Goodwill impairment recognition and value relevance: The role of the Extended Audit Report in the UK

by

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Dedication

I dedicated this thesis to

The memory of my mother, God bless her soul

My father for his belief in me and continuous encouragement

My wife, Esraa, for her kind support, sacrifice, and love

My sons, Anas and Fares, the joy of my life

My brothers and everyone who has shared this dream with

Abstract

External audit plays a vital role in restraining the opportunistic managerial behaviour. This research aims to investigate this role in the case of the discretionary decision related to goodwill impairment. Prior studies on goodwill impairment highlight the opportunistic behaviour exercised by managers while testing goodwill for impairment. Rather than using the discretion allowed under the impairment approach to signal private information about the actual economic circumstances of recorded goodwill, managers may act opportunistically to benefit from the flexibility in accounting standards to accelerate/delay/avoid the recognition of goodwill impairment loss.

The change in the audit reporting regime in the UK in 2013 mandated auditors to provide an extended audit report (EAR). This is to disclose client-specific information related to the risks of material misstatement (RMMs) that had the most significant effect on the overall audit strategy; the allocation of audit resources; and the engagement team effort (FRC, 2013a). Goodwill impairment is one of the highest three RMMs disclosed by auditors in the UK (FRC, 2015). Motivated by this regulatory change in the UK audit market, this thesis aims to study the implications of the EAR through investigating its potential impact on the recognition and value relevance of goodwill impairment.

Using a sample of UK FTSE ALL SHARES non-financial companies over the period from 2010 to 2016, the thesis provides various contributions to the current research. First, results show an improvement in the recognition of goodwill impairment loss following the EAR's adoption. In particular, the association between firms' low-performance indicators and recognised goodwill impairment is much stronger post the EAR adoption. Moreover, this relationship is more pronounced when auditors consider goodwill impairment as a risk item. Second, extended auditor's disclosures are found to provide information that is relevant to investors, since the negative association between reported goodwill impairment loss and company's market value is moderated by the EAR adoption and the extent of auditor's disclosures. These findings highlight the potential role that EAR could play in controlling discretionary management behaviour and reducing information asymmetry, supporting the auditor's role in promoting confidence, reinforcing trust in the financial information, and hence mitigating the agency problem.

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Chapter One: Introduction

1.1 Background

This thesis aims to investigate whether the change in the audit reporting regime has affected the recognition of goodwill impairment and its subsequent market valuation. As instructed by IAS 36 (revised, 2004), purchased goodwill[1] is required to be tested for impairment annually or whenever there are economic indications that cause the carrying amount of the cash-generating units (CGUs) to which goodwill is allocated to be lower than their recoverable amounts.[2] In the UK, this is effective since the implementation of the International Financial Reporting Standards (IFRS) for all publicly listed companies on the London Stock Exchange (LSE) main market for annual periods beginning on or after 31 March 2004[3]. Since then, companies are not allowed to arbitrarily amortize goodwill over certain periods of time.

This decision was supported by the majority of prior studies on goodwill amortization, concluding that systematic amortization was not found to signal private information about the actual economic circumstances of recorded goodwill; that management incentives are found to affect the number of years used to amortize goodwill, depending on whether the management is practising income-increasing or income-decreasing strategies (Hall, 1993; Henning and Shaw, 2003; Skinner, 1993). The International Accounting Standards Board (IASB)'s intention behind eliminating goodwill amortization and introducing the impairment-only approach was to allow managers some discretion to signal private information that shall improve the information content of acquired goodwill and provide market participants management's

[1]. From an accounting perspective, purchased goodwill is the excess of the consideration paid in business combination over the fair value of the identifiable net assets acquired at the acquisition date.
[2]. A cash-generating unit is "the smallest identifiable group of assets that generates cash inflows that are largely independent of the cash inflows from other assets or groups of assets" (IASB, 2004a, para. 6), while the recoverable amount is "the higher of its fair value less costs of disposal and its value in use" (ibid, 2004, para. 6).
[3]. IFRS 3 "Business Combinations" requires purchased goodwill to be accounted for in accordance with IAS 36 impairment of assets (IASB, 2004b).

expectations about the underlying performance of the company. However, this approach was criticized by practitioners as well as academics since it allows managers a high level of discretion[4] that could be misused to manipulate earnings and achieve their personal interests.

The literature on goodwill impairment (e.g., Hayn and Hughes, 2006; Li et al., 2011; Ramanna and Watts, 2012) finds that declines in the economic values of companies' goodwill balance are not the only drivers for the recognising goodwill impairment. Different management incentives, for example, substantially influence the reporting of goodwill impairment, and these include big bath, income smoothing, management change (tenure), leverage (debt covenant restrictions), and earnings-based compensation plans. Rather than signalling private information that enriches financial statements and makes them more informative, certain managers instead opportunistically used their new-found discretion regarding impairment tests to accelerate/delay/avoid recognising goodwill impairment. This affected the timeliness of goodwill impairment; hence, the impairment-only approach did not improve the quality of reported goodwill as was planned. It therefore clearly went against the IASB's intention to report a goodwill balance that reflects its underlying economic attributes. Goodwill impairment is therefore an element that increases the agency cost between managers and users.

At the same time, some studies (e.g., Ayres et al., 2019; Chen et al., 2015; Lobo et al., 2017; Pajunen and Saastamoinen, 2013; Stokes and Webster, 2009) have investigated the role played by auditors in reviewing goodwill impairment losses, providing evidence for auditors playing a substantial role in controlling managers from opportunistically using the discretion involved in the impairment test. Several audit-related characteristics such as audit firm size (Big 4 & non-Big 4), auditor industry specialisation and experience, auditor tenure, auditor

[4] This discretion includes the identification of the relevant CGUs to which goodwill is allocated, allocation of goodwill to these CGUs, estimating the recoverable amount of CGU, which requires managers' judgment regarding the estimation of future cash flow and the choice of proper growth and discount rate.

independence, and the mix of joint audit pair significantly affected recognised goodwill impairment losses. Therefore, academics, stakeholders, practitioners, and policymakers should pay attention to auditors' substantial role in mitigating the agency cost problem that could arise from the accounting treatment of goodwill impairment.

1.2 Changes in the regulatory environment

Despite the importance of the audit report as the primary communication between a company's auditor and its stakeholders, most companies across different countries used to have standardised boilerplate auditor's report. These were merely symbolic, with little communicative value (Church et al., 2008). Several studies have questioned the use of these standardized reports by different stakeholders. Porter et al. (2009) show 47% of financial statement users in the U.K. and New Zealand never or rarely read an entity's audit opinion. Indeed, much of the potential readership simply determined whether the auditor's opinion was unqualified rather than actually read the audit report (Gray et al., 2011). Therefore, the audit report used to be viewed as a pass/fail document on whether the financial statements complied with the applicable financial reporting standards, and that typically renders a standard unqualified opinion. Two concerns have been raised about this report. First, it provides little information about the company; second, it does not communicate potentially useful information about the audit (Bédard et al., 2016; Gutierrez et al., 2018; Mock et al., 2013)**.** The International Auditing and Assurance Standards Board – IAASB (2011) consultation paper respectively named these concerns as the entity information gap and audit information gap, respectively.

Following the 2008 financial crisis, financial statement users, regulators, standard setters and other professional bodies called for auditors to include more entity-specific information in their audits. They requested more informative audit reports as they sought additional insights into

the audit work that could serve as an early warning signal. The UK was one of the earliest countries to respond to this call. Following the feedback received on a consultation paper called "Effective Company Stewardship – Enhancing Corporate Reporting and Audit" in early 2011, the Financial Reporting Council (FRC)[5] concluded that:

> "Auditors can and should provide increased insight into the audit process so as to re-assure users of financial statements that all material matters have been properly disclosed. It would be appropriate to revise the Auditing Standards that govern both reporting by auditors to Audit Committees and reporting to users in the auditor's report, to make the contribution of auditors to stewardship more transparent".
>
> (FRC, 2015, p. 8)

Accordingly, in 2012, the FRC introduced simultaneous changes to the corporate governance code and auditing standards. First, it requires an expanded audit committee report that discloses the issues deemed to be significant and that requires audit committee members' substantial application of judgment regarding financial statements and how they were addressed. Second, it required changes in the International Standard on Auditing (ISA), which governs both auditors' reporting to the audit committee and auditors' final reports to users. This started in September 2012 with the introduction of a new standard – ISA No. 260 (UK and Ireland) – that required auditors to report to the audit committees the information they deem relevant for the board and the audit committee to fulfil their responsibilities[6]. The FRC also asked auditors to report by exception if the audit committees fail to communicate appropriately the matters auditors highlighted to them. Moreover, in June 2013, the FRC revised ISA No. 700 (UK and Ireland, revised June 2013)[7], so that auditors of companies implementing the corporate

[5] The FRC is a regulatory body that is responsible for overseeing the regulations of corporate reporting and auditing in the United Kingdom.

[6] This is to enable the audit committee and the board to understand the rationale and know about the evidence used by while making significant professional judgments and forming opinions on the financial statements.

[7] At this time, The FRC had not adopted the ISA 700 "Forming an Opinion and Reporting on Financial Statements" issued by the IAASB. Instead, The FRC issued ISA (UK and Ireland) 700 "The Independent Auditor's Report on Financial Statements (Revised June 2013)" (FRC, 2013a). It is mandatory only for companies with a premium listing of equity shares on the London Stock Exchange (LSE) Main Market, with fiscal year-ends on or after September 2013.

governance code must provide an extended audit report (EAR). This EAR should describe client-specific information concerning the following: risks of material misstatement (RMMs) that had the greatest effect on the overall audit strategy; the allocation of audit resources; and the engagement team effort (FRC, 2013a)[8]. Furthermore, to comply with the additional disclosures the EU Audit Regulation and Directive required, the FRC also requested that auditors explain how they applied the concept of materiality and provide an audit scope summary. These changes in the auditing standards became effective for fiscal years beginning on or after October 1, 2012.

The FRC's intention was to enhance the informational value of an audit for different financial statements users by allowing auditors to provide relevant insights and encourage greater transparency regarding the judgements management and auditors made while preparing and auditing financial statements (FRC, 2012). For the first time, auditor reports refrained from boilerplate wording but also provided insights into the auditor's work. Thus, detailed client-specific information became publicly available for users in these extended audit reports, which are approximately three times longer than the former one (Gutierrez et al., 2018; Ratzinger-Sakel and Theis, 2019).

By the same time, the IAASB and the U.S. Public Company Accounting Oversight Board (PCAOB) have proposed and eventually adopted new standards. These require auditors to disclose, respectively, Key Audit Matters (KAMs) in ISA 701, '*Communicating Key Audit Matters in the Independent Auditor's Report*', and Critical Audit Matters (CAMs) in AS 3101, '*The Auditor's Report on an Audit of Financial Statements When the Auditor Expresses an Unqualified Opinion*' (IAASB, 2013; PCAOB, 2017)[9]. Their purpose is also to improve the

[8] The FRC refer to this report as an extended audit report. This study uses the term 'extended audit report', abbreviated to EAR.

[9] RMMs, according to the FRC, KAMs, according to the IAASB, and CAMs, according to the PCAOB, are closely similar to each other; hence, they are used interchangeably in the literature in their related context. The disclosure

audit report's communicative value by providing additional information about the auditor's work.

In line with PCAOB (2017), the direct benefit of disclosing CAMs/KAMs/RMMs would be reducing the information asymmetry between market participants and auditors, hence reducing the audit information gap. It will also reduce the information asymmetry between market participants and the management, hence reducing the entity information gap. Indirectly, this may allow market participants to make both positive changes to their behaviour and better-informed decisions (Jermakowicz et al., 2018). According to Katz (2013), Martin Baumann, the chief auditor of the PCAOB said: "I think both those standards will have a benefit to financial reporting quality and to capital formation overall". Similarly, Bruce Webb, chairman of the American Institute of Certified Public Accountants (AICPA)'s Auditing Standards Board and an audit partner at McGladrey & Pullen, said that "the presence of EAR may cause management to think more about the quality and the robustness of their processes and controls" (Katz, 2013).

Furthermore, Jermakowicz et al. (2018) and (IAASB, 2015) highlight several beneficial consequences that could result from adopting EAR. One is renewing the auditor's attention and indirectly increasing his/her professional scepticism in a way that enhances audit quality and users' perceptions. Another is directing users of financial statements to areas with significant management estimates that can be used to engage with management and monitor its stewardship of the company. There is also the benefit of improving communication among the three parties: auditor, management, and users.

of KAMs according to ISA 701 is adopted for audits of fiscal years ending on or after 15 December 2016, where/while the disclosure of CAMs is effective for audits of fiscal years ending on or after 30 June 2019 for large accelerated filers and for fiscal years ending on or after 15 December 2020 for all other companies.

Additionally, a report issued by the Association of Chartered Certified Accountants (ACCA) in 2018 discusses the benefits behind EAR adoption concludes that it improves corporate governance, audit quality and corporate reporting. The study investigated 560 audit reports and conducted a series of roundtable discussions between auditors, audit committee members, preparers and academics from five countries – namely Cyprus, Greece, Abu Dhabi, Oman and Romania (ACCA, 2018).

1.3 Motivation of the study

Given the FRC's 2013 significant regulatory change in UK auditing and similar initiatives undertaken by the U.S. and international regulators to adopt EAR, this research is mainly motivated by several primary concerns in this area but also six subsidiary arguments. On the former, it investigates the overarching implications of EAR adoption for auditors, management, and market participants and the degree to which EAR has satisfied the purpose behind its implementation, using an exogenous shock created by the change in the UK audit reporting regime. More specifically, the importance of the goodwill account as an asset and management's opportunistic behaviour when testing it for impairment – and indeed the role auditors play in controlling this behaviour – are central concerns of this work. These research motivations fundamentally relate to examining EAR via goodwill impairment, and they are supplemented by the following subsidiary arguments.

First, the literature on EAR is still growing, with most of the academic research hitherto consisting of experimental studies that examine the consequences of EAR. These studies report mixed results on various aspects of this area: the impact of EAR on auditors' legal liability (Backof et al., 2017; Brasel et al., 2016; Brown et al., 2015; Gimbar et al., 2016; Kachelmeier et al., 2020); the communicative value of EAR and its impact on auditors' judgments, performance and investment decisions (Christensen et al., 2014; Köhler et al., 2020; Ratzinger-

Sakel and Theis, 2019); and investors' perception and confidence in related financial statement values (Kachelmeier et al., 2020; Sirois et al., 2018). Most of these studies were conducted in the U.S., where the lack of actual regulatory change has been a major limitation while exploring the consequences of EAR adoption. Dennis Beresford, the former chairman of the Financial Accounting Standards Board (FASB), declared that "once you have real world examples…then, it should be imperative to test how users would react to those disclosures and see if they would actually find them beneficial" (Beresford, 2013). Therefore, this study is motivated by considering "real world examples" from the UK since its 2013 EAR adoption to investigate empirically the contribution EAR has made to the agency problem by examining changes in management behaviour and the value relevance of these additional disclosures to financial statement users.

Secondly, few archival studies investigate the consequences of EAR adoption on audit quality and audit cost, client disclosures, and investors' reaction towards these disclosures (e.g., Bédard et al., 2019; Almulla and Bradbury, 2018; Gutierrez et al., 2018; Lennox et al., 2019; Reid et al., 2019). Studies that have examined the impact of EAR on audit quality used discretionary accruals as a proxy for audit quality. According to Bédard et al. (2019), DeFond and Zhang (2014), Gutierrez et al. (2018), and Li et al. (2019), empirical analyses would yield mixed results because of their sensitivity to the calculation of this proxy and sample years. Consequently, the under-researched relation between EAR and audit quality also derives this study.

Thirdly, as goodwill impairment tests allow managers considerable discretion that involves the use of fair value estimates, requires significant judgment, involves high levels of uncertainty, and is difficult to verify by outsiders (e.g., Glaum et al., 2018; Hayn and Hughes, 2006; Li and Sloan, 2017; Li et al., 2011; Ramanna and Watts, 2012), goodwill impairment losses were prone to manipulation. Hence, auditors are required to challenge management estimates within

their goodwill impairment testing, so additional disclosures should play a more pronounced role in maintaining objectivity and transparency of impairment tests, reducing the information asymmetries and increasing investors' trust in the work of auditors and audit committees. Focusing on this specific account thus potentially offers sharper and more powerful tests of the effect of EAR on management's behaviour. Additionally, studying the impairment of goodwill is economically meaningful because it is commonly the largest individual asset for which a non-financial public company requires a 'fair value' estimate, and the FRC (2015) has highlighted goodwill impairment as one of the highest three items auditors consider as risk items, so it requires further attention from them.

Fourthly, the literature on the market reaction to EAR provides mixed results. This is perhaps because researchers assess the overall market reaction to EAR without looking at the value relevance of disclosures related to certain accounts that have a high level of uncertainty, more information asymmetry, more need for significant judgment and complex estimates, and greater vulnerability to management manipulation. Accordingly, a focus on one specific account (e.g., goodwill impairment) that investors find difficult to verify offers sharper and more powerful tests of the value relevance of additional auditor's disclosures.

Fifthly, the UK context provides a good opportunity to investigate the potential effect of EARs and additional auditor's disclosures on managers' discretionary behaviour regarding the recognition of goodwill impairment but also its subsequent market valuation. Being the earliest country to adopt the specific EAR form, though arguably being the second to make such a change[10], the UK offers an exogenous shock that can be used to investigate the research objectives before and after EAR implementation. As the IAASB introduced ISA 701 for audits

[10] Although the UK implemented EARs in 2013, France implemented a similar regulation in 2003 that required auditors to disclosure Justifications of Assessments (JOAs) in their audit reports. Similar to that of RMMs/KAMs/CAMs, the purpose of JOAs is to enhance the informative value of audit reports.

of fiscal years ending on or after 15 December 2016 and PCAOB requires the disclosure of CAMs for audits of fiscal years ending on or after June 30, 2019 for large accelerated filers, the UK context has another advantage. That is, it provides an interesting experimental setting to conduct this study as it offers a longitudinal data from 2013, the adoption year, till 2016, the time when the empirical analysis of this study has started.

Finally, from a methodological perspective most prior studies on the consequences of EAR adoption for investors have examined investors' reactions using the information content approach (e.g., Bédard et al., 2019; Almulla and Bradbury, 2018; Gutierrez et al., 2018; Lennox et al., 2019; Reid et al., 2019). However, for this approach to be significant KAMs must provide unpredictable news that change market prices or trading volume. It is more likely that KAMs have been priced prior to the annual report release through other mediums such as half-year reports and the continuous disclosure regime. This is endorsed by Lennox et al. (2019), who highlight that if investors knew about these risks from other sources, such as annual reports, earnings announcement and conference calls then they may not deem auditors' risk disclosures to be informative. Similarly, the PCAOB argued that "when describing critical audit matters in the auditor's report, the auditor is not expected to provide information about the company that has not been made publicly available by the company" (PCAOB, 2017, p. 34). This is consistent with a CFO comment on the PCAOB's proposal saying that "is not well suited to independently report information about the company beyond what is required to be disclosed by management under GAAP and [Securities and Exchange Commission] regulations" (Katz, 2013). Therefore, prior studies that used the information content approach provided mixed results, with most reporting insignificant investor reactions to EAR. Consequently, this study instead tests the value relevance of EAR using the association approach. Under this approach, the usefulness of KAMs is measured by their ability to capture information that is contemporaneously captured by the market during the same period.

1.4 Research objectives and questions

As mentioned in section 1.1, this thesis investigates whether the change in the audit reporting regime has affected the recognition of goodwill impairment and its subsequent market valuation. In line with the research motivations, this study has two specific research objectives. The first is to explore the association between the EAR adoption and the recognition of goodwill impairment loss; the second is to explore the association between EAR and the value relevance of goodwill impairment loss. To fulfil these objectives, this work asks four research questions – as illustrated in Table 1-1.

Table 1-1 Summary of research objectives and related research questions

<table>
<tr><td colspan="4">Research Aim:
To investigate whether the change in the audit reporting regime has affected the recognition of goodwill impairment, and its subsequent market valuation.</td></tr>
<tr><td colspan="2">Research objective 1:
To explore the association between the EAR adoption and the recognition of goodwill impairment losses.</td><td colspan="2">Research objective 2:
To explore the association between EAR and the value relevance of goodwill impairment losses.</td></tr>
<tr><td>Research question 1</td><td>Research question 2</td><td>Research question 3</td><td>Research question 4</td></tr>
<tr><td>Is reported goodwill impairment loss associated with firms' low-performance measures?</td><td>Is the EAR adoption associated with an improvement in the recognition of goodwill impairment?</td><td>Is reported goodwill impairment loss value relevant to market participants?</td><td>Is the EAR adoption associated with an improvement in the value relevance of goodwill impairment?</td></tr>
</table>

To answer these research questions, seven research hypotheses are developed. Table 1-2 maps the research hypotheses with relevant research questions and objectives and links them to the relevant empirical research models and chapters.

1.5 Summary of research design

This study uses a quantitative research approach and employs quantitative analysis techniques such as tables, graphs, and statistics to test the research hypotheses and to examine data trends and relationships (Saunders et al., 2016). Two main econometric models are utilised. The first one is 'the determinants model', which tests the first four research hypotheses (H1 to H4); the

second is 'the value relevance model', which tests the remaining research hypotheses (H5 to H7). Accordingly, this thesis consists of two empirical studies[11]: Study 1 is the determinants of goodwill impairment study (chapter 5); Study 2 is the value relevance of goodwill impairment study (chapter 6). Section 1.5.1 summarises the research design of the former, while section 1.5.2 summarises the research design of the latter.

[11] These are two separate empirical studies, but they are related to the same topic "goodwill impairment and EAR". Specifically, the first study investigates the association between EAR adoption and the recognition of goodwill impairment, while the second one examines the value relevance of goodwill impairment following the EAR implementation.

Table 1-2 Summary of research hypotheses and research questions and their links to research objectives along with empirical chapters

Research objectives	Research questions		Research hypotheses		Empirical chapters
OBJ. 1	Q1	Is reported goodwill impairment loss associated with firms' low-performance measures?	H1	firms' low-performance indicators are positively associated with the amount of goodwill impairment.	Ch.5 – determinants study
	Q2	Is the EAR adoption associated with an improvement in recognition of goodwill impairment?	H2	Goodwill impairment is positively associated with EAR adoption when economic conditions suggest the need to record an impairment loss.	Ch.5 – determinants study
			H3	Goodwill impairment is positively associated with the auditor disclosure of goodwill impairment as a risk item when economic conditions suggest the need to record an impairment loss.	Ch.5 – determinants study
			H4	Goodwill impairment is positively associated with the extent of related auditor disclosure when economic conditions suggest the need to record an impairment loss.	Ch.5 – determinants study
OBJ. 2	Q3	Is reported goodwill impairment loss value relevant to market participants?	H5	Goodwill impairment loss is negatively associated with the company's market value of equity.	Ch.6 – value relevance study
	Q4	Is the EAR adoption associated with an improvement in the value relevance of goodwill impairment?	H6	EAR provides value-relevant information that moderates the negative relationship between goodwill impairment loss and the company's market value.	Ch.6 – value relevance study
			H7	The extent of goodwill impairment-related auditor's disclosure moderates the negative relationship between reported impairment loss and the company's market value of equity.	Ch.6 – value relevance study
			H7a	Descriptive auditor's disclosure does not provide value-relevant information about recorded goodwill impairment loss.	Ch.6 – value relevance study
			H7b	Entity-specific auditor's disclosure provides value-relevant information about recorded goodwill impairment loss.	Ch.6 – value relevance study

1.5.1 The determinants of goodwill impairment study

The first study investigates the association between EAR and the recognition of goodwill impairment losses. It starts by testing the appropriateness of proxies used to capture a firm's poor-performance as an indication of the need to recognise goodwill impairment. Specifically, it tests the association between a firm's low-performance[12] indicators (captured through market value indication) and the amount of goodwill impairment loss. This study then tests whether EAR improves the recognition of goodwill impairment losses when a firm's low-performance indicators highlight the need to record goodwill impairment loss.

