mandatory IFRS Adoption Improve the Information Environment? Contemporary Accounting Research, 30 (1), 388–423.

Howe, J. S., & Shen, Y.-p. (1998). Information associated with dividend initiations: Firm-specific or industry-wide? Financial Management, 17-26.

Huang, A. H., Zang, A. Y., & Zheng, R. (2014). Evidence on the information content of text in analyst reports. The Accounting Review, 89(6), 2151-2180.

Hughes, J. S., Liu, J., & Liu, J. (2007). Information asymmetry, diversification, and cost of capital. The Accounting Review, 82(3), 705-729.

IASB. (2004). International Accounting Standard (IAS) No. 36: Impairment of assets. London: IASC Foundation Publications Department.

International Auditing and Assurance Standards Board (IAASB). (2015). New and Revised Auditor Reporting Standards and Related Conforming Amendments. Available at https://www.iaasb.org/publications-resources?language&publication-type&source&page=16.

Jarva, H. (2009). Do firms manage fair value estimates? An examination of SFAS 142 goodwill impairments. Journal of Business Finance & Accounting, 36(9-10), 1059-1086.

Kachelmeier, S. J., Schmidt, J. J., & Valentine, K. (2018). The disclaimer effect of disclosing critical audit matters in the auditor's report. Available at SSRN 2481284.

Katz, D. (2013). Robust Auditor Reports Lure Investors: PCAOB Audit Chief. Available at http://ww2.cfo.com/auditing/2013/12/robust-auditor-reports-lure-investors-pcaob-audit-chief/. doi:10.1016/j.conb.2009.02.003

Kedia, S., Koh, K., & Rajgopal, S. (2015). Evidence on contagion in earnings management. The Accounting Review, 90(6), 2337-2373.

Kim, Y., Lacina, M., & Park, M. S. (2008). Positive and negative information transfers from management forecasts. Journal of Accounting Research, 46(4), 885-908.

Klueber, J., Gold, A., & Pott, C. (2018). Do Key Audit Matters Impact Financial Reporting Behavior? Available at SSRN 3210475.

Knauer, T., & Wöhrmann, A. (2016). Market reaction to goodwill impairments. European Accounting Review, 25(3), 421-449.

Kothari, S., Li, X., & Short, J. E. (2009). The effect of disclosures by management, analysts, and business press on cost of capital, return volatility, and analyst forecasts: A study using content analysis. The Accounting Review, 84(5), 1639-1670.

Kothari, S., So, E., & Verdi, R. (2016). Analysts' Forecasts and Asset Pricing: A Survey. Annual Review of Financial Economics, 8(1), 197-219.

Lambert, R., Leuz, C., & Verrecchia, R. E. (2007). Accounting information, disclosure, and the cost of capital. Journal of Accounting Research, 45(2), 385-420.

Lang, M.H. & Stulz. (1992). Contagion and competitive intra-industry effects of bankruptcy announcements: An empirical analysis. Journal of Financial Economics, 32(1), 45-60

Lang, M. H., & Lundholm, R. J. (1996). Corporate disclosure policy and analyst behavior. The Accounting Review, 71(4), 467-492.

Leary, M. T., & Roberts, M. R. (2014). Do peer firms affect corporate financial policy? The Journal of Finance, 69(1), 139-178.

Lehavy, R., Li, F., & Merkley, K. (2011). The effect of annual report readability on analyst following and the properties of their earnings forecasts. The Accounting Review, 86(3), 1087-1115.

Lennox, C. S., Schmidt, J. J., & Thompson, A. (2018). Is the expanded model of audit reporting informative to investors? Evidence from the U.K. Available at SSRN 3199449.

Leuz, C., & Wysocki, P. D. (2016). The economics of disclosure and financial reporting regulation: Evidence and suggestions for future research. Journal of Accounting Research, 54(2), 525-622.

Lev, B., Li, S., & Sougiannis, T. (2010). The usefulness of accounting estimates for predicting cash flows and earnings. Review of Accounting Studies, 15(4), 779-807.

Li, F. (2008). Annual Report Readability, Current Earnings, and Earnings Persistence. Journal of Accounting and Economics, 45 (2–3), 221–47.