Therefore, the determinants model has two equations: the first equation presents the basic model used to test the first hypothesis (H1); the second adds EAR-related variables to the basic model to test the first study's remaining hypotheses (H2 to H4). Pooled data regression analysis with industry and year fixed effect is used to control for any effects that might be specific to certain industries or years. The dependant variable for this study is the magnitude of goodwill impairment loss deflated by current year total assets before goodwill impairment loss. Censored regression analysis called 'Tobit regression analysis' is used to test this first study's research hypotheses (H1 to H4) because the dependent variable has a lower limit (zero value) and a large number of the observation takes the value of zero, resulting in this variable being censored above zero.

This study's final research sample consists of 347 UK non-financial companies (1451 firm-year observations) listed on the London Stock Exchange (LSE) FTSE ALL SHARES index in 2016, the date when the empirical part of the thesis has commenced. The research sample covers the period from 2010 to 2016, as it gives a window of three years before and after the

[12] Low performance and poor performance are used interchangeably in this thesis to indicate the firm's need to recognise goodwill impairment loss.

UK auditing regulatory change. Data were collected from three main sources: Worldscope (Datastream), Fame, and the companies' annual reports. Variables that were not available through databases and EAR-related variables were manually collected from companies' annual reports (downloaded from the relevant companies' official website).

1.5.2 The value relevance of goodwill impairment study

The second study examines the association between EAR and the value relevance of goodwill impairment losses. It starts by testing the value relevance of goodwill impairment losses across the research sample to establish whether or not recorded goodwill impairment loss provides information that investors value. This study then tests the change in the value relevance of goodwill impairment losses following the adoption of EAR.

The value relevance model has two main equations: the first presents the basic model used to test the fifth hypothesis (H5); the second adds EAR-related variables to the basic model to test the remaining hypotheses (H6 & H7). Similar to the first model, pooled data regression analysis with industry and year fixed effect is used to control for any effects that might be specific to certain industries or years. The dependant variable for this second study is the market value of equity per share, and OLS regression analysis is used to test the research hypotheses (H5 to H7). Finally, this study is carried out using the same 347 UK non-financial companies employed in the first study, but with a different number of observations (1822 firm-year observations). Similarly, this study covers the period from 2010 to 2016, and data are collected from the same sources as those in the first study.

1.6 Research contributions

The findings of this thesis make several important contributions. Regarding the first research objective, the determinants study contributes to the emerging stream of archival research that

examines the effect of the new audit report on management behaviour, especially concerning accounting choices, and it does so in various main ways. First, it associates EAR with less opportunistic management behaviour and thus higher audit quality. This contributes to resolving conflicting findings in recent papers on the impact of EAR on audit quality (e.g., Bédard et al., 2019; Almulla and Bradbury, 2018; Gutierrez et al., 2018; Li et al., 2019; Reid et al., 2019). Secondly, this study is one of the first to look at the impact of EAR on the accounting treatment of a specific account[13] (goodwill impairment) rather than the quality of the accounting numbers in general. This helps the various checks on whether auditor's disclosure regarding certain specific items helps improve related reporting, resulting in an albeit modest improvement in research design – through one that potentially offers sharper and more powerful tests of the effect of extended auditor's disclosures.

On the second research objective, the value relevance study contributes to the emerging stream of archival research that examines the value relevance of the new audit report and its impact on investors. It concludes that EAR adoption is associated with less opportunistic management behaviour exercised and thus a higher audit quality. Therefore, the value relevance study adds a third contribution to this thesis by supplementing recent studies' evidence on the impact of EAR on investors' decision (e.g., Bédard et al., 2019; Almulla and Bradbury, 2018; Gutierrez et al., 2018; Lennox et al., 2019; Reid et al., 2019; Smith, 2019). Fourth, the value relevance study makes methodological contributions by using the association approach to better assess the usefulness of the new audit report than the information content approach did, given that latter's requirement for the audit report to provide new information that changes market prices or trading volume.

[13] Goodwill impairment is an adjustment to the goodwill balance, and it is reported separately in the statement of profit and loss as "goodwill impairment loss".

Overall, the findings of the two studies (determinants and value relevance) offer a theoretical contribution to the role auditing plays in mitigating the agency problem. They highlight the benefits associated with the new audit report in terms of improving the audit quality and providing market participants with value-relevant information, hence reducing information asymmetry and reducing the agency cost.

Finally, the findings of the study should inform many other policy-makers and standard setters of the effects of these regulatory changes in the UK and aid comparisons not only with circumstances prior to UK implementation but also with similar circumstances in the United States and other jurisdictions. Furthermore, they can help companies and investors, who are interested in whether the EAR is associated with superior audit quality.

1.7 Structure of the thesis

The remainder of this thesis is structured as follows:

Chapter 1 (Introduction): This chapter began by introducing the changes in the regulatory environment. It then shared the study's motivation and, afterwards, its research objectives and questions. A summary of the research design followed, and next came the research contribution. Finally, the present section outlines the structure of the thesis.

Chapter 2 (Literature review): This review is divided into three main parts: studies that examine the determinants of goodwill impairment, studies that examine the value relevance of goodwill impairment, and studies that examine the extended audit report. After these sections, a summary of the literature review is provided, which highlights the research gaps.

Chapter 3 (Theoretical framework and hypotheses development): This chapter initially presents the study's theoretical framework. It then develops the research hypotheses in line with the research questions and objectives. It concludes with a chapter summary.

Chapter 4 (Research methodology and design): The study's research philosophy is the central concern of this chapter's opening. This is followed by the study's research paradigm. The chapter next describes the research design this study employs, which includes models' specifications, sample characteristics and sources for data collection. The last section summarises the chapter.

Chapter 5 and Chapter 6 (Empirical results): Chapter 5 presents the empirical results of the determinants model, while chapter 6 does the same for the value relevance model. The two chapters start with descriptive statistics and univariate analysis. Then, a correlation matrix between the variables is presented. After that, the chapter presents the findings and discussion of the main analysis. A number of sensitivity analyses are also performed and presented afterwards. Each of these chapters ends with a summary.

Chapter 7 (Conclusion): This final chapter concludes the study, discusses the study's contributions, identifies this work's limitations and offers suggestions for future research.

Chapter Two: Literature Review

2.1 Introduction

This thesis investigates whether the change in the audit reporting regime has affected the recognition of goodwill impairment and its subsequent market valuation. The literature on goodwill can be broadly classified into studies that examine the determinants of goodwill impairment and studies that examine the market effects (market reaction and value relevance) of goodwill. Section 2.2 critically appraises the former, while section 2.3 does the same for the latter. Section 2.4 reviews studies on the extended audit report. Finally, section 2.5 summarises the chapter and highlights the research gap.

2.2 Determinants of goodwill impairment

Figure 2-1 summarises some aspects of the determinants of goodwill studies. They are classified in three main strands: determinants of the initial recognition of goodwill; subsequent measurements to identify the determinants of goodwill impairment recognition (the most common type); and determinants of goodwill impairment disclosures. As the first objective of this thesis is to explore the association between EAR and the recognition of goodwill impairment loss, attention will be given to studies that investigate the determinants of goodwill impairment. Figure 2-1 highlights in blue the area of literature that will be discussed in this study.

Section 2.2.1 reviews studies that examine whether the recognition of goodwill impairment is mainly derived from poor economic performance or managers' incentives and motives. Section 2.2.2 then addresses studies on the role auditors play in reviewing goodwill for impairment.

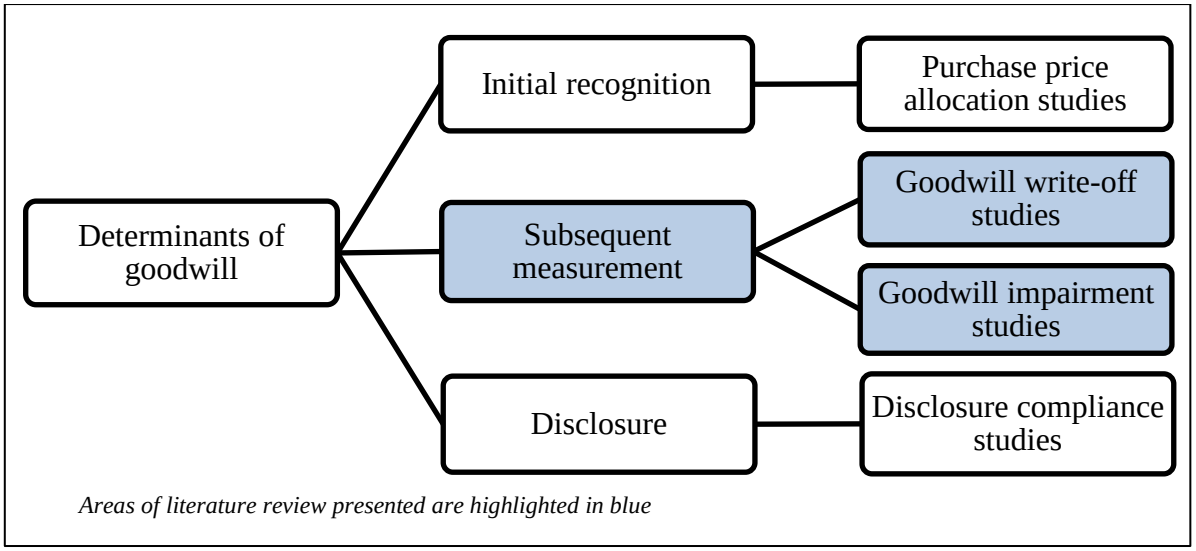


Figure 2-1 Studies on the determinants of goodwill

2.2.1 Recognition of goodwill impairment: Economic factors versus management incentives

Earlier studies investigated managers' reporting choices regarding asset write-offs to examine their discretionary behaviour in deciding the amount and time of such write-offs. They provide evidence that asset write-offs are mainly explained by two main groups of variables: economic-related variables that capture declines in the assets' performance, and variables intended to capture managers' incentives and motives (e.g., Alciatore et al., 1998; Cotter et al., 1998; Elliott and Shaw, 1988; Francis et al., 1996; Rees et al., 1996; Strong and Meyer, 1987; Zucca and Campbell, 1992). Most studies deem the later variables as reflections of managers' opportunistic behaviour. Following the introduction of Statement of Financial Accounting Standards (SFAS) 142 and IFRS 3, academic researchers extended asset write-offs studies to examine the determinants of goodwill impairment. Indeed, both economic-related variables and managers' incentives are now tested by goodwill impairments studies to examine managers' reporting choices. Accordingly, this section presents the determinants of, first, asset write-off studies in general then of goodwill impairment studies in particular. Firstly, economic factors are presented in 2.2.1.1, and then management incentives are presented in 2.2.1.2.

2.2.1.1 Economic factors

Most pertinent studies examine the degree to which assets and goodwill write-offs can be explained via economic-related proxies that reflect poor economic performance, such as stock return over the passing year, changes in sales, changes in return on assets, changes in the operating cash flow and the company's book-to-market (BTM) value (e.g., AbuGhazaleh et al., 2011; Beatty and Weber, 2006; Chalmers et al., 2011; Elliott and Shaw, 1988; Francis et al., 1996; Glaum et al., 2018; Godfrey and Koh, 2009; Hamberg et al., 2011; Lobo et al., 2017; Ramanna, 2008; Riedl, 2004; Strong and Meyer, 1987; Zang, 2008).

Earlier studies started examining asset write-offs using data of U.S. and Australian listed companies. Strong and Meyer (1987) found that write-off companies do not perform well, in terms of their cash flow and total return to shareholders compared to a control group of non-write-off companies from the same industry and during the same accounting period. Similarly, Elliott and Shaw (1988) report that write-off companies show poorer financial performance (proxied by return on assets and return on equity) than their industries in the years preceding and including the write-off year. However, using a sample of publicly listed Australian companies, Cotter et al. (1998) show that asset write-offs are positively associated with companies' market-to-book equity, as a proxy to its growth options. They argue that companies with a high market-to-book ratio are riskier since they are more likely to be vulnerable to variations in their asset values.

Similarly, Francis et al. (1996) analysed different asset write-off for U.S. companies, including write-offs of inventory; goodwill; property, plant, and equipment; and restructuring charges. Generally, economic impairment proxies such as past stock price performance and changes in return on assets were found to be important determinants of asset write-offs. Following Francis et al. (1996), Kvaal (2005) found that companies showing poor previous share performance

and low pre-write-off earnings more likely reported assets impairment (write-offs) in general under FRS 11, *Impairments of Fixed Assets and Goodwill*, using a sample of UK companies in the FTSE 350. However, while testing goodwill impairments (write-offs) in particular, neither of these found that these performance proxies to sufficiently explained variations in reported goodwill impairments (write-offs), compared to other asset write-offs. In an early attempt to examine long-lived assets impairment after the introduction of SFAS 121 – *Accounting for the Impairment of Long-Lived Assets and for Long-Lived Assets to Be Disposed Of*, Riedl (2004) reported changes in sales and returns to be weakly associated with asset write-offs after SFAS 121 implementation, supporting the argument that assets impairment reported under SFAS 121 are less reflective of a company's underlying economic performance.

Earlier studies examining determinants of goodwill impairment likewise investigated samples from U.S. and Canadian companies (e.g., Ahmed and Guler, 2007; Beatty and Weber, 2006; Chalmers et al., 2011; Godfrey and Koh, 2009; Hayn and Hughes, 2006; Jordan and Clark, 2011; Lapointe-Antunes et al., 2008; Masters-Stout et al., 2008; Ramanna and Watts, 2012; Sevin and Schroeder, 2005; Zang, 2008), given that the goodwill impairment-only approach was firstly adopted by U.S. companies in June 2001 through SFAS 142. After the 2005 implementation of IFRS by all EU listed companies, with its requirement for regular tests of goodwill for impairment losses, further studies started investigating the IFRS context and, more specifically, determinants of goodwill impairment (e.g., AbuGhazaleh et al., 2011; Giner and Pardo, 2015; Glaum et al., 2018; Hussainey et al., 2016).

Building on earlier studies of asset write-offs, a few studies have tested five main proxies for firm-specific past performance that are meant to capture the decline in the economic value of a company’s goodwill, and this is done to examine the degree to which goodwill impairments can be explained through economic-related proxies that reflect poor economic performance.

These proxies are namely the company's stock market return, change in sales, changes in return on assets, changes in the operating cash flow and the company's market-to-book value, each of which needs exploring.

Firstly, Francis et al. (1996), Glaum et al. (2018), and Zang (2008) evidence how companies with positive stock market returns recognise less goodwill impairment losses than companies with negative market returns. As share price is a market-based proxy for economic performance, it generally reflects information about companies' abilities to generate cash flows (Glaum et al., 2018). As such, a negative market return generally indicates the inability of goodwill to generate future cash flows, and hence impairment is recognised. Surprisingly, Hayn and Hughes (2006), Hussainey et al. (2016) and Ramanna and Watts (2012) could not provide evidence for a company's stock market return explaining variations in the recognised goodwill impairment losses.

Secondly, despite Riedl (2004) arguing that a change in sales captures a company's accrual-related performance attributes and gives further insights into the recoverability of the assets value (and this being why companies reporting higher sales growth are supposed to report less asset write-offs than companies with lower or negative growth sales), AbuGhazaleh et al. (2011), Glaum et al. (2018), and Hayn and Hughes (2006) found no association between goodwill impairment and a company's sales. Riedl himself actually supported the latter finding when testing assets impairment after SFAS 121 brought in the impairment approach.

Thirdly, similar to Francis et al.'s (1996) findings on goodwill write-offs before the impairment approach, AbuGhazaleh et al. (2011), Glaum et al. (2018), Hayn and Hughes (2006), Li and Sloan (2017), and Lapointe-Antunes et al. (2008) found associations between improvements in a company's return on assets and improved performance, which is reflected in less reporting of goodwill impairment losses. In contrast, as with Riedl's (2004) findings regarding assets

impairment, Hussainey et al. (2016) and Lobo et al. (2017) failed to find a relationship between the amount of goodwill impairment and changes in the companies' earnings.

Fourthly, assessing the value in use for each CGU that contains goodwill, typically uses valuation approaches mainly based on the estimations of future cash flows that are largely forecasted via current cash flows and certain assumptions of a company's expected growth, profitability, and risk (Lobo et al., 2017). As such, previous studies (e.g., AbuGhazaleh et al., 2011; Hussainey et al., 2016; Lobo et al., 2017; Riedl, 2004) expect current operating cash flows (OCFs) to be key economic drivers for determining the amount of goodwill impairment loss. However, with the exception of AbuGhazaleh et al. (2011), researchers have not evidenced how goodwill impairment losses stem from negative changes in a company's operating cash flow (e.g., Hussainey et al., 2016; Lobo et al., 2017; Riedl, 2004).

Finally, several studies (e.g., AbuGhazaleh et al., 2011; Francis et al., 1996; Glaum et al., 2018; Li and Sloan, 2017) positively associate a company's book-to-market value with goodwill impairment; they thus support the regulatory rule to recognise goodwill impairment when the carrying amount of an entity's net assets are more than its recoverable amount (IASB, 2004a). Accordingly, Beatty and Weber (2006) find that companies with higher growth opportunities (higher market-to-book ratio) have a lower likelihood of recording goodwill impairment losses.

Building on these five economic-related proxies, Godfrey and Koh (2009) developed a composite measure that captures companies' underlying investment opportunities to examine its association with goodwill impairment in the first years following the implementation of SFAS 142. Their findings show a negative association between companies' investment opportunities and the level of reported goodwill impairment, supporting the notion that companies faring well economically have less reason to record large impairment losses. Following Godfrey and Koh (2009), Chalmers et al. (2011) compare the associations between

Australian listed companies' investment opportunities and the amount of goodwill impairment before and after the IFRS implementation. They report a strong negative association between goodwill impairment losses and companies' investment opportunities during the IFRS regime than before it. Godfrey and Koh (2009) and Chalmers et al. (2011) deduce that goodwill impairment losses better reflect the underlying economic attributes of goodwill through the impairment-only approach rather than amortization charges.

Further studies have used market-based evidence on the timeliness of goodwill impairments to examine possible links between current economic factors and goodwill impairments. Chen et al. (2008) argue that association between stock returns and newly incurred impairment losses shows a slight improvement in the timeliness of goodwill impairments recognition after the initial implementation of SFAS 142, suggesting potential room for improvement under the revised accounting standards. In seeking direct evidence on the timeliness of goodwill impairments, Jarva (2009) and Lee (2011) examined whether testing goodwill for impairment following SFAS 142 using the fair value approach has resulted in goodwill write-offs being more associated with future expected cash flows. They found that goodwill's forecasting of future cash flows has improved after the introduction of SFAS 142, suggesting that goodwill write-offs are subsequently more closely associated with economic factors. For Lee (2011), there is no difference in the goodwill's predictive ability among different groups of companies with likely inclinations for manipulating their information content. However, Jarva (2009) says that this finding should be interpreted carefully as further analysis shows that SFAS 142 goodwill write-offs lag behind the economic impairment of goodwill, supporting the existence of agency-based motives.

The evidence provided so far suggests that companies' poor economic performance and economic factors are among the main drivers of asset write-offs in general and goodwill

impairments in particular. To some extent, this supports the notion that the timeliness and usefulness of goodwill write-offs have improved with the implementation of the impairment-only approach. Notwithstanding the above, several research findings (including those supporting the previous argument) show that managers' incentives and motives also play an important role in the recording of asset write-offs and goodwill impairments. Managers might use goodwill impairment to signal private information about the company performance or as a tool for earnings management. Therefore, the following section analyses other studies that investigate different management incentives to understand if and, if so, how they influence the reporting of goodwill impairment.

2.2.1.2 Management incentives

Much research on managers' reporting choices concerning asset write-offs in general and goodwill impairments, in particular, suggest that managers are given great discretion in terms of deciding the amount and time of impairments under both IAS 36 and SFAS 142. This 'flexibility' with goodwill comes from managers largely using subjective judgement measures when allocating goodwill to relevant CGUs (reporting units) – understandably so given the qualitative assessment that is prevalent while performing impairment tests. Goodwill impairment studies thus examine the extent to which managers misused this discretion when accounting for impairment, and they endeavour to explain why and how management may use it opportunistically to accelerate or delay the recognition of goodwill impairment. Such opportunism takes various forms.

Prior studies show that managers may aggressively report impairments by allocating goodwill to CGUs (reporting units) that have a lower fair value, so they realise the strategy of big bath for earnings management. Alciatore et al. (1998) highlight three possible reasons for such behaviour. Firstly, management of large companies, in particular, may take the decision to

write-off assets (impair goodwill) to give a market indication that past problems have been dealt with effectively (Strong and Meyer, 1987). Secondly, managers may want to decrease earnings amounts and thus the firm value, so they look less attractive targets to any possible takeovers. Finally, reporting lower earnings through more asset write-offs (goodwill impairments) helps the company to set a lower earnings benchmark, meaning they simultaneously save more earnings for the future.

On the other hand, managers of companies with a higher book-to-market ratio tend to avoid reporting impairments by allocating goodwill to reporting units (CGU) which have fair values that are highly enough to exceed their book values and pass the test without reporting impairment losses, achieving the strategy of income smoothing (Zang, 2008). Likewise, they might allocate goodwill to a large number of CGUs (segments) or allocate a large amount of it to CGUs (segments) with a relatively high internally goodwill to delay the reporting of goodwill impairment (Laurion et al., 2014). Companies with a high level of debt and restricted debt covenants normally use this strategy to manipulate asset write-offs and goodwill impairment, and thus avoid the violation of debt covenants and minimise these restrictions, pay more dividends, issue new debts, lower legal and renegotiation fees, and obtain trading credits easily (Hall, 1993). Additionally, if managers have their bonuses tied to earnings, they will do their best to avoid reporting any write-offs or impairments because of its negative effect on earnings (Alciatore et al., 1998).

Strong and Meyer (1987, p. 644) note:

> "With managerial incentives necessarily playing a major role in determining asset writedown policy, a number of analysts have argued that "the bigger the Bath, the better," – that by cleaning up the balance sheet and reducing equity, a company can boost future profits and increase per-share return."

Francis et al. (1996) point out that managers' misuse of assets impairment to manipulate earnings brought great demands for authoritative guidance on accounting for assets impairment. Nevertheless, the authors also suggest another view of this discretion – one that assumes managers may take write-offs to signal private information about declines in the values of assets due to poor company performance, changes in the economic climate, actions taken by competitors, or changes in the management strategies.

To understand the role played by managers' incentive and motives in the reporting of goodwill impairment and compare it to the period before the implementation of the impairment approach, two subsections address studies that analyse and explain management incentives. Section 2.2.1.2.1 initially reviews studies that discuss the relationships between management incentives and the reported assets and goodwill write-offs before the introduction of the impairment-only approach, while section 2.2.1.2.2 explores management incentives for recognising goodwill impairment after the introduction of the impairment-only approach.

2.2.1.2.1 Before the impairment-only approach

Most earlier studies on asset write-offs (e.g., Elliott and Shaw, 1988; Strong and Meyer, 1987; Zucca and Campbell, 1992) proposed that managers' incentives drive them to make opportunist write-off decisions that achieve their own interests, and these do not reflect the actual economic circumstances of their assets (AbuGhazaleh et al., 2011). These studies, however, did not consider the possibility that these managerial incentives perhaps reflected the provision of managers' private information as opposed to them acting opportunistically to manipulate companies' underlying economics.

- **Asset write-offs studies**

Strong and Meyer (1987) examined companies' determinants to report asset write-offs and their effect on security returns. Findings show senior management change to be a most important determinant of asset write-offs decision, especially when an external CEO is hired. This discretion is supported by the accounting treatment at that time, where asset write-offs were charged to a reserve account, with any future residual balances were reversed and recognised as earnings in future periods. Therefore, during the new CEO transition period, large amounts of reserves were recognised against as many contingencies as possible, based on the grounds that management effectiveness and strength could be signalled through the subsequent reversal of these overvalued reserves and the reporting of higher earnings (Strong and Meyer, 1987). Furthermore, they highlight that low-performing companies might delay asset write-offs to avoid operating losses and debt covenants breakdowns, and to benefit from tax losses carried forwards in profitable periods. Overall, they conclude that management tends to recognise write-offs in periods with high profits and increasing values of book and market value of equity so their companies could fully utilise the tax shields that come from asset write-offs. Notably, Strong and Meyer's (1987) work covers a period where no specific or clear standards addressed how to account for the impairment of different types of assets, except inventory (Francis et al., 1996). Also, the great recession of the early 1980s affected this period, as many companies suffered from poor financial performance and auditors could not force companies to write-off their assets once initial evidence had been provided (Strong and Meyer, 1987).

In similar studies, Elliott and Shaw (1988) and Zucca and Campbell (1992) provide additional evidence for managers using their discretion opportunistically regarding the amount of asset write-offs disclosed. Elliott and Shaw (1988) show that companies with large discretionary write-offs are larger (measured by total assets and revenues) and highly leveraged relative to

their peers in the same industry. Moreover, decreasing performance (in terms of return on equity and return on assets) and lower stock returns for the three years before, during and 18 months after the write-off decision was announced – the other cause being management reporting write-offs that were larger (worse) than expected. Likewise, 39% of these authors' research sample experienced changes in the management (CEO, CFO) during the write-off year, which supports Strong and Meyer's (1987) outcomes about the significant effect of management changes on the reported write-offs.

Zucca and Campbell (1992) provide clear evidence for the use of earnings management tools while recording assets-write-offs. Specifically, most of their research sample disclosed write-offs in periods where earnings are below standards (big bath), while 25% did so when they have highly unusual earnings (income smoothing). Furthermore, the market reaction following the write-offs announcement and subsequent merger and acquisition activities, for those companies who reported goodwill write-offs, could not provide strong evidence for the improvement in their financial performance, compared to other control companies. This suggests that write-offs do not reflect productive and constructive responses to existing problems. Zucca and Campbell (1992) also noted how companies that reported partial write-offs in the last quarter of the year without any warnings in the preceding quarters, and/or that take large write-offs in periods when they have declining financial health which becomes more apparent after taking the write-offs, are more likely to manage their earnings through inaccurate asset write-offs.

Examining the effect of historical security returns (past stock performance) on asset write-off decisions, Francis et al. (1996) conducted one of the first studies that explicitly contends the importance of both actual impairment variables (economic circumstances) and management incentives in explaining the amount and time for asset write-offs. They said the degree of

management incentive influence depends on the discretionary level of these write-offs, as management incentives influence goodwill write-offs[14] more than they influence inventory and property, plant and equipment (PPE) write-offs. Regarding goodwill write-offs, the authors found management incentives, such as recent management change and the company's tendency to record write-offs, to play a substantial role in and positively influence the tendency and magnitude of goodwill write-offs. In contrast with Zucca and Campbell (1992), Francis et al. (1996) found no signs for either big bath or smoothing behaviour. Similarly, for Kvaal (2005) recent management changes are associated with goodwill write-offs while testing asset write-offs recorded under FRS 11, *Impairments of Fixed Assets and Goodwill*. Supporting Francis et al. (1996), Kvaal (2005, p. 53) argues that "goodwill impairment accounting is related to variables that are not easily compatible with the hypothesis of unbiased impairment accounting".

Using a sample of 588 companies from 1985 to 1991, Heflin and Warfield (1997) explored the timeliness of asset write-offs to reveal any management intervention to manage earnings. Results show that companies reported write-offs in years in which they suffer from lower earnings compared to the three years preceding the write-offs, into which they achieved earnings that are equal to or higher than industry peers. On the other hand, lower market returns were observed for those companies compared to the industry for the last three years before write-offs. Moreover, asset write-offs negatively relate to the market returns of the last three years before the write-off year. This suggests that write-offs are not recorded on a timely basis, and a pattern of earnings management exists – delaying an imminent write-off until a year where earnings are poor regardless of the write-off. However, it would appear that the market expected these write-offs during the last three years.

[14] This study covers the period from January 1, 1989 to December 31, 1992, whereas no specific or clear standard had yet been issued for the accounting of goodwill to explain its recognition and measurement.

On the other hand, Rees et al.'s (1996) was one of the earliest studies to consider the possibility that managers use their discretion to provide value-relevant signals to investors rather than act opportunistically to manipulate the company's underlying economics. They examined abnormal accruals at the time of asset write-offs, assuming that any company writing off their assets as an opportunistic behaviour to manipulate earnings would also exercise their discretion over operating accruals. They found these abnormal accruals to be significantly negative in the year of asset write-offs and that they do not tend to reverse in the following years. As Rees et al. (1996, p. 168) thus conclude: "The combined results suggest that the documented abnormal accruals in the write-down year are due to permanent changes in the companies' accrual balances and imply that managers are responding to changes in economic circumstances as opposed to acting opportunistically."

- **Goodwill write-offs studies**

Early studies examining goodwill and its subsequent measurement investigated the substantial role managers incentives played in two decisions. The first was choosing between two treatments – that is, either writing off goodwill into reserves in the same year of acquisition (according to the pooling of interest method[15]) or amortizing it over a specific number of years. The second involved identifying the number of years to be used in amortizing goodwill (Hall, 1993; Henning and Shaw, 2003; Skinner, 1993). Before the writing-off of goodwill to reserves was eliminated (by the ASB[16] in 1998 and by the in the FASB[3] in 2001), many companies used this method to escape the gradual allocation of goodwill to profit and loss account, so earnings

[15] In the pooling of interest method, goodwill that is recognised at acquisition is not treated as an asset and is not recorded in the company balance sheet. Goodwill is written down to reserves (equity) in the same year of acquisition.

[16] In 1998, The Accounting Standards Board issued *FRS 10 Goodwill and Intangible Assets* that eliminated the writing-off of goodwill to reserves and instead treated goodwill as a wasting asset that it is required to be amortised over an assumed life of not more than 20 years. In 2001 the FASB issued *SFAS 142 Accounting for Goodwill and Intangible Assets.* This eliminated the use of pooling of interest methods and required goodwill to be tested annually for impairment instead of being amortised over a specific time period.

were not affected by subsequent treatment of goodwill. As McGoldrick (1997, p. 1) stated, "Not surprisingly, in a financial world where CFOs are judged (and often compensated) on stock appreciation, pooling, which, unlike purchase accounting, avoids the dreaded goodwill, has become very popular."

In examining other factors that influence managers' reporting choices regarding goodwill treatment, Gore et al. (2000) found that management preferences for goodwill accounting in the UK were mainly influenced by debt covenants restrictions and profit-based management compensation plans. Consequently, Russell et al. (1989) noted that 98% of the largest 264 UK companies in 1986 abolishes goodwill immediately to reserve to avoid any future declines in their earnings (as, at that time, the dominant profit-oriented culture dominating the UK significantly influenced managers). Surveying 71 UK companies between 1988 and 1992, Alexander and Archer (1996) similarly demonstrated that more than 60% of these companies eliminated their positive goodwill to reserves, only 8% deemed it an asset and amortised it over a various number of years, and the rest followed different non-standard treatments. On examining 70 French companies, however, the same authors showed how capitalising and amortizing goodwill was the most common method in France with only 7% used the elimination method[17] (Alexander and Archer, 1996).

Similarily, Grinyer et al. (1991) concluded that managers were abusing the allowed discretion in goodwill calculations and that they were doing so mainly by using fair value measures. They argue that managers were trying to allocate large parts of the purchasing price as goodwill and take excessive write-offs in the year of acquisition so they could increase their future earnings,

[17] This because in France, French-listed companies were asked not to follow the elimination methods according to the Opinion No. 210 issued by Commission des Operations de Bourse (COB) in January 1988.

based on contractual motivations such as gearing (leverage) and the availability of merger relief reserves.

Moreover, Norris and Ayres (2000) reported negative market reactions to decreases in goodwill due to amortization reported in the first earnings announcements date following the effective acquisition date. This showed the market responding negatively to the earnings impact of goodwill amortization, and thus managers used to evade negative earnings through using the pooling of interest method that does not recognise any goodwill.

In the U.S. context following the SFAS 121's implementation, research demonstrated that managers were trying to use the maximum time allowed for goodwill amortization. They usually amortize goodwill over a period of more than 30 years, knowing that the maximum number of years allowed is 40 years (Duvall et al., 1992; Hall, 1993; Norris and Ayres, 2000). However, Henning and Shaw (2003) instead argue that managers were aggressively amortizing goodwill over shorter periods – not only because of the lower productivity expected from goodwill but also when the company post-acquisition synergies are expected to be high enough to absorb these expenses without lessening the future performance of the company stock. On the other hand, companies that expected lower synergies typically used an extended period or even wrote off goodwill to reserves to avoid declines in post-acquisition earnings that may come from allocating and amortizing goodwill.

Likewise, Hall (1993) traced the determinants of the goodwill amortization period and found that the economic consequences of goodwill amortization– including debt covenants costs, agency costs and political costs – all affect, in different ways, managers' decisions regarding the number of years over which goodwill is amortised. On the one hand, results indicate that company size, as a proxy for expected political costs, negatively affects the amortization period, as managers try to avoid the increased political costs from higher visibility and wider

influence by reporting lower income (Hall, 1993; Watts and Zimmerman, 1990). On the other hand, debt contract constraints positively influence the amortization period, as managers of companies operating near their debt constraints are more likely to amortize their goodwill over longer periods to try to avoid any consequences that may restrict their actions (Hall, 1993). This is supported by Skinner (1993), who examines the effect of investment opportunity set (IOS) on managers' choices regarding goodwill impairment. They found that companies with large investment opportunities (measured by total assets in operations), high debt levels, and bonus plans that are linked to earnings are more likely to follow income-increasing goodwill procedures by extending amortization.

To conclude this section, prior studies highlight the substantial role management incentives played in the reporting of assets and goodwill write-offs before the introduction of the impairment-only approach. Besides economic-related factors, studies conclude that various other factors substantially influenced the amount of assets and goodwill write-offs. These include recent management change (Elliott and Shaw, 1988; Francis et al., 1996; Kvaal, 2005; Strong and Meyer, 1987), big bath and income smoothing (Elliott and Shaw, 1988; Zucca and Campbell, 1992), leverage and debt constraints (Elliott and Shaw, 1988; Gore et al., 2000; Grinyer et al., 1991; Hall, 1993; Skinner, 1993), and earnings-based compensation plans (Gore et al., 2000; Skinner, 1993). Furthermore, management incentives influenced the amount of goodwill recognised as a part of the purchase price and whether this goodwill was kept and amortised over numerous years or immediately written off to reserves (Alexander and Archer, 1996; Norris and Ayres, 2000; Gore et al., 2000; Grinyer et al., 1991; Henning and Shaw, 2003; Russell et al., 1989). Additionally, management incentives influenced the number of years used to amortize goodwill, depending on whether management was practising income-increasing or income-decreasing strategies (Hall, 1993; Henning and Shaw, 2003; Skinner, 1993). Except for Rees et al. (1996), most prior studies argue that managers' incentives drove them to make

opportunistic write-offs decisions that pursued their own interests and did not encourage them to signal private information about the actual economic circumstances of their assets.

2.2.1.2.2 After the impairment-only approach

Even after the introduction of new standards (SFAS 121, SFAS 142, SFAS 144, and IAS 36)[18], most studies on assets and goodwill impairments (e.g., Chao and Horng, 2013; Duh et al., 2009; Riedl, 2004) still confirm a high association between recognised impairment and earnings management tools (e.g., big bath, income smoothing, management change).

- **Studies of assets impairment**

Investigating management incentives to take write-offs before and after SFAS 121 implementation, Riedl (2004) revealed a significant association between asset write-offs and big bath and explained it as managers tend to act opportunistically rather than signal private information to investors. Moreover, the author found this association became stronger after SFAS 121 implementation, resulting in lower write-offs reporting quality than before the standard's introduction. This can be because of the subjectivity inherent in the standards (e.g. flexibility involved in the calculation of write-offs based on the fair value concept), which may warrant management to justify their reporting choices. As Riedl (2004, p. 850) explained:

> "[T]he issuance of a "brighter line" standard, combined with (possibly increased) capital market pressures for achieving earnings targets during the

[18] Different standards were issued in response to calls for improving the reporting of asset write-offs. SFAS 121 was issued on March 1995 and applied by companies that have their fiscal years starting after 15 December 1995 (FASB, 1995) in an attempt to solve the timing and measurement issues of asset write-offs. It required companies to run impairment tests 'whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable' (FASB, 1995, para. 4). It also noted that an impairment loss should be recognised and measured as 'the amount by which the carrying amount of the asset exceeds the fair value of the asset' (FASB, 1995, para. 7). For the same reason, the IAS 36 was issued by the IASB following similar procedures for identifying and measuring assets' impairment loss. However, in 2001 SFAS 121 had been completely superseded after the introduction of SFAS 144 (to resolve significant implementation issues related to SFAS 121) and SFAS 142 (to separately account for goodwill and intangible assets). Similarly, IAS 36 was revised so that it also accounted for goodwill and intangible assets acquired in business combinations.

> latter part of the 1990s, may have enabled/driven managers to adopt more discretionary reporting choices under SFAS 121 relative to before the standard."

Using research samples from Taiwanese listed companies, Chao and Horng (2013) and Duh et al. (2009) checked the role of management incentives after the July 2004 implementation of SFAS No. 35[19] '*Accounting Treatment of Asset Impairment*'. Chao and Horng (2013) showed a negative association between the amounts of discretionary assets impairment and abnormal accruals. Contrary to Rees et al. (1996)[20], they also found that companies with big bath or income smoothing incentives likely use assets impairment as well as discretionary accruals to attain their earnings targets. Thus, they are partial complements for earnings manipulation. The difference in findings between Rees et al. (1996) and Chao and Horng (2013) can be explained by country-specific factors such as audit function and accounting standards influencing managers' willingness to engage in earnings management (Chao and Horng, 2013). On Duh et al.'s work (2009), they tested managers' incentives by examining management decisions on reversing impairment losses. They suggest that managers of companies that record more impairment losses and have higher amounts of debt are more likely to reverse these losses when this helps them to minimise declines in the following period's earnings. This is explained by managers smoothing their earnings using a strategy called 'cookie jar reserves' to main the level of earnings debt covenants require.

[19] This standard is similar to IAS 36. Its purpose is to control management discretion and improve the reporting of assets impairment. As with IAS 36, companies with fiscal years beginning on or after 1 January 2005 had to apply the provisions of SFAS 35, with early adoption permitted.

[20] As explained before, Rees et al. (1996) contend the use of asset write-offs and discretionary accruals by managers to reveal and uncover, instead of obfuscating, changes in economic circumstances.

- **Studies of goodwill impairment**

Most studies on the determinants of goodwill impairment started in the U.S. and Canada after the introduction of both the SFAS 142 in the U.S. in 2001 and Section 3062 of the CICA Handbook in Canada in 2002. Then, further studies are examined in the IFRS context after its implementation has become mandatory for all EU listed companies starting from 2005. Accordingly, this section initially addresses study samples from the U.S. and Canada, then does the same for those within the IFRS context.

a. The GAAP context

Hayn and Hughes (2006) is one of the earliest studies that examined the leading indicators of goodwill impairment before the actual implementation of SFAS 142. Following them, Beatty and Weber (2006) and Lapointe-Antunes et al. (2008) studied the transition period of goodwill impairment treatment using a research sample that covers the period following the SFAS 142 implementation. Then, other studies (e.g., Jordan and Clark, 2011; Long, 2005; Sevin and Schroeder, 2005; Zang, 2008) examined typical sample periods of one year before and after SFAS 142 adoption to investigate the existence of earnings management during its initial implementation. Others (e.g., Li and Sloan, 2017) covered a longer period before and after the implementation of SFAS 142, so they could properly examine the main indicators of goodwill impairment and test whether management incentives influence the timeliness of recorded goodwill impairment. More studies (e.g., Filip et al., 2015) focused only on the period following the SFAS 142 implementation to investigate how managers could potentially manipulate current cash flows to postpone the recognition of goodwill impairment and its impact on future performance. This section analyses these studies to draw up a conclusion on the implementation of the goodwill impairment approach in the U.S. and Canadian context.

On the abovementioned early study on goodwill impairment, Hayn and Hughes (2006) used data on U.S. companies from before the SFAS 142 implementation to examine the predictability of goodwill impairments. To mirror the disclosure environment under SFAS 142 as closely as possible, they examined write-offs associated with 1,276 acquisitions made between 1988 and 1998 (pre-SFAS 142 implementation), plus a small sample of goodwill write-offs made after SFAS 142 implementation. Their results show poor predictability of impairments, mainly because of the poor quality of relevant disclosures concerning the post-acquisition performance of acquired business units. Furthermore, an average time lag of three to four years (six to ten years for one-third of the companies) was found between the acquired business's deteriorated performance and the reporting of goodwill impairment. Authors argue that this substantial delay indicates that opportunistic goodwill write-offs existed both before and after SFAS 142 implementation, and they concluded that the adoption of the impairment-only approach is less likely to improve the quality of financial reports in terms of forecasting goodwill write-offs.

After SFAS 142's implementation, Beatty and Weber (2006) investigated managers' incentives regarding the trade-off between the two accounting treatments of goodwill offered during the transition period.[21] They found managers acting opportunistically by increasing the amounts of goodwill written off as a change in the accounting policy (below the line) to decrease the likelihood of recognising any future goodwill impairments (above the line) that negatively

[21] "When implementing SFAS 142 for the first time, firms could decide whether to write down the goodwill recorded in their balance sheets (immediate "hit" to their balance sheet, without affecting current reported earnings). This initial impairment was reported below the line, whereas any future impairments would be taken above the line included in income from continuing operations" (Hussainey et al., 2016, p. 16). Hayn and Hughes, (2006 p. 258) explain the consequences of this transitional treatment:

> "The timing for many of these write-offs is likely to be motivated by the desire to take advantage of the one-time opportunity to disclose the write-off as a cumulative effect of a change in accounting principle, the disclosure permitted if the write-off is made within six months of SFAS 142's adoption. An added advantage of taking a goodwill write- off upon adoption of the new statement is that such a charge can be presented to investors as the result of a new accounting standard rather than an indication that management made a poor acquisition."

affect company income. Additionally, companies were less likely to record goodwill impairment in the following cases: they had earnings-based bonus plan or debt covenants restrictions that do not exclude special items' effects; they were listed on stock exchanges where listings are conditional on net worth amounts, and more write-offs could potentially result in a future exchange delisting; and if their CEOs had relatively longer tenures and made the acquisition decision. Similarly, Lapointe-Antunes et al. (2008) investigated the adoption choices for a sample of Canadian companies following the requirement to account for this mandatory accounting change using a retroactive approach[22]. They examined how reporting incentives and constraints influenced reported transitional goodwill impairment losses, focusing on a slightly different set of reporting incentives from those that Beatty and Weber (2006) examined. Their findings showed overstated transitional goodwill impairment losses when companies experience changes in their CEOs and when they seek to minimise deviation from the industry median performance indicators (ROE and ROA). Also, companies tend to understate transitional goodwill impairment losses to minimise deviation from the industry median leverage, especially in particular circumstances: when they subsequently issue new debt or equity capital; when there are sizable unrealised gains on exercisable executive stock options; and when they are cross-listed in the United States.

Similarly, Jordan and Clark (2011) noticed how those companies listed in the U.S. Fortune 100 in 2002 that recorded goodwill impairment showed a lower level of earnings compared with their counterparts from the non-impairment group. Furthermore, companies reporting negative earnings from the impairment group had significant negative earnings compared with their

[22] As Lapointe-Antunes et al. (2008, p. 39) said: "Under the retroactive method, transitional goodwill impairment losses reduce assets and equity equally without affecting net income, which increases the value of ROE and ROA. This creates an incentive for firms with lower than industry median ROE and/or ROA to maximise the initial impairment to bring the value of these ratios towards the industry norm. This incentive only exists for firms using the retroactive method because the transitional loss equally reduces assets, equity, and net income under the cumulative effect method thereby reducing ROE and ROA."

counterparts. Nevertheless, in 2001, the year before the implementation of the SFAS 142, the two groups had a similar level of earnings (negative earnings), providing an indication of big bath accounting. Results are robust to both measures of earnings (return on sales and return on assets). The authors argue that these companies try to accelerate the recording of goodwill impairment in the same implementation year (2002) as a change in the accounting principles instead of recording it as an operating expense in subsequent years, and hence increase future earnings.

Sevin and Schroeder (2005) investigated this further by examining whether larger companies are more likely to exercise extensively the big bath earnings management strategy than smaller ones. They divided their initial sample of 120 U.S. companies that reported goodwill impairment in the first year of implementing the standard (2002) into two groups, based on the size of assets. Their results show that small companies charged goodwill impairments more than the large ones. As they concluded (ibid., p. 53):

> "We find that a significantly greater proportion of small firms reported negative earnings in the year of SFAS 142 adoption, as opposed to the prior year, but that there was no significant difference between the year-to-year proportions of large firms reporting negative earnings. These findings suggest that the negative reporting impact of the standard's adoption was used more by small firms as part of a big bath strategy."

Evidencing an income smoothing incentive, Long (2005) found that U.S. companies are not reporting impairment on a timely basis in the initial SFAS 142 implementation, as they sought to minimise their reported impairment losses to smooth income and to avoid violating debt covenants. Examining the same period, Zang (2008) also found a significant negative relationship between leverage levels and recorded goodwill impairment losses for a sample of 870 U.S. companies. This result is robust to different measures of leverage that reflect the strictness of debt covenants. Even after collecting information from the annual reports to

control for the effect of accounting changes on debt covenants, the coefficient of this variable remained significant negative. This indicates that highly leveraged companies with debt covenants that include the effect of accounting changes and restrictions on retained earnings and net assets are less likely to record impairment losses than companies with debt covenants that exclude accounting changes or do not have such restrictions. Furthermore, Zang (2008) found companies charge large amounts of goodwill impairment losses when there is a recent change in the management (ΔMGMT), even after distinguishing between non-voluntary changes that follow poor performance[23] and voluntary changes because of retirement. This result supports the argument that new managers tend to impair goodwill aggressively to set lower benchmarks and increase future earnings, with the responsibility of such impairments being placed on the former management. Likewise, Masters-Stout et al. (2008) examined the amount of goodwill impairment reported by Fortune 500 U.S. companies from 2003 to 2005 to identify whether CEO turnover affects the amount of goodwill impaired. In this, the total number of years worked by the CEO was used to construct the main independent dummy variable – one being assigned if the CEO worked only for the last two years and zero if they worked longer. The results show that new CEOs recognise more goodwill impairment than their senior counterparts, supporting the argument either that new CEOs use goodwill impairment as a tool to lower expectations and manage earnings, or that former CEOs avoid impairing more goodwill to protect their own linked-to-earnings compensations (Masters-Stout et al., 2008).