Li, K. K., & Sloan, R. G. (2017). Has goodwill accounting gone bad? Review of Accounting Studies, 22(2), 964-1003.

Li, Z., Shroff, P. K., Venkataraman, R., & Zhang, I. X. (2011). Causes and consequences of goodwill impairment losses. Review of Accounting Studies, 16(4), 745-778.

Lin, H., & McNichols, M. F. (1998). Underwriting relationships, analysts' earnings forecasts and investment recommendations. Journal of Accounting and Economics, 25(1), 101-127.

Lobo, G. J., Paugam, L., Zhang, D., & Casta, J. F. (2017). The effect of joint auditor pair composition on audit quality: Evidence from impairment tests. Contemporary Accounting Research, 34(1), 118-153.

Loughran, T., & McDonald, B. (2016). Textual analysis in accounting and finance: A survey. Journal of Accounting Research, 54(4), 1187-1230.

Maletta, M. J., & Zhang, Y. M. (2012). Investor reactions to contrasts between the earnings preannouncements of peer firms. Contemporary Accounting Research, 29(2), 361-381.

Maloney, M. T., McCormick, R. E., & Mitchell, M. L. (1993). Managerial decision making and capital structure. Journal of Business, 66(2), 189-217.

Masulis, R. W., Wang, C., & Xie, F. (2007). Corporate governance and acquirer returns. The Journal of Finance, 62(4), 1851-1889.

McNichols, M., & O'Brien, P. C. (1997). Self-selection and analyst coverage. Journal of Accounting Research, 35(1), 167-199.

Moeller, S. B., Schlingemann, F. P., & Stulz, R. M. (2004). Firm size and the gains from acquisitions. Journal of Financial Economics, 73(2), 201-228.

Muller, K. A., Neamtiu, M., & Riedl, E. J. (2012). Do managers benefit from delayed goodwill impairments? Available at SSRN 1429615.

Paugam, L., & Ramond, O. (2015). Effect of impairment testing disclosures on the cost of equity capital. Journal of Business Finance & Accounting, 42(5-6), 583-618.

Peecher, M. E., Solomon, I., & Trotman, K. (2013). An accountability framework for financial statement auditors and related research questions. Accounting, Organizations and Society, 38(8), 596-620.

Petersen, C., & Plenborg, T. (2010). How do firms implement impairment tests of goodwill? Abacus, 46(4), 419-446.

Previts, G. J., Bricker, R. J., Robinson, T. R., & Young, S. J. (1994). A content analysis of sell-side financial analyst company reports. Accounting Horizons, 8(2), 55.

Public Company Accounting Oversight Board (PCAOB). (2011). Roundtable on the Auditor's Reporting Model.

Public Company Accounting Oversight Board (PCAOB). (2012). PCAOB Announces Settled Disciplinary Order for Audit Failures Against Ernst & Young and Four of Its Partners. Available at https://pcaobus.org/News/Releases/Pages/02082012_DisciplinaryOrderEY.aspx.

Public Company Accounting Oversight Board (PCAOB). (2014). Proposed Auditing Standards – The Auditor's report on an audit of financial statements when the auditor expresses an unqualified opinion; The auditor's responsibilities regarding other information in certain documents containing audited financial statements and the related auditor's report; and related amendments to PCAOB Standards. PCAOB Release No. 2013-005. Washington, D.C., Available at http://pcaobus.org/Rules/Rulemaking/Docket034/Release_2013-005_ARM.pdf.

Public Company Accounting Oversight Board (PCAOB). (2016). Proposed auditing standard— the auditor's report on an audit of financial statements when the auditor expresses an unqualified opinion and related amendments to PCAOB standards." PCAOB Release No. 2016-003. Washington DC. Available at https://pcaobus.org/Rulemaking/Docket034 /Release-2016-003-ARM.pdf.

Public Company Accounting Oversight Board (PCAOB). (2017). The auditor's report on an audit of financial statements when the auditor expresses an unqualified opinion and related amendments to PCAOB standards. Release No. 2017-001. Washington, D.C, Available at https://pcaobus.org/Rulemaking/Docket034/2017-001-auditors-report-final-rule.pdf.