Li and Sloan (2017) extended Hayn and Hughes's (2006) work by also examining the timeliness of goodwill impairment but doing so over a longer sample period from 1996 to 2011, thus covering both before and after the implementation of SFAS 142. They did so to test

[23] Zang (2008, p. 55) stated: "If a management change was prompted by poor firm performance, then the portion of the initial impairment loss that is associated with ΔMGMT may not be attributable to earnings management"

whether managers misused the discretion afforded by SFAS 142 to delay goodwill impairments. Their results show that goodwill impairments in the post-SFAS 142 period lag deteriorating performance and stock returns by at least three years, supporting Hayn and Hughes's (2006) argument that goodwill impairments became relatively less timely after SFAS 142 implementation. Li and Sloan (2017) said the main reason for this lies in the difficulties of verifying the fair value of goodwill resulting in less timely goodwill impairments and inflated goodwill balances. Focusing only on the post-SFAS 142 period, Ramanna and Watts (2012) studied a sample of U.S. companies with a high likelihood of goodwill impairment. However, only 69% of the sample reported goodwill impairment. They provided evidence that managers did not have positive inside information about future cash flows and that they may have avoided impairments for opportunistic reasons relating to CEO compensation, CEO reputation and debt covenant violation concerns. The authors also found some evidence that the non-impairments in their sample may be explained by managers' flexibility provided under the SFAS 142.

Considering the empirical evidence for the opportunistic behaviour managers exercise to delay the recognition of goodwill impairment, Filip et al. (2015) investigated how managers use real earnings management to justify the decision to recognise, or not, an impairment loss, and the consequences of such practices on future performance. Using a sample of 38,667 firm-year observations for U.S. companies over the period from 2003 to 2011, their findings support the argument that managers use real activities (e.g., manipulation of R&D expenses, advertising, production, sales terms or capital expenditures) to report abnormal positive current cash flows and thus delay the recognition of goodwill impairment. These abnormal upward cash flow managements are found to be detrimental to the companies' future performance. Furthermore, authors found an association between the recognition of goodwill impairment loss and 'big bath' accounting for companies that have large and negative income-decreasing abnormal accruals in the year of impairment. Accordingly, they conclude that goodwill impairment

reporting is not timely, with managers either manipulating current cash flows so they could delay or not recognise impairment or accelerating goodwill impairment when they have large and negative income before impairment.

b. The IFRS context

All studies hitherto explored in the previous section have been conducted within the U.S. and Canadian context. On those in the IFRS context, Hamberg et al. (2011) used a sample of 180 listed Swedish companies recorded goodwill in their year-end 2004 financial statement to examine how managers used their discretion when they adopted IFRS for the first time. The authors tested for some management incentives variables highlighted in prior studies, including the degree of debt covenant slack, earnings-based bonus compensation, and management tenure. Their results, however, provided weak evidence for tenured management being more reluctant to impair goodwill on initial IFRS 3 adoption.

Likewise, AbuGhazaleh et al. (2011) investigated whether the discretion involved in reporting goodwill impairment under IFRS was used to signal useful information as IASB intended or whether management opportunistically used this for their own incentives. The research sample consisted of 528 firm-year observations from the largest 500 UK listed companies (based on their market capitalisation) for the years 2005 and 2006. A multivariate Tobit regression analysis found an association between recent CEO change, big bath and income smoothing, and the amount of goodwill impairments. This suggests that managers use the discretion in the recording of goodwill impairment. However, they argue that this discretion is more likely to be used to signal private information about the company performance rather than be used opportunistically. As authors concluded (ibid., p. 197): “The overall results suggest that IFRS No. 3 has improved the quality of reported goodwill impairment losses, and hence provide

support to the IASB's contention that IFRS 3 allows companies to reflect their underlying economic attributes".

Hussainey et al. (2016) extended AbuGhazaleh et al.'s (2011) work by using a large sample of UK listed companies covering a longer period from 2001 to 2009, thus incorporating both periods before and after IFRS implementation and the effect of the 2007/2008 financial crisis. After controlling for the current and lagged stock returns to test the timelines of goodwill impairment, the reporting of goodwill impairment was not found to be quite timely, with a significant relationship between lagged return and recorded impairments. Furthermore, CEO change was a main driver for goodwill impairments in the UK.

These findings are supported by Glaum et al. (2018), who report an association between the likelihood of reporting goodwill impairment and lagged stock market return, suggesting that companies tend to delay necessary impairment. They also found a link between companies' decisions to impair goodwill and earnings management (income smoothing). These findings are based on 8,110 non-financial firm-years and 1,358 financial firm-years that are collected from 21 European countries over the period from 2005 to 2011, where companies apply IFRS.

Similarly, Giner and Pardo (2014) examined managers' use of discretion in deciding whether or not to impair goodwill and in the magnitude of the impairment reported, using a sample of 538 Spanish-listed firm-year observations covering the period 2005–2011. In line with Glaum et al. (2018), they found big bath and income smoothing to explain the likelihood and magnitude of goodwill impairment. They also conclude that goodwill impairment is recorded following unethical behaviour in order to achieve the desired net income. Furthermore, the cost and complexity of running the tests, proxied by company size, affect managements' decision to record goodwill impairment, supporting the notion that larger companies are more likely to record impairment and to impair larger amounts than smaller ones.

In summary, most prior studies have highlighted that declines in the economic values of companies' goodwill balance are not the only drivers for recognising goodwill impairment. Different management incentives evidently affect the reporting of goodwill impairment substantially, and these include big bath, income smoothing, management change (tenure), leverage (debt covenant restrictions), and earnings-based compensation plans. Rather than signalling private information that provides informative financial statements, managers opportunistically use the discretion given to them within the impairment test to accelerate/delay/avoid the recognition of goodwill impairment, depending on whether they are exercising income-increasing or income-decreasing strategies. This negatively affects the timeliness of goodwill impairment, suggesting that the impairment-only approach has not improved the quality of reported goodwill, as was intended. Hence, this approach does not support the FASB/IASB's intention to encourage management to report a goodwill balance that reflects its underlying economic attributes. Consequently, researchers started examining the role auditors played in reviewing goodwill for impairment loss. Accordingly, section 2.3 presents studies that use different proxies for audit quality to examine the extent to which auditors can minimise managers' misuse of discretion in their endeavours to manipulate earnings through goodwill impairment.

2.2.2 Audit quality and goodwill impairment

Several studies have examined the effect of audit quality as a controlling mechanism on the reporting of goodwill impairment. Various proxies have been used to measure audit quality, including audit firm size (e.g., Al-Dabbous et al., 2015; Bepari and Mollik, 2015; Carlin et al., 2010; Carlin and Finch, 2015; Godfrey and Koh, 2009; Iatridis and Senftlechner, 2014; Kabir and Rahman, 2016; Laili and Khairi, 2013; Pajunen and Saastamoinen, 2013; Stokes and Webster, 2009; Waldmann, 2014); auditor independence (Carcello et al., 2020; Waldmann,

2014); auditor tenure (Ghosh and Wang, 2016); auditor specialisation and experience (Chen et al., 2015; Ghosh and Wang, 2016; Pajunen and Saastamoinen, 2013); and joint audit (Lobo et al., 2017). Most such studies support the argument that better audit quality could constrain management's misuse of the discretion SFAS 142 and IAS 36 gave them and thus help improve both the reporting of goodwill impairment and compliance with disclosure requirements. However, this might negatively affect the relationship between auditors and their clients. A recent study by Ayres et al. (2019) supports this argument, as it notes how recording goodwill impairment losses that are unfavourable to the company create auditor-client disagreements that often lead to the dismissal of the auditor. Using a sample of 21,665 firm-year observations starting from 2001 (the first implementation year of SFAS 142) and concluding in 2014, the authors noted that goodwill impairment recognition is positively associated with a higher probability of auditor dismissal. They also found companies that dismiss their auditors after impairing their goodwill are more likely to hire auditors who are more favourable to clients in their impairment decisions. The following section provides a critical discussion of previous studies, explaining the rationale behind using different proxies to measure audit quality.

2.2.2.1 Size of audit firm

DeAngelo (1981) argues that large auditors have greater incentives, given their higher reputational risks, to force companies to provide reports that comply with the required standards and thus limit managers from using their discretion opportunistically. Based on this argument, many studies started differentiating between the quality provided by big audit firms and that provided by non-big audit firms, doing so by investigating the degree to which companies strictly followed and implemented the accounting standards in measuring and recording goodwill impairment losses and disclosing the procedures and the assumptions behind their calculations.

Pajunen and Saastamoinen (2013) explore auditors' beliefs about whether goodwill accounting using the IFRS impairment approach allowed management to manipulate their earnings. After surveying 523 KHT certified auditors in Finland, they collected 123 responses (23.5%)[24]. Of these, 78 auditors (63.4%) had experience of auditing goodwill calculations under IFRS, while 97 auditors (78.86%) worked for one of the Big 4 audit firms. Overall, their results showed that auditors did not agree on one thought. Some think that IFRS gave managers opportunities to manage earnings and that Finnish companies engaged in opportunist behaviour to avoid recording impairment, while others favoured the IFRS treatment of goodwill. However, further analysis demonstrated, on average, consistent thoughts between the Big 4 auditors in the sense that they favour the accounting treatment of goodwill under IFRS and they do not believe in managers' opportunistic behaviour.

To empirically examine the impact of audit firm size on goodwill impairment recognition**,** Godfrey and Koh (2009) examined a pooled 575 firm-year observations in the U.S. from 2002 to 2004 – one where 76% of the whole sample was audited by Big 4 auditors. Their results show that large amounts of goodwill impairment were reported by Big 4 clients rather than non-Big 4 clients, supporting the argument that Big 4 auditor provide higher audit quality. Moreover, using only 2002 observations, the authors also explored whether goodwill impairments recorded by former Arthur Andersen clients differ from those reported by other auditors' clients. However, no evidence of an overall Arthur Andersen effect existed.

In the IFRS context, Stokes and Webster (2009) examine the effect of audit quality on the relevance and timeliness of goodwill impairment, doing so by following the same methodology adopted by Chalmers et al. (2011) and Godfrey and Koh (2009). However, unlike Godfrey and

[24] According to Pajunen and Saastamoinen (2013, p. 258), there are "two groups of certified auditors in Finland which are called KHT and HTM. Listed companies should use a KHT certified auditor … Other companies may employ a HTM certified auditor".

Koh (2009), authors do not assume that Big 4 auditors necessarily require their companies to be more conservative and to show more goodwill impairment losses. Instead, they argued that Big 4 auditors might encourage their clients to record goodwill impairments that better reflect companies' underlying economic circumstances – as measured through their investment opportunities set (IOS) – than non-Big 4 audit firms' clients. Initially using the same Australian sample as Chalmers et al. (2011), the final sample consisted of 4,310 firm-year observations that had non-zero goodwill balances between 1999 and 2008, hence covering both the area before and after the IFRS adoption. Then, focusing only on the sample post the IFRS implementation, they evidenced how Big 4 clients more likely reported goodwill impairments that were negatively related to their IOS than non-Big 4 clients. They then re-run the analysis on each of the two groups – Big 4 clients and non-Big4 clients. Their findings indicated that the Big 4 model (R^2 = 46%) has more explanatory power than the non-Big 4 one (R^2 = 32%), with a significant negative relationship only in the big 4 audit firms sample between the reported impairment losses and their IOS. This result supports the IASB's argument that the impairment approach under the IFRS better reflects the economic value for goodwill than the previous systematic amortization only when companies are audited by Big 4 audit firms. Accordingly, high audit quality is important in implementing and being fully compliant with IFRS standards.

In the same vein, using a sample of 1783 firm-year observations in the same Australian context covering the period from 2007 to 2012, Kabir and Rahman (2016) investigated the effect of Big 4 auditing on the relationship between goodwill impairment (its likelihood and magnitude) and economic-related drivers such as market-to-book ratio, change in cash flow, change in sales, and GDP growth rate. For the subsample of Big 4 clients, authors found that the amount of goodwill impairments associates significantly and negatively with these economic factors. However, the likelihood of recording impairment increased with a negative pre-impairment

income and was more prominent in the first year of a new CEO's appointment, regardless of whether the research sample was audited by the Big 4 or not. Accordingly, despite Big 4 auditors providing, to some extent, higher audit quality, goodwill impairment losses still recorded in the form of a big bath tool for earnings management.

In the UK, Al-Dabbous et al. (2015) use the same sample[25] used by AbuGhazaleh et al. (2011) to examine whether Big 4 auditors can control the management from using goodwill impairment to manipulate earnings. On the contrary, after controlling for economic-related motives and considering audit firm size, results fail to support that Big 4 auditors have a significant effect on the recognition of goodwill impairments, and goodwill impairments are still mainly derived by managers' incentives to exercise both big bath and income smoothing, with new CEOs reporting more impairment. They claim that this might be because of the homogeneity of audit quality provided to the largest UK companies. However, these results might not be valid as 97% of the sample (528 firm-year observations) are reviewed by big 4 auditors, resulting in limited variation in the sample and difficulty in measuring the causality relationship.

Other research considers the moderating effect of audit firm size on the association between goodwill impairment and companies' cost of capital (Iatridis and Senftlechner, 2014) and on the ability of goodwill to predict future cash flows (Waldmann, 2014). Using a sample of all non-financial Austrian companies listed on the Vienna Stock Exchange over the period from 2006 to 2011, Iatridis and Senftlechner (2014) indicate that companies recognising goodwill impairment enjoy a lower cost of capital if they are audited by Big 4 rather than non-Big 4 auditors, reflecting the assurance provided to the market when impairment tests are audited Big 4 firms. On the other hand, using a sample of 510 U.S. firm-year observations that are collected

[25] AbuGhazaleh et al. (2011) restrict his sample to the top 500 UK listed companies that have the largest market capitalisation, resulting in a total of 528 firm-year observations over 2005 and 2006.

in 2010, Waldmann (2014) show a significant positive association between changes in goodwill in 2010 and cash flow only one year ahead (2011), but no empirical evidence is found on the impact that audit quality (measured through audit firm size and auditor independence) might have on the association between goodwill changes and future cash flow (whether one or two years later).

Other studies have explored the effect of audit firm size on the degree of compliance with goodwill impairment disclosures requirements imposed by IFRS. Bepari and Mollik (2015), Carlin et al. (2010), and Carlin and Finch (2015) examine the compliance level of the Australian, Singaporean, Hong Kong-listed companies, respectively. Bepari and Mollik (2015) assess 18 different goodwill impairment disclosures for 911 firm-year observations collected from 2006 to 2009. They outline a significant difference in the goodwill impairment disclosure index measured for Big 4 and non-Big 4 clients, with companies audited by the Big 4 auditors, in total or even for each one of them, showing a significantly higher level of compliance. Furthermore, they argue that audit quality provided by big 4 auditors is not the same and not all Big 4 clients are showing the same compliance level with IFRS disclosure requirement for goodwill impairment testing. This is supported by Carlin and Finch (2015) who use a sample from the largest 500 companies listed in the Hong Kong Stock Exchange in 2007 (the third year transition to IFRS). They report higher audit quality for Big 4 than non-Big 4 auditors, as levels of non-compliance and poor disclosure quality pertaining to goodwill impairment was higher for clients of non-Big 4 than that of Big 4 auditors. Moreover, clients of Deloitte were found to be the best practice disclosure bearing on goodwill impairment testing process. On the other hand, clients of E&Y, KPMG, PWC and other audit firms were evaluated to have substantial variations of practice disclosures relating to method employed, CGU aggregation and discount rates and growth rates. This indicates that the quality of an audit among Big 4 audit firms is not homogeneous as has been accepted before but is subject to variation.

However, based on a sample of 168 companies from 2005 until 2007 and using six analytical measures, Carlin et al., (2010) conclude that companies audited by Big 4 and non-Big 4 failed to even adhere to the basic disclosure requirements. They examine elements including the definition and allocation of cash-generating units (CGUs), and the disclosure of the growth and discount rate used in the calculation of the discounted cash flow while calculating the recoverable amounts to measure the disclosure compliance level according to the FRS 35 goodwill impairments tests disclosure requirements applied on July 2004. Using the same methodology, Carlin et al. (2009) support these results through the examination of 34 companies listed in the FTSE 100 Bursa Malaysia Index in 2006, the first year where IFRS was mandatory adopted, and are audited by a Big 4 auditor. They mention that despite the materiality of goodwill as a percentage to total assets, more than 25% of the sample does not disclose the method they used to calculate the recoverable amount of cash-generating units, with no justification is provided for this lower level of transparency. In contrary to Carlin and Finch (2015), companies audited by PWC show a uniform commitment to the disclosure requirement of the method used to find the recoverable amount, while other companies audited by each of Deloitte, Ernst & Young and KPMG failed to do this (Carlin et al., 2009). This indicates that the level of quality provided by each one of the Big 4 audit firms is not the same across the world.

On the other hand, Laili and Khairi (2013) find no significant differences in audit quality among the Big 3 auditors for a sample of the largest 20 Malaysian listed companies on Bursa Malaysia in 2010 and 2011. They propose that audit quality among the largest audit firms is homogenous, as has so often been assumed in the literature. However, consistent with Carlin et al. (2010, 2009), companies failed to comply with even the basic elements of the standard in relation to goodwill impairment testing.

To sum up this section, analysing research that tests the impact of auditor size on the reporting of goodwill impairment, shows that, in general, Big 4 auditors might improve the reporting of goodwill impairment, but when it comes to the required disclosures related to it under IFRS, it can be concluded that these disclosures are really complicated to be applied in practice, and audit quality (using the auditor brand name or the audit firm size as a proxy), could not succeed to direct companies to strictly follow them (Carlin et al., 2010, 2009; Carlin and Finch, 2015). Furthermore, researchers and practitioners should consider variations in the audit quality provided by Big 4 auditors and review their attitude regarding the classification of auditors into Big 4 vs non-Big 4. Therefore, as proposed by Bepari and Mollik (2015), the inclusion of a separate variable for each one of the Big 4 audit firms in the research of audit quality is important to mitigate this problem and to test the difference in the audit quality among all of them. For that reason, academics have started to examine different issues that might affect auditors' performance and hence audit quality. Accordingly, other audit quality proxies are presented in section 2.3.2.

2.2.2.2 Auditor independence

Carcello et al. (2020) investigate the effect of non-audit fees as a proxy for auditor independence on the likelihood, magnitude, and timeliness of goodwill impairment for a U.S. sample of companies that are more likely to recognise goodwill impairment over the period from 2003 to 2012. By focusing on companies that have goodwill larger than 0.5% of revenues, this paper eliminates the potential that this matter might not include auditor scrutiny due to the materiality issue. By doing this, two research samples are used. The first consists of 3,615 companies that have a book-to-market ratio greater than one, while the second one represents

1,723 companies that have been predicted[26] to record goodwill impairment. Their results demonstrate that non-audit fees impair independence as companies are less likely to record goodwill impairments, report them less and take longer to record them when their auditors are more involved in providing non-audit services. Furthermore, results are more significantly negative when the sample is limited to large companies (companies with a market value of equity greater than the median), implying that non-audit fees have a negative effect on auditor independence for those clients who are more important to the auditor.

2.2.2.3 Auditor industry specialisation and auditor tenure

Focusing on auditor industry specialisation and auditor tenure, Ghosh and Wang (2016) examine the impact of audit quality on the likelihood of goodwill impairment for a large sample of U.S. companies starting from 2000 to 2013. Findings highlight more recurring goodwill impairments when auditors' tenure is higher and when they are specialised in the client business[27]. This supports the argument that client and industry-specific knowledge improve auditor understanding of the client business, leading to better audit quality for goodwill impairments. According to them, this is reflected in a stronger significant negative market reaction to goodwill impairment in the case of higher audit quality. Following the signalling theory, this can be explained as the market reacts negatively to goodwill impairment news (as a reflection of lower future cash flow) because of the trust they allocate in case of higher tenure and more specialised auditors reviewing goodwill impairment tests.

In the same vein, Chen et al. (2015) present the effect of monitoring tools, such as auditor industry specialisation; and institutional ownership (reflects the percentage of shares owned by

[26] "The prediction-based sample is obtained using an approach similar in spirit to Shu's (2000) auditor mismatch technique whereby we use estimated probabilities to identify observations that "should have" received treatment." (Carcello et al., 2020, p. 204)

[27] However, this paper is not running the model to companies that are more likely to report impairment. Therefore, the derived causality might be affected by this noisy relationship.

institutions), on the market participants decisions following the reporting of goodwill impairment using a sample of 568 U.S. firm-quarters for 383 companies that announced goodwill impairment charges during the period 2003–2007. Results demonstrate that auditor industry specialisation and institutional ownership reduce the negative effect of goodwill impairment on analysts' forecasts decisions. Goodwill impairments are found to be positively (negatively) associated with analysts' forecast dispersion (forecast accuracy), due to the uncertainty adjacent to them. However, more specialised auditors and greater institutional ownership decrease this uncertainty and mitigate the negative effect of goodwill impairments on analyst forecast dispersion.

2.2.2.4 Joint audit

Examining a different proxy for audit quality, Lobo et al. (2017) investigate the effect of joint audit on recorded goodwill impairments and their related disclosures using a sample of 551 nonfinancial firm-year observations drawn from the SBF 250 index in France covering the period from 2006 to 2009. After limiting the research sample to companies with low-performance indicators and are more likely to record goodwill impairment[28], they demonstrate that a joint audit with a pair of Big 4–non-Big 4 team (BS) helps to control the management from manipulating goodwill impairment than the one done by a pair of Big 4–Big 4 team (BB). Empirical results show that BS's clients are more likely and are recording larger amounts of goodwill impairment than clients of BB pair. Furthermore, related impairment disclosures are found to be better for BS pair than BB pair, suggesting lower transparency for companies audited by a BB pair. They conclude (pp. 148-149):

> "One possible explanation is better coordination among the auditors in the BS pair as it is easier to develop hierarchy and the two auditors are not direct

[28] By doing this, they try to figure out a clear causality by assuming that higher audit quality provided to those companies should result in high likelihood and larger amounts of goodwill impairment.

> competitors. Another possible reason is that a Big 4 auditor, when paired with a non- Big 4 auditor, has stronger incentives to deliver better audit quality because it may face greater litigation exposure and more severe client losses in case of an audit failure".

To sum up, prior studies highlight the monitoring role played by auditors in restraining the management from opportunistically using the discretion involved in the impairment test. Considering all the proxied used in the literature to capture different aspects of audit quality, it can be concluded that audit firm size, auditor industry specialisation and experience, auditor tenure, auditor independence, and the mix of joint audit pair significantly affect recognised goodwill impairment. However, it is important to consider the possibility that, in some instances, auditors might not help in improving the reporting of goodwill impairment due to the management's use of cash flow increasing real activities management that auditors cannot prevent. The following section presents studies that examine the value relevance of goodwill impairment.

2.3 Value relevance of goodwill impairment

Providing equity investors with relevant information is one of the major objectives of financial reporting. Therefore, value-relevance studies are considered to be part of market-based accounting research that investigates the relationship between financial accounting information and capital markets to empirically examine whether or not this objective is met. This line of research is generally motivated by giving implications that help standard setters in structuring their thinking about particular policy issues and evaluating alternative accounting methods (Amel-Zadeh et al., 2013; Barth et al., 2000, 2001). This is to produce decision-useful accounting information for investors and other stakeholders.

The focus of value relevance studies is not on how accounting information is used to estimate firm value. Instead, they help to enrich our knowledge regarding the relevance and reliability

of accounting amounts by assessing how well particular accounting amounts reflect information that is used by equity investors in valuing the company's equity (Barth et al., 2001; Beaver, 2002; Beisland, 2009; Kothari, 2001; Lev and Ohlson, 1982).

According to Barth et al. (2001), value relevance is defined in the extant literature as the association between accounting amounts and security market values. Thus, a set of accounting variables is considered to be 'value relevant,' i.e., significantly related to a security-based dependent variable, if it provides investors with information that is measured reliably enough to be reflected in the share price, and can directly be used in valuing the company (Beaver, 2002). As explained by Holthausen and Watts (2001), this represents the first theory to draw inference on the value relevance of accounting information (direct valuation theory). Furthermore, accounting information could be considered to be value relevant if it contains information that assists in predicting these variables, which is identified by Holthausen and Watts (2001) as inputs-to-equity valuation theory. Therefore, value-relevance studies are not only limited to studies testing the association between accounting numbers and stock prices but also include other studies that examine variables used for valuation, e.g. future earnings, accruals or cash flows (Francis and Schipper, 1999).

Accordingly, value relevance studies can be broadly classified into information content studies and association studies. Information content studies use short window event studies to investigate whether or not the announcement of an accounting number adds new information to investors. They are interested in how fast the market reacts to new information, and therefore they analyse stock price reactions over short periods of time, usually a day or two surrounding specific announcement dates. This line of research considers accounting numbers to be value relevant if they reveal new information to the market that is capable of changing investors' beliefs and shows movements in stock market prices (Lev, 1989). On the other hand, association studies are not mainly conducted to examine the timeless and market reaction to

accounting numbers. Rather, they examine the long term relationships with stock prices (returns), usually from three or four months to several years, to observe whether accounting numbers capture and summarise useful information that explains the firm value, regardless of whether or not this information is new (Alciatore et al., 1998; Hitz, 2007).

According to Holthausen and Watts (2001), association studies can be categorized into relative association studies and incremental association studies. Relative association studies test the relationship between stock market prices and different accounting numbers and recognise the accounting number that yields the greater regression R2 to be value relevant, where incremental association studies consider a specific accounting number to be value relevant and useful in explaining stock market prices (over long windows), given other variables in the research model, if it has an estimated regression coefficient that shows the expected direction and significantly different from zero.

Similarly, prior research on the value relevance of asset write-offs is categorized by Alciatore et al. (1998) into information content studies that examine the short term market reaction around the announcement of these write-offs, and association studies that examine the long term association between write-offs and stock prices. In goodwill related studies, the information content approach was mainly used to examine whether managers use the impairment-only approach to convey timely and useful information to investors. This is to examine the impact of the change in the accounting treatment of goodwill from amortization to impairment on the value relevance and information content of this economically significant accounting choice. On the other hand, long term association studies were mainly conducted to assess the extent to which stock market participants consider the goodwill balance and its related impairment relevant while evaluating the firm value.

Figure 2 summarises some aspects of the value relevance studies that relate to goodwill. They are classified into three main strands: the first is concerned with examining the value relevance of goodwill following its initial recognition; the second and the most common one investigates the value relevance of subsequent measurements of goodwill, and the last one interrogates the value relevance of goodwill related company disclosures. As the second purpose of this thesis is to examine the value relevance of goodwill impairment and related auditor's disclosures after the implementation of the EAR, more attention is given to studies that investigate the value relevance of goodwill's subsequent measurements (the impairment-only approach, in particular)[29]. Furthermore, a broader range of studies is reviewed to investigate issues similar to goodwill impairment (e.g. assets impairments), as some conclusions from them could be relevant and are often used in goodwill-centred research.

Moreover, there are various participants in the capital markets: shareholders, lenders, and financial intermediaries. However, for the purpose of this thesis, literature review primarily focuses on equity holders (shareholders) and their valuation to goodwill impairments.

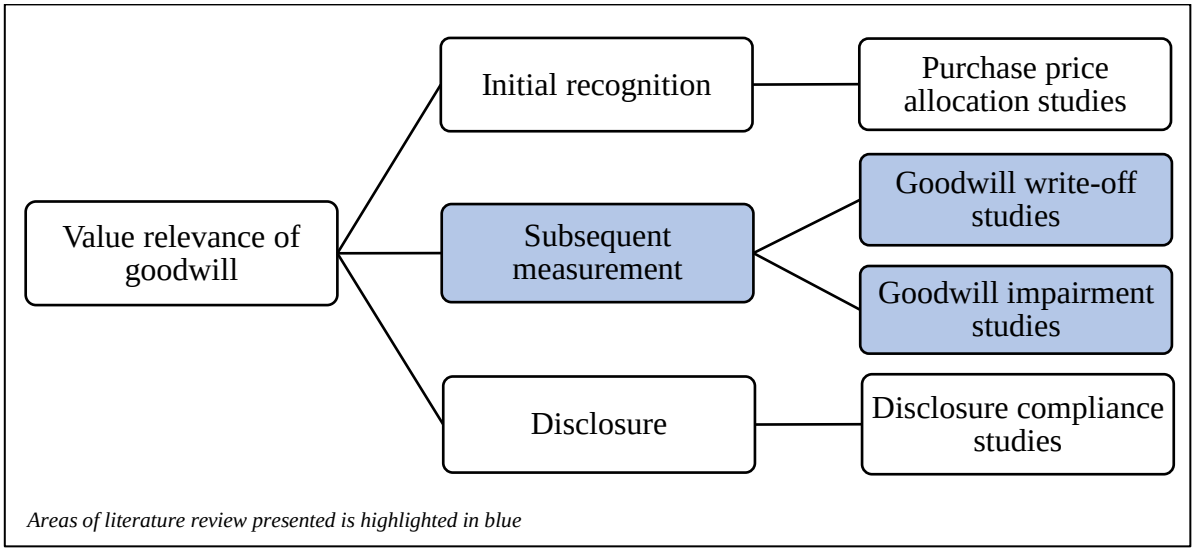


Figure 2-2 Studies on the value relevance of goodwill

[29] Section 2.3.1 start by a brief explanation of studies that examine the value relevance of goodwill as an asset, as some conclusions from them are used by studies that test and examine the value relevance of goodwill impairment.

Accordingly, section 2.3.1 starts with a brief presentation of studies that investigate the market valuation of goodwill as an asset. Then, studies that explore the value relevance of goodwill' subsequent measurement are presented in section 2.3.2.

2.3.1 Market valuation of goodwill

The early set of studies that examine the value relevance of goodwill aims to test whether goodwill is a value-relevant balance sheet item that incorporates future benefits and is decision-useful to users of financial statements, hence should be recorded as an asset.

Amir et al. (1993) and Chauvin and Hirschey (1994) are not primarily focusing on goodwill. However, they are among the first to report findings that support the value relevance of goodwill. Jennings et al. (1996) is considered to be one of the earliest studies that focus on goodwill to examine its association with stock prices using data from 259 U.S. companies for the years 1982 to 1988. Their findings show that purchased goodwill is positively associated with equity value with coefficient estimates that are significantly larger than the coefficients of other assets included in the model. Furthermore, goodwill amortization is found to have a week negative association with equity value for a cross-section of companies. This indicates that goodwill is valued as an asset by the market with weak evidence in favour of goodwill as a wasting asset[30]. Similarly, McCarthy and Schneider (1995) investigate the value relevance of purchased goodwill using data from U.S. companies from 1988 to 1992 and report similar results. Henning et al. (2000) extend the work done by prior studies by investigating the value relevance of goodwill components. They conclude that the components of goodwill are valued differently by investors, with positive value allocated to the portion of goodwill that captures the expected synergies from acquisitions, and negative value allocated to the portion of

[30] Jennings et al. (1996) defined goodwill as a wasting asset, if purchased goodwill has a limited life span and declines in value over time, hence requires to be systematically amortised over a period of time.

goodwill that captures acquisition overpayment. These findings are further supported by other studies examined in other countries like Australia (e.g. Bugeja and Gallery, 2006; Dahmash et al., 2009; Ritter and Wells, 2006), and the UK (e.g. Amel-Zadeh et al., 2013; Al Jifri and Citron, 2009).

Furthermore, using a sample of 136 companies that recorded an increase in their goodwill from acquisitions between 1995 to 1999, Bugeja and Gallery, (2006) examine the change in the value relevance of acquired goodwill over the years. Results show that newly acquired goodwill has information content, with the firm value being positively associated with purchased goodwill up to three years from the acquisition date. The authors conclude that older goodwill might not be considered by investors as an asset stating that "the purchase price paid in corporate acquisitions does not represent unidentified future economic benefits, or that any benefits purchased are quickly consumed. Alternatively, the benefits of acquisitions are quickly incorporated into the normal performance of the company and, hence, are captured by the net income variable in our regression model" (Bugeja and Gallery, 2006, p. 533). These results are affirmed by the findings of Amel-Zadeh et al. (2013) that report deterioration in the value relevance of goodwill in years subsequent to the year of purchase, for a sample that consists of 507 non-financial companies listed on the London Stock Exchange between 1997 and 2011.

Moreover, Al Jifri and Citron (2009) provide further evidence on the value relevance of goodwill through a comparison between the period before the implementation of FRS 10, where goodwill was disclosed in the notes, and the period after the FRS 10, where goodwill had to be capitalised as an asset and amortised over 20 years, using a sample of 243 non-financial UK companies. This is to examine whether recognised, and disclosed goodwill numbers carry different information content. Both recognised and disclosed goodwill are found to be positively associated with companies' market value. However, for non-R&D companies, findings show recognised goodwill to provide more explanatory power than the disclosed one

in explaining the company market value. They refer this back to the possibility that pre-FRS 10 disclosed goodwill is older than the recognised goodwill, and following Bugeja and Gallery, (2006) and Amel-Zadeh et al. (2013), it might have lost some of its value relevance.

To sum up, prior studies suggest that recording goodwill provides value-relevant information, hence should be capitalised in the balance sheet. Subsequent studies on the value relevance of goodwill analyses whether it has changed following the adoption of the impairment-only approach of SFAS 142 and IAS 36. Hence, they indirectly test for the value relevance of amortization versus impairment of goodwill. Therefore, these studies are presented subsequently in their relevant subsections.

2.3.2 Market valuation of goodwill write-offs

This section presents studies that examine the value relevance of subsequent goodwill measurement. Before reviewing studies that investigate the change in the value relevance of goodwill following the implementation of the impairment-only approach in section 2.3.2.2, section 2.3.2.1 starts by a quick survey of prior studies on the market valuation of goodwill amortization (before the impairment-only approach). This helps to understand whether goodwill amortization used to provide relevant information about goodwill, or it was just an arbitrary allocation that does not provide useful information to the market, and hence a change in the way of measuring goodwill was required.

2.3.2.1 Before the impairment-only approach

Earlier studies on the market valuation of goodwill amortization (mainly U.S. studies) examine whether the systematic reduction of the goodwill balance with a fixed rate over certain periods of time provides useful information to market participants about changes in the future cash flows. Weak evidence is found by Jennings et al. (1996) on the association between equity market value and the recorded amounts of goodwill amortization, suggesting that goodwill was

declining on average, but not at the same rate reflected in the average amortization schedule. In a subsequent study, Jennings et al. (2001) test the value relevance of earnings before and after the elimination of goodwill amortization. They conclude that goodwill amortization "simply adds noise" and "eliminating it from the computation of net income will not reduce its usefulness to investors". Moehrle et al. (2001) come to similar conclusions about the ability of earnings before amortization to explain stock returns, suggesting that goodwill amortization life is not making a difference as the same information may be signalled by earnings before amortization. Henning et al. (2000) support these results and conclude that equity market values the components of goodwill amortization differently, with negative value allocated to the portion of goodwill amortization of the residual overpayment component of goodwill, but no value allocated to the portion of goodwill amortization related to the expected synergies from acquisitions. They conclude that amortization does not adequately capture the depletion of goodwill economic value.

On the other hand, Henning and Shaw (2003) argued that the choice of goodwill amortization life could convey useful information to the investors about acquisition success, in terms of post-acquisition earnings levels and future stock performance. They find the chosen amortization life reliably predicts companies' future growth, expected earnings, and future stock performance. The literature provided so far uses a sample from the U.S. markets, in which goodwill was required to be amortised over a maximum period of 40 years before the implementation of the impairment-only approach. Consistent with U.S. evidence, Dahmash et al. (2009) investigated the reliability of goodwill amortization under Australian GAAP, where companies are required to amortize goodwill over a maximum of 20 years. Results show declines in recorded goodwill values are on average greater than the decline in the firm value, suggesting that goodwill is conservatively reported and that the amortization of goodwill is not informative and is not reflected in the company market value.

Overall, despite the choice of the goodwill amortization life is expected to signal useful information to the market about acquisition synergies and expected earnings level (Henning and Shaw, 2003), the majority of prior studies could not find evidence to support the value relevance of goodwill amortization. Considering that the management is left with substantial discretion in the choosing the amortization period, it could be possible that economic consequences, such as violation of debt covenants and political cost (reflected in the company size), play an important role in identifying the period to which goodwill is amortised (Hall, 1993). Hence, selected amortization period in some companies might not properly capture the decline in the economic value of goodwill.

2.3.2.2 After the impairment-only approach

Some of the earlier studies that tested the value relevance of discretionary goodwill write-offs before the implementation of the impairment-only approach provide evidence that predicts increases in the value relevance of goodwill if it is tested annually for impairment rather than being systematically amortised over certain periods of time (e.g., Elliott and Hanna, 1996; Elliott and Shaw, 1988; Francis et al., 1996; Hirschey and Richardson, 2003, 2002; Rees et al., 1996; Strong and Meyer, 1987; Zucca and Campbell, 1992). Churyk (2005) tests the appropriateness of eliminating goodwill amortization and introducing the impairment-only approach using a sample of 244 acquisitions over the period from 1996 to1998. Results show the association between goodwill and market value is inversely affected when the company's market value is lower than its book value, supporting the elimination of goodwill amortization by accounting regulators.

Further studies are implemented to examine the market reaction and the value relevance of goodwill after the impairment-only approach. They can be presented into three groups of studies. The first group examines the effect of the change from amortizing goodwill to only testing it annually for impairment over the transition period (usually 2001 in U.S. and 2005 in

EU). These studies are named "transition period studies" and are presented in section 2.3.2.2.1. Section 2.3.2.2.2 presents the second group of studies that examines the long term effect of this change. They use longer periods of time, usually several years before and after the implementation of goodwill impairment. They are named "pre/post impairment studies". Rather than focusing on differences in the value relevance between former amortization and current goodwill impairment, the third group of studies tests the value relevance of goodwill impairment using one or more years after adoption. Hence, they are named "post impairment studies", and are presented in section 2.3.2.2.3.

2.3.2.2.1 Transition period studies

SFAS 142 allows managers the discretion to recognise goodwill impairment losses immediately following the initial adoption as a change in accounting principle (below-the-line accounting treatment). Under this option, impairment losses capture the cumulative effect of delayed goodwill write-offs related to previous periods (Beatty and Weber, 2006; Chen et al., 2008). Managers could also charge more impairment losses against operating income at the end of the accounting period if further goodwill impairment has taken place during the year.

Earlier studies (e.g., Chen et al., 2008; Segal, 2004; Zang, 2008) examine the initial adoption of SFAS 142 in the U.S. context during the transition period to investigate the market reaction and value relevance of goodwill after the impairment charges[31]. Chen et al. (2008) use a sample of companies reporting goodwill in 2001 to distinguish between the adoption impairment and

[31] As previously stated, the market reaction studies investigate whether recorded goodwill impairment losses are informative and provide private information about the economic loss in the value of goodwill, hence testing the timeliness of the impairment-only approach. If the economic impairment of goodwill was impounded in the market price before its actual recognition in the statement of profit or loss, it could be argued that goodwill impairment losses are not timely reported (Amel-Zadeh et al., 2018). On the other hand, the value relevance studies investigate whether goodwill impairment losses provide value-relevant information (predictive or confirmatory value or both) that is reflected in the firm's stock price (market value), even if goodwill impairment losses were not timely reported (Wersborg et al., 2014).

subsequent year-end impairment. The adoption impairment captures delayed goodwill impairment losses that should have been captured and reflected in prior years returns, whereas year-end impairments should be associated with current year returns, hence could be used to assess the timeliness of goodwill impairments subsequent to SFAS 142. Results show, to some extent, timely reported goodwill impairment charges, providing evidence on the potential benefits of the new standard, consistent with FASB's objectives. In a similar vein, Segal (2004) and Zang (2008) examine the information content of goodwill impairment losses and distinguish between the expected and unexpected goodwill impairment losses. Segal (2004) finds no significant difference in the market reaction to impairments taken under SFAS 121, compared to impairments taken following SFAS 142, where goodwill amortization was still in place. Only unexpected goodwill impairment losses are found to be negatively associated with the stock return, providing evidence on the informational value of unexpected impairment losses to investors and supporting their signalling effect (Segal, 2004; Zang, 2008). Furthermore, Zang (2008) finds this negative relationship to be stronger for highly leveraged companies and analysts revise their earnings forecasts downward in response to unexpected impairment losses.

In a similar environment, Lapointe-Antunes et al. (2009) review the Canadian context. In addition to investigating the timeliness of transitional goodwill impairment losses, Lapointe-Antunes et al. (2009) is one of the first few studies that investigate its overall value relevance through examining their association with the share price. Results show a negative association with cumulative annual returns for the two years preceding the adoption of the impairment-only approach.[32] Consistent with Chen (2008), Lapointe-Antunes et al. (2009) conclude that

[32] Canadian listed companies were also required to embrace the impairment-only approach on financial years starting on or after January 2002 following the introduction of Section 3062. However, unlike SFAS 142 that used the cumulative-effect approach to account for the adoption impairment, Canadian companies were required to account for transitional goodwill impairment losses retroactively.

transitional goodwill impairment losses reflect catch-up adjustments that were already impounded in prices. Furthermore, transitional goodwill impairment losses are found to provide value-relevant information that is negatively associated with the company's share price. This relationship is more pronounced when companies are expected to report an impairment (reliable goodwill impairment losses are reported) and when managers' opportunistic behaviour is controlled by an effective audit committee.

However, findings of the studies presented so far in the U.S. and Canadian context cannot be generalised and need to be interpreted with caution. This is mainly because of the special accounting treatment offered by the U.S. SFAS 142/Canadian section 3062 during the transition year was not offered in the IFRS context. Such treatment could have motivated managers to act opportunistically by impairing large amounts of goodwill treated as an accounting change (below-the-line treatment), allowing them to reduce the likelihood of recognising further year-end goodwill impairment losses that affect the net income from continuing operation (above-the-line treatment) (AbuGhazaleh et al., 2011; Beatty and Weber, 2006; Chen et al., 2008).

Accordingly, further evidence is presented in the IFRS context in countries such as Australia, Spain, Sweden, and the UK after the introduction of the impairment-only approach in 2005. Hamberg et al. (2011) examine a sample of 226 Sweden non-financial companies over a seven-month transition window surrounding the adoption of IFRS 3. They analyse abnormal stock returns of goodwill intensive companies compared to others without capitalised goodwill to understand how investors react to increases in reporting earnings resulting from the abolishment of goodwill amortization. Results show a considerable increase in earnings and high market returns for goodwill intensive companies throughout the transition period. On the other hand, despite making higher abnormal earnings, companies that did not recognise goodwill yield considerably lower abnormal returns. The authors highlight the possibility that

investors focused on ‘bottom-line’ earnings, and hence saw goodwill-intensive companies as more attractive investments when their current earnings increased, regardless of whether this is associated with higher future cash flows.

Using a sample of 599 companies listed on the Australian securities exchange in 2006, Chalmers et al. (2008) examine whether goodwill and other intangible assets provide incrementally usefulness information to investors through testing their association with companies’ market value separately on comparative Australian GAAP and IFRS values. Only IFRS goodwill amounts are found to have incremental positive value relevance compared to their GAAP counterparts. Similarly, Aharony et al. (2010) outline an incremental value relevance of three accounting practices (goodwill; R&D; and asset revaluation) for a research sample that consists of 2298 companies across 14 EU countries during the IFRS transition period. This result is more pronounced in countries where respective national GAAP are substantially different from IFRS.

In a similar vein, using a sample of 72 Spanish companies during the transition year, Martínez and Martínez (2014) examine the value relevance of IFRS adoption through testing related reconciliation adjustments compared to local GAAP. Overall, the association between the market value of equity and both the book value of equity and net income are not found to be statistically different after the IFRS adoption. However, when considering individual reconciliation adjustments, intangible assets, including goodwill, are found to provide incremental value relevance after the IFRS adoption. Further evidence is provided by Horton and Serafeim (2010) who investigate a UK research sample that involves companies listed in the FTSE 350 for the period ending December 2006. Results demonstrate that IFRS goodwill reconciliation adjustments are associated with companies’ share prices calculated five days after the publication of the reconciliation statements. Moreover, they are found to reveal new

information that is associated with stock returns. This supports the notion that IFRS goodwill reconciliation adjustments are deemed to reveal timely value-relevant information.

Generally, the above discussion postulates an improvement in value relevance of goodwill over the IFRS transition period, and this indirectly indicates that the impairment-only approach provides more value-relevant information than the systematic amortization. However, research was stilled required to directly investigate the value relevance of goodwill impairment losses, and their association with the stock price. Consequently, AbuGhazaleh et al. (2012) test the value relevance of goodwill impairment losses recorded through the first year of IFRS 3 adoption for a UK sample that consists of 528 firm-year observations. Following Lapointe-Antunes et al. (2009), AbuGhazaleh et al. (2012) use Ohlson (1995) valuation model and report a significant negative impact of reported goodwill impairment losses on companies' market value. This suggests that investors perceived these impairments as a real reduction in the value of goodwill, supporting the value relevance of goodwill impairment loss after the IFRS adoption.

Overall, prior studies show some consistencies in the value allocated to goodwill and goodwill impairment subsequent to the implementation of the impairment-only approach. The findings of these papers provide evidence consistent with FASB/IASB's objectives in developing the impairment-only standard. Particularly, Goodwill impairment has provided more value-relevant information than the previous systematic amortization. However, the degree of its relevance in the IFRS context might differ between countries, depending on the extent to which the IFRS is far away from the national GAAP (Aharony et al., 2010).

Furthermore, the presented findings so far need careful consideration because they could be biased by the noise surrounding the transition year. In line with the special accounting treatment offered by the U.S. SFAS 142/Canadian section 3062 during the transition year, D'Arcy and Tarca (2018) highlight that IFRS transition year studies might not properly represent other

years because of the IFRS first time adoption effects[33]. Therefore, the next set of studies compare the value relevance and information content of goodwill write-offs over several financial years before and after the adoption of the impairment-only approach to investigate its long term effect.