Ramanna, K. (2008). The implications of unverifiable fair-value accounting: Evidence from the political economy of goodwill accounting. Journal of Accounting and Economics, 45(2), 253-281.

Ramanna, K., & Watts, R. L. (2012). Evidence on the use of unverifiable estimates in required goodwill impairment. Review of Accounting Studies, 17(4), 749-780.

Ramnath, S. (2002). Investor and analyst reactions to earnings announcements of related firms: An empirical analysis. Journal of Accounting Research, 40(5), 1351-1376.

Ramnath, S., Rock, S., & Shane, P. (2008). The financial analyst forecasting literature: A taxonomy with suggestions for further research. International Journal of Forecasting, 24(1), 34-75.

Reichelt, K. J., & Wang, D. (2010). National and office-specific measures of auditor industry expertise and effects on audit quality. Contemporary Accounting Research, 48(3), 647-686.

Reid, L. C., Carcello, J. V., Li, C., & Neal, T. L. (2018). Impact of auditor and audit committee report changes on audit quality and costs: Evidence from the United Kingdom. Available at SSRN 2647507.

Riedl, E. J. (2004). An examination of long-lived asset impairments. The Accounting Review, 79(3), 823-852.

Roberts, M. R., & Whited, T. M. (2012). Endogeneity in empirical corporate finance. Available at SSRN 1748604.

Romanus, R. N., Maher, J. J., & Fleming, D. M. (2008). Auditor industry specialization, auditor changes, and accounting restatements. Accounting Horizons, 22(4), 389-413.

Ross, S. A. 1977. The Determination of Financial Structure: The Incentive-Signalling. The Bell Journal of Economics, 8(1), 23-40.

Roychowdhury, S., & Martin, X. (2013). Understanding discretion in conservatism: An alternative viewpoint. Journal of Accounting and Economics, 56(2), 134-146.

Schatt, A., Doukakis, L., Bessieux-Ollier, C., & Walliser, E. (2016). Do goodwill impairments by European firms provide useful information to investors? Accounting in Europe, 13(3), 307-327.

Schipper, K. (1990). Information transfers. Accounting Horizons, 4(4), 97.

Servaes, H., & Tamayo, A. (2013). The impact of corporate social responsibility on firm value: The role of customer awareness. Management Science, 59(5), 1045-1061.

Shroff, N. (2017). Corporate investment and changes in GAAP. Review of Accounting Studies, 22(1), 1-63.

Shroff, N., Verdi, R. S., & Yost, B. P. (2017). When Does the Peer Information Environment Matter? Journal of Accounting and Economics, 64(2), 183-214.

Smith, K. (2017). Tell Me More: A Content Analysis of Expanded Auditor Reporting in the United Kingdom. Available at SSRN 2821399.

Tan, H., Wang, S., & Welker, M. (2011). Analyst following and forecast accuracy after mandated IFRS adoptions. Journal of Accounting Research, 49(5), 1307-1357.

Tetlock, P. C., Saar-Tsechansky, M., & Macskassy, S. (2008). More than words: Quantifying language to measure firms' fundamentals. The Journal of Finance, 63(3), 1437-1467.

Twedt, B., & Rees, L. (2012). Reading between the lines: An empirical examination of qualitative attributes of financial analysts’ reports. Journal of Accounting and Public Policy, 31(1), 1-21.

Wang, C. (2014). Accounting standards harmonization and financial statement comparability: Evidence from transnational information transfer. Journal of Accounting Research, 52(4), 955-992.

Welch, I. (2000). Herding among security analysts. Journal of Financial Economics, 58(3), 369-396.

Wells Fargo. (2016). Comment letter on PCAOB Release No. 2016-003; Rulemaking Docket Matter No. 34.

Wen, H. J., & Moehrle, S. R. (2015). Accounting for goodwill: A literature review and analysis. Available at SSRN 2685922.

Zhou, H. (2007). Auditing standards, increased accounting disclosure, and information asymmetry: Evidence from an emerging market. Journal of Accounting Public Policy, 26(5), 584-620.