2.3.2.2.2 Pre/post impairment studies

Starting with studies that examine the information content and timeliness of goodwill impairment losses, Bens et al. (2011) and Li et al. (2011) conduct an event study and examine a long period before and after the adoption of SFAS 142. The two studies cover the same accounting period from 1996 to 2006. Bens et al. (2011) use a sample of 388 firm-year observations with reported goodwill write-offs greater than 5% of lagged assets to ensure the materiality of goodwill write-offs and to focus on companies where the standard had the largest impact. For the full sample, results show a significantly negative stock market reaction to unexpected goodwill write-offs only for big size companies and for companies with a low number of analysts following. These findings imply that goodwill write-offs are less informative to investors in case of low information asymmetry (high analyst following) and when it is costly to effectively implement the impairment tests (small size companies).

Similarly, Li et al. (2011) examine the information content of unexpected impairment loss and how it has changed following the adoption of SFAS 142 using a sample of 1,584 goodwill impairment announcements. Furthermore, they extend the work done by Bens et al. (2011) through investigating the nature of information conveyed. This is done by examining the association between goodwill impairment losses and future company performance. Moreover,

[33] In the first year of IFRS adoption, companies were given the option to keep previous mergers or goodwill written-off from reserves and do not adjust goodwill recognised though the purchase price allocation on acquisition. companies were also allowed, should they wish to do so, to restate all business combinations starting from a date they select (IFRS 1). Thus, the transition effect could be quite small and misleading when studying the transition period only.

Li et al. (2011) extend the research sample used by Bens et al. (2011) by considering companies with potentially impaired goodwill that did not recognise any impairment losses. Overall, findings show a significant negative abnormal return to the amount of unexpected goodwill impairment losses across the whole sample period. In exploring the nature of information conveyed by the impairment loss, analysts were found to revise their earnings forecasts downwards, and a negative association was found between goodwill impairment losses and future sales and operating profits growth throughout the following two years.

However, inconsistent with the previous evidence provided on the timeliness of goodwill impairment losses during the transition period, Bens et al. (2011) and Li et al. (2011) document a reduction in the information content and a negative market reaction was found to be less pronounced after the adoption of SFAS 142. Bens et al. (2011) argue that this could be due to the fact that the impairment-only approach resulted in more frequent and smaller amounts of goodwill impairment losses. Li et al. (2011, p. 772) conclude that "some firms with potentially impaired goodwill may have used their accounting discretion to postpone the recognition of an impairment loss in the post-period". In line with Bens et al. (2011) and Li et al. (2011), Li and Sloan (2017) find goodwill impairment losses to be less timely and hence are more predictable after the implementation of the SFAS 142. They explain these results as managers try to avoid impairing goodwill, so they do not signal to the market that associated business acquisitions have been overpaid. They also find stock prices are positively associated with inflated goodwill balances that arise from avoiding goodwill impairments. They presume that investors do not fully anticipate the untimely nature of goodwill impairments.

Looking at different market-based measure, Kimbro and Xu (2016) examine idiosyncratic return volatility (IVOL) to investigate the information content of the impairment-only approach. Inconsistent with the evidence provided so far, results show goodwill impairment losses post SFAS 142 to be associated with less IVOL anomaly, compared to the pre-SFAS

142 period where IVOL is high with a very strong anomaly. They conclude that goodwill tested for impairment captures the future economic benefits and conveys better information that shall reduce company risk than goodwill reported under the amortization era.

Turning now to the value relevance studies, Ahmed and Guler (2007) and Oliveira et al. (2010) find that the relationship between goodwill and share prices becomes much stronger in the U.S. and Portugal, with a significantly larger coefficient following the adoption of the SFAS 142 and IFRS 3, respectively. This is consistent with the evidence presented earlier in the transition period studies that attribute the improvement in the value relevance of goodwill to the adoption of the impairment-only approach.

However, this conclusion is not supported by Sahut et al. (2011) who study 1855 firm-year observations collected from 10 European countries (Belgium, Finland, France, Ireland, Italy, Luxembourg, Norway, Spain, Sweden, and the UK) across the period from 2002 to 2007. Except for Italy and Finland, goodwill is found to be less positively associated with the share price under the IFRS compared to the local GAAP. Ji and Lu (2014) jump to a similar conclusion after studying an Australian sample that consists of 6,650 firm-year observations over the period from 2001 to 2009. The inconsistency in the results of different EU countries can be justified by the argument presented by Morricone et al. (2009)**.** They state that "in a reporting environment characterized by a weak corporate governance system and low financial transparency ….., the introduction of the impairment test of goodwill and the subsequent higher discretion in goodwill valuation might not convey more useful information due to the potential for discretionary behaviour" (p. 25).

Moving on to consider studies that directly investigate the value relevance of goodwill impairment losses. Based on Ohlson (1995) model, Amel-Zadeh et al. (2018) and Hamberg and Beisland (2014) examine the association between reported goodwill impairment losses and the company's market value before and after the implementation of the impairment-only

approach. Amel-Zadeh et al. (2018) test a UK sample that involves FTSE all shares non-financial companies listed on the London Stock Exchange covering the period from 1998 to 2011, while Hamberg and Beisland (2014) investigate all Sweden companies listed on the Nasdaq Stockholm Stock Exchange from 2001 to 2010. Consistent with the evidence presented earlier, the two studies document an insignificant coefficient of goodwill impairment write-offs after the adoption of the impairment-only approach. Amel-Zadeh et al. (2018) conclude that investors deem to trust impairment losses reported under the UK GAAP than the ones reported under the IFRS.

Other studies (e.g., Chalmers et al., 2012, 2011; Lee, 2011) provide evidence on the value relevance of goodwill impairment losses using the inputs-to-equity valuation method[34]. Chalmers et al. (2011) document a strong and significant negative relationship between companies' investment opportunities (IOS) and goodwill impairment losses. In a later study, Chalmers et al. (2012) find that the magnitude and the dispersion of analyst forecast errors have become negatively associated with recorded intangibles assets in general and goodwill balances in particular following to IFRS adoption. In a similar vein, Lee (2011) notices an improvement in the ability of goodwill to predict future cash flows since the adoption of the impairment-only approach. The findings of these studies emphasise that goodwill become more useful for investors, supporting the standard setters' argument that the impairment regime better reflects the underlying economic value of goodwill than systematic amortization.

To sum up, similar to the transitional period studies, this pre/post impairment studies also investigate the information content and the value relevance of the impairment-only approach, compared to the previous combined amortization and impairment method. Although pre/post impairment studies include some observations that were examined in the transition period

[34] Please see section 3.1 for more details about this method of valuation.

studies and goodwill is still reported to provide value-relevant information, the evidence about the information content and value relevance of goodwill impairment in the pre/post impairment studies is very mixed.

A quick comparison between the research findings of the two sets of studies highlights changes in management strategic behaviour (D'Arcy and Tarca, 2018), consistent with prior studies (e.g., Beatty and Weber, 2006; Hayn and Hughes, 2006; Li and Sloan, 2017; Li et al., 2011; Ramanna and Watts, 2012) that emphasise managers' misuse of the discretion allowed in the SFAS 142/IFRS 3 to accelerate/delay the recognition of the goodwill impairment losses. Accordingly, the management-opportunistic motivation rather than the signalling motivation could be the main driver that affects the association between goodwill impairment losses and stock prices/returns (Hamberg and Beisland, 2014). This opportunistic behaviour is supplemented by differences between countries in the level of corporate governance, public enforcement and institutional factors (D'Arcy and Tarca, 2018; Glaum et al., 2018; Morricone et al., 2009).

Another reason why the transitional period studies, as well as the pre/post impairment studies, do not provide conclusive evidence on the effect of the impairment-only approach could be because of the potential selection bias problem. According to Boennen and Glaum (2014), the comparison between the value relevance of goodwill in the periods before and after the adoption of the impairment-only approach need to be interpreted carefully. Results could be biased by the fact that in the years before the impairment-only approach, some U.S. companies often opted for the pooling of interest method and hence recognise no goodwill, while in many European countries companies chose to write off goodwill immediately against reserves. The following section provides further evidence by presenting studies that focus only on years following the adoption.

2.3.2.2.3 Post impairment studies

The studies presented in this section provide further insight into the information content and value relevance of goodwill impairment losses, focusing on the period following the implementation of the impairment-only approach. They attempt to investigate factors that affect how market participants perceive the information conveyed through recorded goodwill impairment. This helps to explain the mixed evidence reported in the studies presented in the previous two sections.

Starting with market reaction studies, Cheng et al. (2017) investigate the long term effect of goodwill impairment losses using a research sample that covers the period from 2002 to 2011. Despite finding a negative abnormal return in the short term (two days surrounding the earnings announcement date), investors are found to perceive goodwill impairment as positive news in the long term (using 125 or 250 trading days after the announcement date). This positive abnormal return lasts for one year post the impairment event and is greater than the negative abnormal return spotted over the two days window. To investigate whether these positive returns are justified by improved company performance or due to earnings management, they examine the company's post-impairment operating and overall performance. Although significant improvement is noticed in the post-impairment overall performance, no such improvement is found in the corresponding operating performance. They explain this as managers exercise big bath earnings management by charging all foreseeable non-recurring expenses in the year of the impairment. While this causes a negative impact on earnings in the short term, it results in a reduction in the future nonrecurring costs, hence, eliminating potential negative earnings surprises and showing positive performance in the future. Cheng et al. (2017, p. 328) argue that "rational investors can anticipate the increase in stock prices post event and trade on the goodwill impairment announcement".

In a similar vein, Knauer and Wöhrmann (2015) examine the market reaction to 564 goodwill impairment losses reported in 20 EU countries and the U.S. from 2005 to 2009 to investigate whether differences between countries in the level of legal protection system would affect the information content perceived by investors surrounding the announcements of unexpected goodwill impairment losses. They also explore whether management's explanations of the impairment decision and the verifiability of these explanations would affect the reliability of goodwill impairment losses. Generally, results show a significant negative market reaction to the announcements of unexpected goodwill impairment losses. However, civil law countries with a low level of legal protection experience negative cumulative abnormal return compared to common law countries with a high level of legal protection. This implies that information perceived by investors is associated with the likelihood of opportunistic discretion exercised by the management. They argue that "If management discretion is high because of a low level of legal protection, investors take into account that the true goodwill impairment might be higher than the announced write-off and react more negatively" (p. 26). This suggests that legal protection plays an important role in constraining managers' opportunistic behaviour, resulting in more reliable goodwill impairment losses. Furthermore, the management disclosure of verifiable explanations for the decision to record goodwill impairment losses is found to lessen the negative impact of recognising goodwill impairment losses.

On the other hand, after controlling for the endogeneity of goodwill impairment choice, Jarva (2014) could not find a significant difference in three different economic consequences measures (future stock returns, cost of equity, and future earnings' analyst forecast accuracy) between companies that recorded goodwill impairment (impairment group) and others that did not (control group). They analyse a U.S. sample that consists of 280 material goodwill impairment losses post the implementation of the impairment-only approach over the period from 2002 to 2005. For a high proportion of sample companies, results show goodwill

impairment losses are not significantly associated with poor economic performance. This implies that goodwill impairment losses do not signal timely negative information to market participants because managers use the discretion afforded by SFAS 142 to avoid timely write-off.

With regards to the value relevance studies, Xu et al. (2011) analyse 431 firm-year observations over the period from 2003 to 2006, of which 258 observations are collected for profitable companies, compared to 173 observations of non-profitable ones. Results highlight goodwill impairment losses to provide value-relevant information only for the profitable ones. They conclude that companies' financial health plays an important role in the information conveyed to investors. This result supports the argument that valuations for profitable companies are different from those who reported loss (Collins et al., 1997).

Furthermore, Baboukardos and Rimmel (2014) highlight the importance of companies' disclosures in providing the relevant information that investors need to better understand the reported goodwill figure when predicting future performance. The study findings show goodwill balance of 76 Greek companies to provide value-relevant information that is positively associated with their share price post the IFRS adoption and the implementation of the impairment-only approach. This relationship is more pronounced with higher levels of compliance with the IFRS disclosure requirements.

Laghi et al. (2013) examine a research sample that is collected from six EU countries (France, Germany, Italy, Portugal, Spain, and the UK) over the period from 2008 to 2011. Empirical results for the whole sample show a significant negative association between goodwill impairment losses and companies' stock price. However, segregating the sample into countries and years show significant results only for the two years of the financial crisis, and for the subsample of the French companies over the whole period of study. The authors conclude that the value relevance of goodwill impairment losses is more pronounced during periods of

negative stress (e.g., financial crisis) and is also influenced by country-specific factors (e.g., default risk).

In addition to the stock market-based evidence, other studies examine the extent to which goodwill impairment losses are associated with realised future cash flows (Jarva, 2009) and analysts' forecast accuracy and dispersion (Chen et al., 2015). Jarva (2009) finds that reported goodwill impairment losses have significant predictive ability for future cash flows, while Chen et al. (2015) find a significant negative (positive) association between goodwill impairment losses and analysts' forecasts accuracy (dispersion). However, auditor specialisation and institutional ownership are found to moderate the negative effect of goodwill impairment on analyst forecast dispersion.

Overall, post impairment studies conclude that companies' disclosure level and financial health, country-related characteristics, the reliability of reported goodwill impairment losses, and how managers exploit the discretion underpinning the impairment-only approach help to explain the mixed evidence presented in prior studies about the information content and value relevance of goodwill impairment losses.

2.4 Extended audit report

Given the auditing regulatory change established by the FRC in the UK in 2013 and similar initiatives undertaken by the U.S. and international regulators to adopt EAR, a few studies have started to investigate the determinants and consequences of KAMs/CAMs auditor disclosure. For the purpose of this thesis, only studies that examine the consequences will be presented, and they can be summarised in three main domains. Section 2.4.1 presents studies that explore users' perception of auditor liability after EAR adoption. Then, section 2.4.2 presents studies that examine the communicative value of EAR through investigating its impact on investors

behaviour. Finally, section 2.4.3 presents studies that look at the impact of EAR on managers' behaviour and audit outcomes.

2.4.1 Impact on auditor liability

There has been a discussion while developing the new reporting requirement in the U.S. on how the auditor legal liability will be affected. The main concern was that auditors' extended disclosure could increase their liability when they fail to detect misstatements. Due to the novelty of this regulatory change, these studies are experimental and are conducted to different types of participants (including MBA students, financial analysts, attorneys, law students and lay jurors). The results of these studies show different impacts on auditors' liability. Experiments that document reduced auditor liability (e.g., Brasel et al., 2016; Brown et al., 2015; Kachelmeier et al., 2020) argue that the disclosure of CAMs should forewarn users of the financial statements about the possibility of future misstatements. Jurors are less likely to find auditors negligent when they disclose CAMs that are related to detected misstatements, resulting in a reduction in auditor liability judgments.

In contrast, other studies highlight situations where the disclosure of CAMs could potentially result in an increase in the auditor's liability. First, when the concept of reasonable assurance is not explained in the audit report elevating the juror's expectations from the auditor (Backof et al., 2017). Second, when misstatements pertain to judgments and estimates in which the auditor had expressed related concerns (Gimbar et al., 2016). Backof et al. (2017) argued that when auditors disclose the additional procedures they performed in response to the risks associated with the CAMs, the juror's assessment of the foreseeability of the misstatements is likely to increase, resulting in an increase in auditor liability assessments.

2.4.2 Impact on investors' behaviour

This set of studies investigates the communicative value of EAR. They examine how auditors' disclosures could affect investors' investment decisions and their perception and confidence in related financial statement figures. While most of the research conducted in this area is experimental (e.g., Boolaky and Quick, 2016; Carver and Trinkle, 2017; Christensen et al., 2014; Kachelmeier et al., 2020; Köhler et al., 2020; Sirois et al., 2018), there is also some initial evidence from archival studies (e.g., Bédard et al., 2019; Almulla and Bradbury, 2018; Fayad Altawalbeh and Alhajaya, 2019; Gutierrez et al., 2018; Lennox et al., 2019).

Regarding the experimental studies, Christensen et al. (2014) outlined that investors react negatively and change their investment decisions when they receive a CAMs section in the audit report, compared to receiving the standard audit report, even if the same information provided in the CAMs section is present in the management's footnotes. Furthermore, they found the level of details provided by auditors about how they addressed this CAMs moderates the negative impact that related CAMs has on investors' decisions, supporting the argument that investors trust auditors' disclosures. Consistent with these results, Sirois et al. (2018) documented that investors pay more attention to management disclosures that have related KAMs in the auditor's report. The findings of the two studies are consistent with the information processing theory, suggesting that while footnotes are often long and analytical, CAMs/KAMs paragraphs are more concise and straightforward, and hence bring investors' attention. However, according to Sirois et al. (2018), this result is negatively affected by the number of KAMs disclosed, as with more KAMs disclosed investors are found to pay less attention to both KAMs and non-KAMs related financial statement disclosures. Authors highlighted this could be due to participants' information acquisition capabilities. Köhler et al. (2020) conducted their study to investigate how KAMs impact the decision-making process of

both professional and non-professional investors. They conclude that professional investors' assessment of the economic situation of the company depends on the tendency of the information conveyed in the KAMs section; whether KAMs section conveys positive or negative information. On the other hand, they found non-professional investors having some difficulties in processing the information conveyed within the KAMs section, causing these disclosures to be non-informative.

Inconsistent with prior evidence, Boolaky and Quick (2016) and Carver and Trinkle (2017) could not find evidence to support the communicative value of EAR. Boolaky and Quick (2016) conducted an experiment on 105 bank directors in Germany and concluded that the disclosure of KAMs neither has a significant impact on the quality of the financial statements nor bank directors' lending decisions. Carver and Trinkle (2017) found that non-professional investors perceive audit reports to be less readable upon the disclosure of the CAMs paragraphs and their evaluation judgments are not affected by these disclosures.

Bédard et al. (2019) is among the earliest studies to conduct an archival study investigating the economic consequences of auditor's disclosure of JOAs that has been required in France since 2003. This kind of disclosure is similar to the KAMs/CAMs disclosure since auditors provide a summary of their assessment, the procedures they followed, and the conclusions they developed that help to provide a better understanding of the financial reporting quality. This study benefits from examining a long period of study from 2002 to 2011. Results neither reveal a significant market reaction (captured by abnormal trading volume and abnormal returns) to the JOAs disclosed in the first year of adoption nor to the new JOAs reported in subsequent years. The authors concluded that JOAs are not informative since the information provided in JOAs could have already been known or expected by the financial market.

Similarly, Gutierrez et al. (2018) investigated the impact of RMMs auditor's disclosures on companies' absolute abnormal returns and abnormal trading volume using a UK research sample that covers two years before and after the EAR adoption in 2013. They extend Bédard et al.' (2019) work by also assessing the information content of different auditor's disclosure characteristics such as the number of RMMs disclosed and the extent of related disclosure (Length). Consistent with the findings of Bédard et al. (2019), this study found no evidence that EAR is significantly associated with a short term incremental market reaction. They claimed that this could be driven by some reasons such as: "(a) an auditor's disclosures may be pre-empted by other information; (b) the market may believe that an auditor adequately addresses the disclosed risks, previously known to the audit committee; or (c) the market may not understand the implications of the auditor's disclosure" (P. 1546).

Lennox et al. (2019) complement the work done by Bédard et al. (2019) and Gutierrez et al. (2018) through investigating why EAR's disclosures do not provide incrementally useful information to investors. Findings show most of the RMMs disclosed by auditors had already been disclosed by the management in prior earnings announcements, conference calls, or last year's annual report. Hence, the short-window market reactions do not capture new conveyed information. On the other hand, testing the value relevance of these disclosures using the price model indicate that RMM disclosures capture value-relevant risks that negatively moderate the positive relationship between firm's earnings per share as well as net assets per share and its market price. Finally, 75% of the RMMs reported in a certain year are found to be repeated again in the subsequent year, explaining why prior studies do not find RMMs incrementally informative over a longer window. Likewise, Almulla and Bradbury (2018) tested the value relevance of KAMs disclosures using a sample of 132 New Zealand companies in their first year of EAR adoption. Consistent with Lennox et al. (2019), they support the value relevance

of KAMs and conclude that the number of KAMs disclosed is consistent with remarked investors' uncertainty.

Inconsistent with prior studies, Fayad Altawalbeh and Alhajaya (2019) found the disclosure of KAMs to be informative for a sample of 128 companies listed in the Amman Stock Exchange (ASE). Their findings indicate that investors decisions captured by the abnormal trading volumes are significantly affected by the auditor disclosure of KAMs. This could be explained as auditor's disclosures could convey new information that has incremental value to investors in emerging markets with a weak form of market efficiency, such as Jordan.

2.4.3 Impact on auditors' and managers' behaviour

Studies that focus on auditor's behaviour examine the potential effect of the new reporting regime on the quality and pricing of audit service. Using an experimental case study, Asbahr and Ruhnke (2019) and Ratzinger-Sakel and Theis (2019) examined how KAMs disclosure could affect auditors' judgement performance. They both conducted their experiments on experienced Big4 auditors in Germany using two different case studies that require an accounting estimate. Ratzinger-Sakel and Theis (2019) used a goodwill impairment testing case study, while Asbahr and Ruhnke (2019) used a warranty provision case study. In the two studies, auditors are found to exercise less professional scepticism and accept their clients desired accounting treatment when the accounting estimate is disclosed as KAMs. They concluded that rather than improving the communicative value of the auditor's report, EAR might negatively affect auditor judgment performance due to The Moral Licensing[35].

[35] The Moral Licensing literature argues that disclosure might exacerbate biases, "because information providers are more comfortable providing biases when information recipients have been forewarned about the estimates' potential inaccuracy" (Griffin, 2014, 1173). Griffin (2014) argues that, in an auditing setting, "moral licensing could mean that auditors will be more willing to acquiesce to their clients' desired accounting treatments, believing either that the disclosure provides a suitable defence for not requiring adjustments […], or that disclosure fulfils the auditors' fiduciary duty to ensure that the investing public has been informed" (Griffin, 2014, 1173).

Nevertheless, few archival studies provide initial mixed evidence on the impact of EAR on audit quality, audit fees, and audit delay. Bédard et al. (2019) and Gutierrez et al. (2018) found no impact of the JOAs/RMMs disclosure on audit quality, audit cost, and audit delay. In line with these results, Reid et al. (2019) found no evidence to support significant changes in the audit fees or audit delay surrounding the EAR adoption. However, their findings document significant decreases in both abnormal accruals and the propensity to just meet or beat analyst forecasts in the two years following the EAR adoption, suggesting a reduction in managers opportunistic behaviour and improvement in the financial reporting quality. Furthermore, they examined investors' perception of quality through comparing earnings response coefficients (ERCs) before and after the new reporting regime and notice a higher ERCs over the first two years of implementation. Given these results, they concluded that EAR is associated with a significant improvement in financial reporting quality without this being reflected in higher audit fees or a long audit delay.

Similarly, Almulla and Bradbury (2018) and Li et al. (2019) examined the reporting change in New Zealand in the first year of adoption and reported mixed results. While Li et al. (2019) found a significant impact of KAMs disclosure on audit quality and audit fees, Almulla and Bradbury (2018) could not provide any evidence to support these results.

Given that both Gutierrez et al. (2018) and Reid et al. (2019) examined the new reporting regime in the UK, and Almulla and Bradbury (2018) and Li et al. (2019) examined the new reporting regime in the New Zealand, their mixed results about the impact of EAR on audit quality and audit fees could be explained in the light of their sensitivity to the calculation of the audit quality proxies and sample years (Bédard et al., 2019; DeFond and Zhang, 2014; Gutierrez et al., 2018; Li et al., 2019).

Moving on to studies that examined whether and how auditors' disclosure affect managers behaviour, Gold et al. (2020) used an experimental case study of goodwill impairment to investigate whether managers' tendency to manipulate earnings is associated with the disclosure of KAMs. Managers are found to feel more accountable and hence are less likely to avoid goodwill impairment and manage earnings when a related KAM is disclosed. This relationship is much stronger when KAMs include firm-specific risk information about the goodwill impairment test. On the other hand, in a different experiment, Cade and Hodge (2014) highlighted the potential unintended negative consequences of extended auditor's disclosures on managers' behaviour. Their findings support the notion that managers become less willing to provide detailed and private information to their auditors about the accounting choices and estimates they made after auditors have been required to disclose and discuss these estimates in their extended reports. This is to avoid sharing details with auditors that, if disclosed, could negatively affect users' perceptions of the firm.

In summary, the above studies provide mixed evidence on the consequences of EAR adoption. Some experimental studies document a potential reduction in the auditor's legal liability, while others find auditors more accountable and liable towards material misstatements, failing to detect whether auditors have disclosed related or unrelated KAMs/CAMs. Experimental studies that examined the information content of these disclosures showed mixed findings because they are employing different experimental designs that are not fully able to capture investor's information environment (Lennox et al., 2019). Furthermore, archival studies could not find strong evidence to support the information content of auditor's disclosure, mainly because auditor's disclosure could have been disclosed by the management in prior earnings announcements, conference calls, or last year annual report. Finally, while experimental studies found auditor's extended disclosure could negatively affect auditor judgment performance due to moral licensing, archival studies provided mixed evidence on its impact on auditors' and

managers' behaviour. The following section summaries the literature review and highlights the research gaps.

2.5 Summary and the research gaps

The first part of this chapter starts by surveying studies the examine the determinants and timeliness of goodwill impairments. This is to investigate whether the decision to recognise goodwill impairment is mainly derived by declines in the economic values of goodwill balance or managers opportunistically using the discretion involved while testing goodwill for impairment to manipulate earnings. Findings of prior studies conclude that declines in the economic values of goodwill balance are not the only drivers for the recognition of goodwill impairment. Different management incentives are found to substantially affect the reporting of goodwill impairment, such as big bath, income smoothing, management change (tenure), leverage (debt covenant restrictions), and earnings-based compensation plans. Rather than signalling private information that provides financial statements that are more informative, managers are found to opportunistically use the discretion involved in the impairment test to accelerate/delay/avoid the recognition of goodwill impairment, depending on whether they are exercising income-increasing or income-decreasing strategies. This negatively affects the timeliness of goodwill impairment and suggests that the impairment-only approach has not improved the quality of reported goodwill as was planned, and hence does not support the FASB/IASB's intention to report a goodwill balance that reflects its underlying economic attributes. Accordingly, the second part of this chapter presents studies that examine the role played by auditors in reviewing goodwill for impairment loss. These studies provide evidence that auditors play a substantial role in controlling managers from opportunistically using the discretion involved in the impairment test. Considering all the proxied used in the literature to capture different aspects of audit quality, it can be concluded that audit firm size, auditor

industry specialisation and experience, auditor tenure, auditor independence, and the mix of joint audit pair significantly affect recognised goodwill impairment, and that, academics, stakeholders, practitioners, and policymakers should consider more variation in the audit quality between Big 4 and non-Big 4 auditors, Big 4 auditors themselves, and the same Big 4 audit firm in different contexts. However, it is important to consider the possibility that, in some instances, auditors might not help in improving the reporting of goodwill impairment due to managements relying on cash flow increasing real activities management that auditors cannot prevent.

Regarding the value relevance of goodwill impairment losses, several studies have examined the value relevance of recorded goodwill impairment losses. Transition period studies provide evidence that supports the increase in the value relevance of goodwill impairment losses following the adoption of the impairment-only approach (e.g., AbuGhazaleh et al., 2012; Aharony et al., 2010; Chalmers et al., 2008; Chen et al., 2011; Martínez et al., 2014). Regarding studies that examined longer periods of time before and after the adoption and post impairment studies, evidence provided is very mixed. While some studies still support the value relevance of goodwill impairment losses following the adoption of the impairment-only approach (e.g., Ahmed and Guler, 2007; Chalmers et al., 2012; Oliveira et al., 2010), others conclude that it had declined due to the potential for opportunistic discretionary behaviour given the difficulty in verifying fair value estimates of goodwill (e.g., Bens et al., 2011; Hamberg and Beisland, 2014; Ji and Lu, 2014; Li and Sloan, 2017; Li et al., 2019; Morricone et al., 2009; Sahut et al., 2011).

Prior studies that examined the change in the audit reporting regime provide limited evidence on its potential impact on the auditor's performance, with some caveats that must be carefully considered before these results can be generalised. Furthermore, few empirical studies

examined the impact of extended auditor's disclosures on the financial reporting quality in general, with no evidence is provided to examine its effect on specific accounts, such as goodwill impairment. Therefore, the UK context provides a good opportunity to investigate the consequences of EAR on auditor's performance, management behaviour, and market participants. The following chapter introduces the theoretical framework and develops the research hypotheses of the current study.

Chapter Three: Theoretical Framework and Hypotheses Development

3.1 Introduction

The previous chapter provided a detailed review of prior studies that examine the determinants and value relevance of goodwill impairment. It also reviewed studies that investigate the impact of the EAR adoption on investors, auditors, and managers. This allowed the identification of the research gaps and highlighted the need to investigate the role EAR could play in (1) improving the recognition of goodwill impairment, and (2) providing investors with value-relevant information about reported goodwill impairment losses. This chapter presents the theoretical underpinnings for the study (section 3.2) and develops the research hypotheses to test the association between EAR and the recognition and value relevance of goodwill impairment (section 3.3). Finally, section 3.4 provides a summary of the chapter.

3.2 Theoretical framework

This study employs the agency theory to highlight the principal-agent relationship and the substantial role played by the auditor in reducing its undesirable consequences. Section 3.2.1 defines the agency relationship between the principal (shareholder) and the agent (manager) and explains the conflict of interests that arises between them. Section 3.2.2 discusses the demand for the audit service and highlights external auditor's monitoring role in mitigating the agency problem. Finally, section 3.2.3 presents the proposed conceptual framework that explains how the new audit reporting regime could alleviate the agency problem.

3.2.1 Agency theory: definition and consequences

Jensen and Meckling (1976) introduced the agency cost concept to explain matters related to the separation between ownership and management in large companies at which shareholders are not involved in decision making. They define the agency relationship as a contract in which

shareholders (principal) assign the decision making power to managers (agent) to act on their behalf in running and managing the business. This principal-agent relationship results in a conflict of interest between the two parties, which is the ultimate element in the agency theory (Adams, 1994; Jensen and Meckling, 1976; Watts and Zimmerman, 1983). According to this theory, managers who are self-serving, individualistic, and opportunistic in nature manipulate information in favour of their own interests.

Adams (1994, p. 9) notes:

> "Agency theory is based on the premises that agents have more information than principals and that this information asymmetry adversely affects the principals' ability to monitor effectively whether their interests are being properly served by agents".

Since managers would typically have an information advantage over shareholders due to their immersion in the company's daily operations, information asymmetries would usually exist between the management and shareholders, resulting in two main agency problems. Those are the "moral hazard" and the "adverse selection" problems. According to Jensen and Meckling (1976), moral hazard problem arises when managers have the incentive to maximise their own wealth and hence act opportunistically against the interest of shareholders. Rather than taking actions and making decisions to maximise the benefits of shareholders, managers act selfishly and pursue their own interests. The adverse selection problem happens when shareholders are not able to determine whether or not managers have made decisions that are for the best interests of the company. This is mainly because they do not have access to all the information available to managers at the time decisions are made (Adams, 1994).

Knowing that goodwill impairment test allows managers considerable discretion, different management incentives, for example, substantially influence the reporting of goodwill impairment, and these include big bath, income smoothing, management change (tenure),

leverage (debt covenant restrictions), and earnings-based compensation plans (e.g., Glaum et al., 2018; Hayn and Hughes, 2006; Li and Sloan, 2017; Li et al., 2011; Ramanna and Watts, 2012). Rather than signalling private information that enriches financial statements and makes them more informative, certain managers instead opportunistically used their new-found discretion regarding impairment tests to accelerate/delay/avoid recognising goodwill impairment. Therefore, goodwill impairment is an accounting area that emphasises the conflict of interests between managers and shareholders and shows managers acting opportunistically to achieve their own personal interests.

Given these agency dilemmas, it was inevitable to establish some forms of monitoring and control to motivate managers to act in a way that maximises shareholders' wealth. Such monitoring mechanisms would mitigate the agency problems but incur implementation costs known by Jensen and Meckling (1976) as agency costs. Jensen and Meckling (1976) argue that the appointment of a third party independent agent, such as an external auditor, is an effective monitoring tool that helps to mitigate agency problems and consider audit fees to be part of the agency cost[36]. Consistent with this notion, the Cadbury Report (1992, p. 36) pointed out:

> "The annual audit is one of the cornerstones of corporate governance. Given the separation of ownership from management, the directors are required to report on their stewardship by means of the annual report and financial statements sent to the shareholders. The audit provides an external and objective check on the way in which the financial statements have been prepared and presented, and it is an essential part of the checks and balances required".

Accordingly, agency theory provides the main theoretical underpinnings for the study since it acknowledges the monitoring role played by the external auditor in minimising manager's opportunistic behaviour and providing assurance that reduces the information asymmetry

[36] Please see Jensen and Meckling (1976) page 308 for more details about other types of agency costs.

problem. The following section highlights the role of external auditor and explains the main sources of demand for audit services.

3.2.2 Agency theory: role of the external auditor

According to Watts and Zimmerman (1983, p. 614), "audit existed early in the development of business corporations (1200) and evolved gradually into the type of audit required by the first English companies act (1844)". This Companies Act expanded access to the incorporation of joint stock companies, leading to a growth in the number of company formation and raising set of concerns on the separation between ownership and management (Chandler, 2019). Chandler (2019) examined a case study of one of the first big companies that was formed under this Act. In this case study, the agency problem was particularly severe since the company had large number of shareholders who have no prior knowledge of the company industry. The author stressed the need for auditing as part of the early governance provisions to mitigate the agency problem. However, the audits of the early corporations used to be done by directors or shareholders. The UK was one of the earliest countries that required the use of outside professional auditors in the latter half of the nineteenth century (Watts and Zimmerman, 1983).

The overall objective of conducting an audit is outlined by the International Standard of Auditing (ISA) 200[37] for the UK and Ireland (IAASB, 2009, pp. 2–3) as

> "to enhance the degree of confidence of intended users in the financial statements. This is achieved by the expression of an opinion by the auditor on whether the financial statements are prepared, in all material respects, in accordance with an applicable financial reporting framework… As the basis for the auditor's opinion, ISAs (UK and Ireland) require the auditor to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error. Reasonable assurance is a high level of assurance."

[37] ISA 200 (UK and Ireland) "Overall objectives of the independent auditor and the conduct of an audit in accordance with International Standards on Auditing (UK and Ireland)"

According to Jensen and Meckling (1976) and Watts and Zimmerman (1986), the level of information asymmetry and agency conflict differs between companies based on the degree to which ownership is dispersed and the extent to which shareholders are physically away from the business. High dispersed ownership is associated with a high level of information asymmetry and higher agency cost. Hence, the role of the external auditor would be more pronounced, and a higher level of audit quality would be required (DeAngelo, 1981).

Prior literature identifies several reasons for the demand for audit services that are highly connected to the agency theory. The first and most important one is monitoring. Hiring an external auditor helps to mitigate the moral hazard and adverse selection problems (Wilson, 1983), and increases the firm value (Jensen and Meckling, 1976). External auditors verify and provide reliable information on the value of assets, enhance the company's internal control, and alleviate financial statement fraud and illegal reporting. This would result in high-quality financial statements that reduce the levels of uncertainty, mitigate both market and company related risks, and provide investors with reliable information that improve their decision making (Wallace, 1980).

Other sources of demand for audit services include signalling and insurance. To mitigate the adverse selection problem and retain high remunerations, managers might want to signal to shareholders their good performance by hiring an external auditor that testifies this in case the audit is voluntary, or by appointing high-quality auditors in case the audit is mandatory. Furthermore, hiring an external auditor provides managers with some kind of protection since auditors share the liability of audited financial statements with the management, and hence any further litigation risks are shared between the auditor and the management. According to DeAngelo (1981) and Wallace (1980), auditors provide managers with a higher level of insurance than a conventional insurance company would do because, unlike insurance

companies, auditors are motivated to spend more effort, exercise their professional scepticism, and become more conservative to mitigate litigation risk and avoid further reputational losses. From the shareholders' standpoint, audited financial statements offer a form of protection in the event of audit failure. An auditor is more likely to held responsible and will be required by the court to bear resultant losses as a form of 'socializing risk', especially if the audit was done by large audit firm known as 'deep pockets' (Schwartz and Menon, 1985).

Thus far, auditors ensure that information provided by the management is unbiased (minimising moral hazard problem) and complete (minimising the adverse selection problem). They add credibility and improve the quality of financial reporting (DeAngelo, 1981). Therefore, according to the agency theory, auditors mitigate the conflicts of interest and information asymmetries problems between the management and shareholders and assure shareholders that financial statements have been carefully prepared and checked against material errors (Wallace, 1980; Wilson, 1983).

Regarding goodwill impairment and consistent with the agency theory presumptions, prior studies highlight the monitoring role played by auditors in restraining the management from opportunistically using the discretion involved in the impairment test. Audit quality-related proxies such as audit firm size, auditor industry specialisation and experience, auditor tenure, auditor independence, and the mix of joint audit pair are found to significantly affect the recognition of goodwill impairment losses. The following section explores how the change in the audit reporting regime could potentially contribute to the auditor's role in minimising the agency conflicts, in line with the agency theory hypotheses.

3.2.3 Agency theory: role of the EAR

The audit report is the primary communication between the auditor and users of the financial statements. Despite its importance, it used to be a pass/fail document about whether the financial statements are prepared following the appropriate accounting standards. Since the majority of companies get unqualified audit opinion, this standardised audit report is viewed to provide symbolic with little communicative value. Therefore, it failed to provide useful information neither about the company nor about the audit, causing an entity information gap and audit information gap, respectively (Bédard et al., 2016; Gutierrez et al., 2018; IAASB, 2011; Mock et al., 2013).

Since the change in the UK audit reporting regime in 2013, auditors provide extended audit reports that disclose client-specific information related to the RMMs that had the greatest effect on the audit, the application of materiality, and the scope of the audit. The main goal is to provide information about the judgments made by management and provides insights into the auditor's work to improve the communicative value of the audit report to users of the financial statements (FRC, 2013a). The direct benefit of extended audit reports would be reducing the information asymmetry between market participants and auditors, hence reducing the audit information gap. It will also reduce the information asymmetry between market participants and the management, hence reducing the entity information gap (PCAOB, 2017). Figure 3 presents the study proposed framework to explain how the EAR adoption could enhance the audit role as a controlling mechanism in mitigating the agency problem, shedding light on the recognition and value relevance of goodwill impairment.

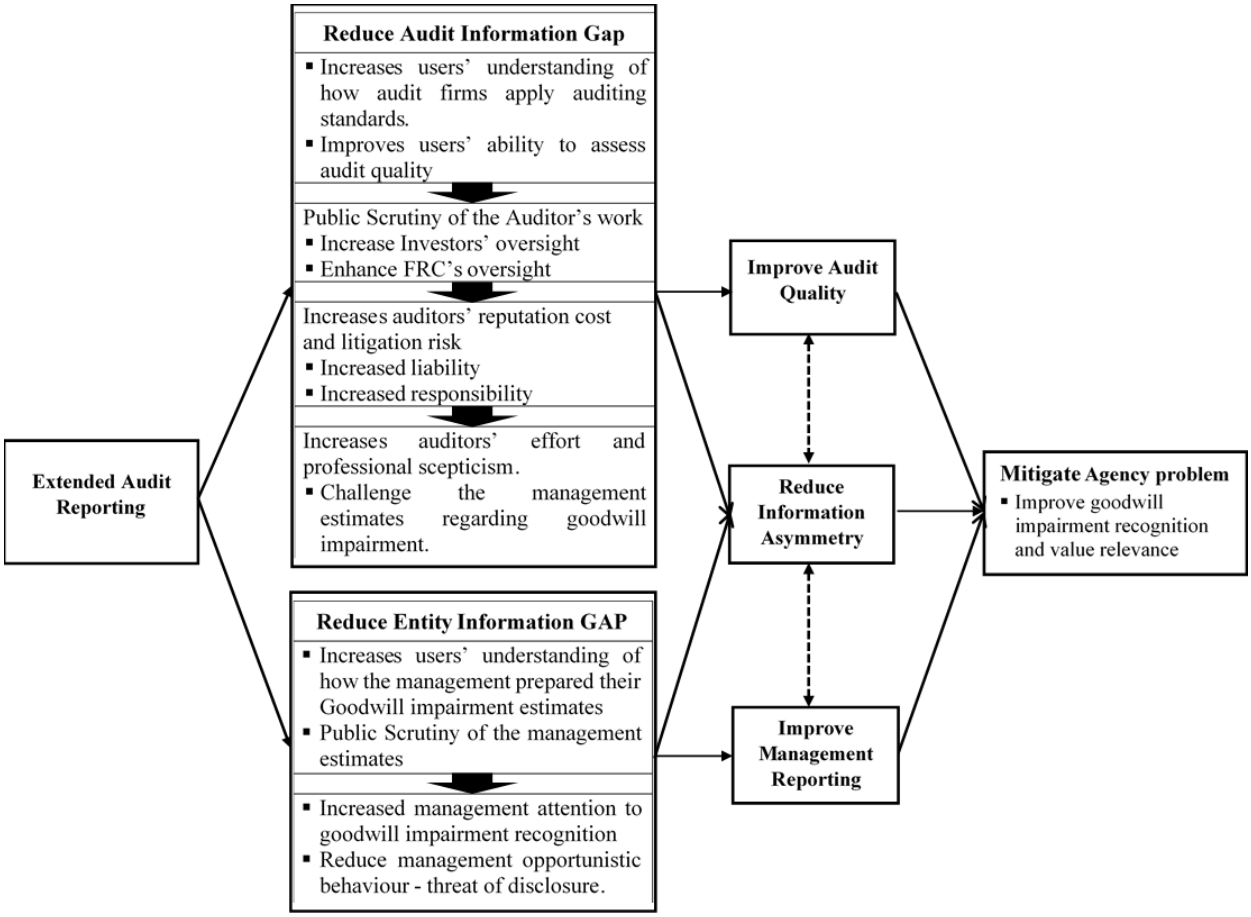


Figure 3-1 Proposed Study Framework

First, extended auditor's disclosures help investors to better understand the overall audit approach, auditor's assessment of the company risks and level of materiality, and how auditor applies auditing standards. This can potentially improve investors' ability to assess the audit quality (FRC, 2013b), and place companies and their auditors under more scrutiny (Christensen et al., 2014). Besides, EAR could attract additional oversight over the auditor work from the FRC while performing their annual review to ensure auditors report accurately the work performed and the audit procedures implemented (FRC, 2015). According to DeFond and Zhang (2014), it can be argued that the FRC inspection process is likely to affect both the auditor and the client incentives that, in turn, could affect audit quality. Accordingly, EAR could function as incentive-based accountability mechanism (Asbahr and Ruhnke, 2019) that

increases auditor's professional scepticism in general and in the area identified as an RMM in particular (IAASB, 2015), leading to higher audit quality (Peecher et al., 2013).

Thus, consistent with the agency theory, extended audit report could be associated with (1) an increase in the audit quality that minimises management opportunistic behaviour and hence improve the recognition of goodwill impairment, and (2) a reduction in the information asymmetries that minimises audit information gap and provides value-relevant information to investors about recorded goodwill impairment losses (ACCA, 2018; DeFond and Zhang, 2014; IAASB, 2015).

Second, despite that it is the management responsibility to address the entity information gap, auditor's disclosure of the RMMs and the procedures followed to address them could increase users' understanding of how managers have made their judgment and prepared accounting estimates (IAASB, 2015; Jermakowicz et al., 2018). This could expose management estimates to higher scrutiny and more public oversight, and increase managers' accountability if they exercise aggressive accounting estimates (Gold et al., 2020).

In addition, IAASB (2015) suggests that the EAR would bring the management attention to the RMMs disclosed, which could indirectly improve the financial reporting quality. The deputy chief accountant at the SEC, Brian Coteau, argues that "increased disclosures in the audit report may lead management to think more carefully about disclosures they've made, and perhaps enhances disclosures they've made as a result of the auditor's highlighting a particular area" (Katz, 2013).

Therefore, consistent with the agency theory, extended auditor's disclosures could be associated with changes to managers' reporting behaviour in a way that improves the recognition of goodwill impairment and provides value-relevant information to investors about recorded goodwill impairment losses. The following section develops the research hypotheses

about the association between EAR adoption and the recognition and value relevance of goodwill impairment losses in view of the agency theory.

3.3 Hypotheses Development

This section presents seven research hypotheses that are developed to fulfil the research objectives and answer related research questions. Table 3:1 summarises the research objectives, questions, and related research hypotheses. The first four hypotheses (H1, H2, H3 and H4) are established in section 3.3.1 to answer research questions 1 and 2, while the remaining hypotheses (H5, H6, and H7) are established in section 3.3.2 to answer research questions 3 and 4.

Table 3-1 Research objectives, questions, and related research hypotheses

Research objectives (O)	Research questions (Q)	Research hypotheses (H)
O1: To explore the association between EAR and the recognition of goodwill impairment losses	Q1: Is reported goodwill impairment loss associated with firm's low-performance measures?	H1
	Q2: Is EAR associated with improvements in the recognition of goodwill impairment losses?	H2, H3, H4
O2: To explore the association between EAR and the value relevance of goodwill impairment losses.	Q3: Is reported goodwill impairment loss value relevant to market participants?	H5
	Q4: Is EAR associated with an improvement in the value relevance of goodwill impairment losses?	H6, H7

3.3.1 Research objective one: EAR and the recognition of goodwill impairment losses

To accomplish this research objective, it is important to establish the association between companies' poor-performance and the recognition of goodwill impairment losses across the research sample before testing the potential impact of the EAR on this relationship. Therefore, H1 tests the association between the firm's poor-performance (proxied by low-performance

indicators) and the recognition of goodwill impairment losses (section 3.3.1.1), while H2, H3, and H4 test the association between EAR adoption and goodwill impairment recognition, conditional on the existence of low-performance indicators (section 3.3.1.2 and 3.3.1.3).

3.3.1.1 Recognition of goodwill impairment loss: Company's poor performance

IAS 36 requires companies to test for goodwill impairment annually and if there is an indication that goodwill may be impaired. Goodwill should be allocated to the unit or group of units that represent the lowest level at which goodwill is internally monitored, which is known as the cash-generating unit (CGU). If the net book value of the CGU is greater than its recoverable amount and this CGU has allocated goodwill, companies should charge a goodwill impairment loss in the statement of profit and loss up to the level of goodwill recorded.

Prior studies have considered current poor performance as an economic indicator of impairment, and expect that an economic impairment is likely to be incurred and needs to be booked when a company reports low performance (André et al., 2016; Beatty and Weber, 2006; EFRAG, 2016; Hayn and Hughes, 2006; Lapointe-Antunes et al., 2009; Li and Sloan, 2017; Li et al., 2011; Lobo et al., 2017; Ramanna and Watts, 2012; Verriest and Gaeremynck, 2009). Accordingly, a significant positive relationship suggests that a company's poor performance is related positively to the amounts of goodwill impairment losses reported by the company.

On the other hand, the majority of prior studies (e.g., Glaum et al., 2018; Hayn and Hughes, 2006; Li and Sloan, 2017; Li et al., 2011; Ramanna and Watts, 2012) emphasise that declines in the economic values of goodwill balance are not the only drivers for the recognition of goodwill impairment. Different management incentives, for example, influence the reporting of goodwill impairment, such as big bath, income smoothing, management change (tenure), leverage (debt covenant restrictions), and earnings-based compensation plans. Rather than signalling private information that enriches financial statements and makes them more

informative, certain managers instead opportunistically used their new-found discretion regarding impairment tests to accelerate/delay/avoid recognising goodwill impairment, depending on whether they are exercising income-increasing or income-decreasing strategies. As such, reported goodwill impairment losses might not reflect the current performance of the company. Hence, an insignificant relationship between a firm's low-performance indicators and the amount of goodwill impairment can be found.

Based on the above arguments, this study tests the first hypothesis (presented in the alternative format) as follows:

H1: Firm's low-performance indicators are positively associated with the amount of goodwill impairment.

3.3.1.2 Recognition of goodwill impairment loss: The impact of the EAR

As previously stated, to improve the informational value of the audit report to users of the financial statements, extended auditor's disclosures provide information about the judgments made by the management and provide insights into the auditor's work (FRC, 2013a). This would help investors to better understand the overall audit approach in general and the auditor's assessment of the company risks and level of materiality in particular. The FRC intention behind this mandatory change was to provide expanded disclosures that increase the transparency of the auditor's work with no intention to affect the underlying work undertaken by the auditor (FRC, 2012). However, as suggested in section 3.2.3, EAR adoption might indirectly affect both managers and auditors and impose more scrutiny on them, leading to an improvement in the financial reporting quality. To develop the hypotheses related to the association between EAR adoption and the recognition of goodwill impairment losses, the proposed study framework (figure 3-1) will be explained in detail and supported with evidence from prior studies.

Starting with the impact of EAR adoption on auditors, EAR might improve users' ability to assess the audit quality (FRC, 2013b). As suggested by Christensen et al. (2014), this regulatory change could endorse public oversight on the auditor work. Out of 31 feedbacks collected by the FRC on the EAR adoption, 18 commenters realised that the implementation of EAR would improve users' ability to assess audit quality (Gutierrez et al., 2018). In addition, since the EAR adoption, the FRC emphasises the importance of the audit report to accurately reflect the work performed and conducts an annual review to improve the informativeness of auditor's disclosure and identify inaccuracies in the auditor's description of the audit procedures implemented (FRC, 2015). This could enhance the FRC's oversight over the auditor work (Gutierrez et al., 2018).

The RMMs disclosure could also increase auditors' litigation risk. Ernst & Young (2013) outlines that ''we believe the proposed identification and disclosure of CAMs/KAMs/RMMs ... pose risks of increased legal liability that are real and substantial". Consistent with Creyer and Gürhan (1997), Backof et al. (2017) argue that EAR would shift jurors' attention to the auditors' role in case of audit failure when they fail to detect misstatements related to previously disclosed RMMs. Gimbar et al. (2016, p. 1630) note that:

> "a CAM related to a litigated issue will highlight the fact that judgments and estimates were made in the application of the precise standard and that the auditor had concerns regarding those judgments and estimates. This will reduce jurors' perceptions that the precision of the accounting standard limited the auditor's ability to influence the financial reporting. These consequences of a related CAM will increase jurors' perceptions that the auditor could have foreseen the negative outcome and therefore played a causal role in its occurrence".

Since perceived control is the critical factor in blame acknowledgements (Kadous and Mercer, 2016), Gimbar et al. (2016) conclude that RMMs disclosure increases the jurors' belief that

auditors had more control over the financial reporting outcome, hence increasing their litigation risk.

Given that reputation, litigation, and regulatory concerns have been demonstrated to drive audit quality (DeAngelo, 1981; DeFond and Zhang, 2014), EAR could function as incentive-based accountability mechanism (Asbahr and Ruhnke, 2019; Bédard et al., 2019; FRC, 2013b; IAASB, 2013; Reid et al., 2019) that may renew the auditor attention and increases auditor's professional scepticism (IAASB, 2015; Jermakowicz et al., 2018). As such, auditors would exert more effort, gather more evidence, exercise special diligence, and challenge the management estimates and assumptions regarding goodwill impairment. Thus, consistent with the agency theory, extended auditor's disclosures could be associated with an increase in the audit quality that minimises management opportunistic behaviour, hence an improvement in recognition of goodwill impairment.

On the other hand, other experimental studies document a reduction in the auditor's liability (e.g., Brasel et al., 2016; Brown et al., 2015; Kachelmeier et al., 2020). They argue that the disclosure of RMMs should forewarn users of the financial statements about the possibility of future misstatements. Consequently, jurors are less likely to find auditors negligent when auditors disclose RMMs that are related to detected misstatements, resulting in a reduction in auditor liability judgments. Kachelmeier et al. (2020) highlight that EAR could be misused by auditors as a disclaimer tool, with auditors expanding their disclosure in unnecessary areas to reduce their liability, hence providing uninformative disclosures. Brasel et al. (2016, p. 1347) state that:

> "auditors might have legal incentives to expand CAM disclosures in unwarranted areas to reduce negligence verdicts in the event of an undetected fraud. Such incentives could result in auditors developing and commonly reporting unwarranted, boilerplate CAM disclosures, thereby undermining the

> intent of the proposed standard by diluting the impact of more warranted CAM disclosures."

Additionally, in line with Griffin, (2014), two experimental studies (Asbahr and Ruhnke, 2019; Ratzinger-Sakel and Theis, 2019) suggest that RMMs disclosure could unconsciously discourage auditors from exercising due professional care and accept material misstatements, which is known as "Moral Licensing". Findings of the two studies show that auditors exercise less professional scepticism and accept their clients desired accounting treatment when the accounting estimate is disclosed as a KAM. They conclude that rather than acting as an accountability mechanism, RMMs disclosure might negatively affect auditor judgment performance due to moral licensing. To the extent that EAR increase or decrease auditor litigation risk, a corresponding change in audit effort or risk premium is expected (Almulla and Bradbury, 2018).

Moving on to examine the impact of EAR adoption on managers, the disclosure of RMMs and the procedures followed by auditors to address them would increase users' understanding of how managers have made their judgment and prepared accounting estimates (IAASB, 2015; Jermakowicz et al., 2018). This could expose the management estimates to higher scrutiny and more public oversight, and hence increase managers' accountability if they exercise aggressive accounting estimates (Gold et al., 2020). According to Bruce Webb, the chairman of the AICPA's auditing standards board and an audit partner at McGladrey & Pullen, EAR adoption may derive managers to thinking carefully about the quality and the robustness of their processes and controls (Katz, 2013).

This argument is supported by studies on the accountability theory and the disclosure transparency literature. Consistent with the accountability theory, individuals (managers) would feel more accountable and under more pressure to provide justifiable explanations if someone (auditor) is asked to justify their views to others (investors) (Tetlock, 1983, 1985).

Accordingly, managers are motivated to exert more effort in the presence of RMMs disclosure since their judgments are expected to be scrutinised more strongly by investors than in the case of an unqualified audit report without RMMs disclosure (Gold et al., 2020). Furthermore, as suggested by the disclosure transparency literature (e.g., Cassell et al., 2015; Hirst and Hopkins, 1998; Lee et al., 2006), greater levels of transparency (RMMs disclosure) would cause more second-guessing of the management judgments by market participants, hence resulting in a higher likelihood of earnings management detection and a higher level of managerial accountability.

Furthermore, Reid et al. (2019, p. 1506) point out that:

> "Management may alter their financial statement disclosures, particularly around subjective estimates, if they are fearful that the auditor may comment on the financial statement area in a potentially negative light. Therefore, the "threat of disclosure" could improve the quality of management's pre-audited numbers. The "threat of disclosure" could also change the negotiation dynamics between management and the auditor, leading to improved financial reporting quality".

Companies and investors believe that following the EAR adoption auditors would gain more leverage over managers through the "threat of disclosure" (PCAOB, 2011; Wells Fargo, 2016), resulting in managers adopting more acceptable financial reporting practices, particularly around subjective estimates such as goodwill impairment. Therefore, consistent with the agency theory, EAR adoption could be associated with changes to managers' reporting behaviour in a way that improves the recognition of goodwill impairment.

Based on the above arguments, this study tests the second hypothesis as follows:

H2: Goodwill impairment is positively associated with EAR adoption when economic conditions suggest the need to record an impairment loss.

3.3.1.3 Recognition of goodwill impairment loss: The impact of goodwill impairments related audit disclosures

Some studies (e.g., Asbahr and Ruhnke, 2019; Bédard et al., 2019; Gold et al., 2020) show that auditors would feel more accountable and gather more evidence in areas identified as RMMs, thereby increase the audit quality in those areas than other areas not disclosed as RMMs. The IAASB (2015) and PCAOB (2013) suggest that auditors would exercise more professional scepticism in areas where KAMs/CAMs are identified.

Since auditors would explain why certain matters are disclosed as RMMs and disclose the audit procedures conducted to address them, it can be argued that auditors would exercise higher professional scepticism in these particular cases to minimise future reputational costs associated with undetected material misstatements. Asbahr and Ruhnke (2019, p. 167) note that "Knowing that KAMs draw public attention to the disclosed matters, it can be expected that auditors will process information in a more balanced way and consider evidence that disapproves management's estimate more thoroughly".

On the management side, IAASB (2015) suggests that the EAR would bring the management attention to the RMMs disclosed, which could indirectly improve the financial reporting quality. The deputy chief accountant at the SEC, Brian Coteau, argues that managers would probably re-check and enhance their disclosures about areas highlighted by the auditor as RMMs (Katz, 2013). Moreover, Gold et al. (2020) find that managers are less likely to act opportunistically and engage in earnings management practices in the presence of firm-specific KAMs. Accordingly, when auditors disclose goodwill impairment (firm-specific KAMs) as a risk item, they would exert more effort, gather more evidence, exercise special diligence, and may challenge the management estimates and assumptions, resulting in an improvement in recognition of goodwill impairment. Managers' reporting behaviour would also change in a way that improves the recognition of goodwill impairment. They would also act less

opportunistically to ensure reported goodwill impairment losses properly reflect the economic impairment conditions.

Based on the above arguments, this study tests the third hypothesis as follows:

H3: Goodwill impairment is positively associated with the auditor's disclosure of goodwill impairment as a risk item when economic conditions suggest the need to record an impairment loss.

Finally, greater transparency through the RMMs section could attract more public oversight, resulting in a potential increase in the auditor's liability (Backof et al., 2017) and higher accountability pressure on managers (Gold et al., 2020). The level of voluntary disclosure provided by auditors in the new reports can also be seen as a good signal to the effort employed and the quality of audit service provided. Gutierrez et al. (2018) examine the effect of the auditor's report length to test the incremental effect of longer audit reports (as a proxy to higher audit effort) on the quality of audit provided. They report a weak positive association between the length of auditor's disclosure and audit quality.

Based on this argument, this study tests the fourth hypothesis as follows:

H4: Goodwill impairment is positively associated with the extent of related auditor's disclosure when economic conditions suggest the need to record an impairment loss.

3.3.2 Research objective two: EAR and the value relevance of goodwill impairment losses

To undertake this research objective, it is important to establish the value relevance of goodwill impairment losses across the research sample before testing the change in the value relevance following the EAR adoption. Therefore, H5 initially tests the value relevance of goodwill impairment losses through testing the association between recorded goodwill impairment loss

and the company's market value (section 3.3.2.1). Then, H6 and H7 test the change in the value relevance of goodwill impairment losses following the adoption of the EAR (section 3.3.2.2 and section 3.3.2.3).

3.3.2.1 Value relevance of the impairment-only approach

Earlier studies that examined the value relevance of discretionary goodwill write-offs before the implementation of the impairment-only approach suggests that goodwill would provide more relevant information that is better suited to reflect the company's underlying economics if it is tested annually for impairment rather than being systematically amortised over certain periods of time (Elliott and Hanna, 1996; Elliott and Shaw, 1988; Francis et al., 1996; Hirschey and Richardson, 2003, 2002; Rees et al., 1996; Strong and Meyer, 1987; Zucca and Campbell, 1992). This is mainly based on the assertion that the impairment-only approach gives managers the discretion to signal private information about the expected future cash flow, hence a better understanding of the management's expectations of changes in goodwill (FASB, 2001; IASB, 2004a).

Several studies have examined the value relevance of recorded goodwill impairment losses. Transition period studies provide evidence that supports the increase in the value relevance of goodwill impairment losses following the adoption of the impairment-only approach (e.g., AbuGhazaleh et al., 2012; Aharony et al., 2010; Chalmers et al., 2008; Chen et al., 2011; Martínez et al., 2014). Regarding studies that examined longer periods of time before and after the adoption and post impairment studies, evidence provided is mixed. While some studies support the value relevance of goodwill impairment losses following the adoption of the impairment-only approach (e.g., Ahmed and Guler, 2007; Chalmers et al., 2012; Oliveira et al., 2010), others conclude that it had declined due to the potential for opportunistic discretionary behaviour given the difficulty in verifying fair value estimates of goodwill (e.g., Bens et al., 2011; Hamberg and Beisland, 2014; Ji and Lu, 2014; Li and Sloan, 2017; Li et al.,

2011; Morricone et al., 2009; Sahut et al., 2011). Different management incentives, for example, influence the reporting of goodwill impairment, and these include big bath, income smoothing, management change (tenure), leverage (debt covenant restrictions), and earnings-based compensation plans. Rather than signalling private information that enriches financial statements and makes them more informative, certain managers instead may opportunistically use their new-found discretion regarding impairment tests to accelerate/delay/avoid recognising goodwill impairment. This affected the timeliness of goodwill impairment; hence, the impairment-only approach did not improve the quality of reported goodwill as was planned. It therefore did not meet the IASB's intention to report a goodwill balance that reflects its underlying economic attributes. Thus, reported goodwill impairment might not be value relevant and insignificant relationship between reported impairment loss, and companies' market value is found.

Given these mixed arguments, it is unclear whether the signalling or opportunistic motivation has the largest effect on the value relevance of goodwill impairment losses. This study tests the fifth hypothesis (presented in the alternative format) as follows:

H5: Goodwill impairment loss is negatively associated with the company's market value of equity

3.3.2.2 Value relevance of goodwill impairment losses: The impact of the EAR

According to agency theory, auditors play an important role in increasing shareholders' trust and mitigating the agency problem between managers and shareholders. External auditors verify and provide reliable information on the value of assets, enhance the company's internal control, and alleviate financial statement fraud and illegal reporting. According to Shakun (1978), investors pay higher risk premiums to reduce uncertainty levels and minimise investment risk. Auditing regulators introduced the EAR to provide value-relevant information

that reduces the information gap between auditors and different stakeholders. Extended auditor's disclosures could be associated with less information asymmetry, which in turn reduces uncertainty levels, mitigates investment risk and increases the quality of the financial reporting (Shakun, 1978; Wallace, 1980). Thus, it can be argued that investors would perceive less market and firm-specific risk following EAR adoption, and hence reducing the risk premium associated with their investments.

Prior studies that examine the impact of EAR on the value relevance and investors decisions include both experimental (e.g., Christensen et al., 2014; Köhler et al., 2020; Sirois et al., 2018), and archival studies (e.g., Bédard et al., 2019; Almulla and Bradbury, 2018; Gutierrez et al., 2018; Lennox et al., 2019; Reid et al., 2019; Smith, 2019). Using an experimental study of 141 business school graduates to test the change in investment decision by individual nonprofessional investors, Christensen et al. (2014) find that participants changed their investment decisions following the receipt of CAMs paragraph about the audit of fair value estimates, supporting the information effect of extended auditor's disclosures than the standard audit report. Moreover, the disclosure of the same information in management footnotes is found not to have the same impact on the participants' decisions, supporting the auditors' disclosures credibility effect. Similarly, Sirois et al. (2018) examine the information value of key audit matters in the auditor's report through monitoring differences in the information acquisition behaviour for 98 graduate accounting students. Results show that participants pay more attention to the financial statements' disclosures for the KAMs reported in the auditor's report, suggesting that the disclosure of KAMs guides market participants to the key financial statements areas where they have to pay more attention. Moreover, findings show less attention is allocated to the remaining parts of the financial statements when auditors communicate large number of key audit matters. On the other hand, by conducting an experimental study using professional and nonprofessional participants, Köhler et al. (2020) conclude that KAMs section

provide communicative value only to professional investors, as nonprofessional investors might find it difficult to understand the information provided in the KAMs section.

Similarly, archival studies show mixed results. Bédard et al. (2019), Gutierrez et al. (2018), and Lennox et al. (2019) show an insignificant market reaction to extended auditor's disclosures, suggesting that they are not incrementally informative to market participants. On the other hand, Reid (2015) reports significant increases in the abnormal trading volume and decreases in the abnormal bid-ask spreads following EAR adoption, supporting the idea that enhanced audit report reduces the information asymmetry. Results are much stronger for companies with lower analyst coverage, suggesting that EAR is more useful for companies with weaker information environments. Likewise, Smith (2019) report lower earnings forecast dispersion post EAR implementation. When employing the valuation approach using price level model, Almulla and Bradbury (2018) and Lennox et al. (2019) report a significant impact on the market price, supporting the value relevance of EAR.

Given these mix results and based on the argument that EAR adoption would improve investors' understanding of the audit process and reduce the information asymmetry, it can be argued that market participants would perceive higher audit quality and collect more information about reported goodwill impairment losses following the adoption of the EAR. Thus, this study tests the sixth hypothesis as follows:

H6: EAR provides value-relevant information that moderates the negative relationship between goodwill impairment loss and the company's market value of equity.

3.3.2.3 Value relevance of goodwill impairment losses: The impact of goodwill impairments related audit disclosures

Some experimental studies (e.g., Christensen et al., 2014; Kipp, 2017) provide evidence on the value relevance of providing client-specific details that extensively describe the audit

procedures employed to address reported KAMs. Christensen et al. (2014) find that a paragraph offering resolution to the disclosed CAMs reduces its negative impact on investors' decisions. Similarly, Kipp (2017) reports increases in the perceived confidence by nonprofessional investors in the audited financial statements with increases in the level of details provided by auditors about KAMs. Furthermore, firm-specific details, as well as the additional details provided to describe KAMs related audit procedures, are found to significantly increase investors' confidence in the accuracy and reliability of the financial statements than what a generic description would do. Thus, improving investors' perceptions of the audit quality. Likewise, Reid (2015) finds significant reductions in the information asymmetry associated with more detailed audit reports. This is also supported by Sirois et al. (2018, p.5) who states that:

> "By communicating details of the key audit procedures performed, the auditor provides additional context and information on the specific financial disclosure, which may facilitate users' integration of the information. In addition, users may conclude that the audit matter has been sufficiently audited, and the risk reduced, which decreases their need to pay attention to the KAM-related disclosures".

Consistent with the importance of providing client-specific goodwill impairment disclosures, Paugam and Ramond (2015) find impairment test related disclosures that are entity-specific to be informative and negatively associated with the company's cost of capital. In contrast, descriptive disclosures show no impact on the cost of capital. These results support the notion that entity-specific goodwill impairment related auditor disclosures might convey useful information (e.g., how auditors challenged the management in the assumptions and sensitivities used in the impairment test) that reduce investors' uncertainty regarding the associated future cash outflows, hence reducing information risk. In contrast, descriptive disclosures are typically standardised disclosures that may not reveal value-relevant information to market participants.

Based on this argument, it can be argued that more detailed entity-specific goodwill impairment related disclosures may help to reduce the information asymmetry, provide more assurance, and deliver the message that this audit matter has been sufficiently audited and the risk reduced, resulting in a less negative impact of goodwill impairment losses on companies' market value. Thus, this study tests the seventh hypothesis as follows:

H7: The extent of goodwill impairment-related auditor's disclosure moderates the negative relationship between reported impairment loss and the company's market value of equity.

H7 can be formulated into two sub-hypotheses as follows:

H7a: Descriptive auditor's disclosure does not provide value-relevant information about recorded goodwill impairment.

H7b: Entity-specific auditor's disclosure provides value-relevant information about recorded goodwill impairment.

3.4 Summary

This chapter discussed the theoretical framework used to develop the research hypotheses. Prior studies measure the consequences of audit regulation since it might affect the behaviour of both the auditor and the auditee, and hence the supply and demand for audit services (DeFond and Zhang, 2014). The change in the UK auditing standards required auditors to disclose information about the RMMs and the procedures they followed to address these risks. This helps to communicate informative details on the audit process and the quality of financial reports, hence reducing the information gap (entity information gap and audit information gap). This may reduce information asymmetry and mitigate the agency problem between management and shareholders. Additionally, the extent of auditors' disclosures in the new

reports can be a good signal to the effort employed and the quality of audit service provided. It can also reduce uncertainty and provide investors with some level of assurance.

Accordingly, seven research hypotheses are developed to fulfil the two main research objectives of this study. The first four hypotheses are examined to answer the first and second research questions. H1 is developed to explore the association between a company's poor performance and the recognition of goodwill impairment. In contrast, H2, H3 and H4 are established to test the association between EAR and the recognition of goodwill impairment, conditional on the existence of low-performance indicator. To answer the third and the fourth research questions, H5 is developed to initially test the value relevance of recorded goodwill impairment loss through examining its association with the company’s market value. Then, H6 and H7 are developed to test the change in the value relevance of reported goodwill impairment loss following the implementation of the EAR. The following chapter introduces the research methodology and develops the research design to test the research hypotheses of the current study.

Chapter Four: Research Methodology and Design

4.1 Introduction

The current study investigates the association between EAR adoption and the recognition and the value relevance of goodwill impairment in the UK capital market. Previous chapters presented the theoretical section in this study; reviewing the relevant literature in chapter two and exploring the conceptual framework and hypotheses development in chapter three. This chapter identifies the suitable research methodology and develops the research design needed to carry out the empirical analysis, test the research hypotheses, and answer the research questions.

Silverman (2013) defines research methodology as a way of studying any phenomenon. It is the overall approach to the whole research process designed to investigate predetermined research questions, starting from building the theoretical grounds until data collection and analysis (Collis and Hussey, 2014). Several steps and procedures must be followed to conduct reliable research. Section 4.2 introduces the main research philosophies that are commonly used in business and management research to highlight how researchers develop and gain knowledge to deal with their research problems. This is followed by a discussion of the philosophy underpinning the study. Then, section 4.3 presents the appropriate research paradigm for this study. The model specification, research sample, and data collection are presented in the research design in section 4.4. Finally, a summary of the chapter is provided in section 4.5.

4.2 Research philosophy underpinning the research

The term research philosophy refers to the preconceived beliefs and assumptions held by the researcher about knowledge in a specific field (Saunders et al., 2016). It highlights how researchers develop and gain knowledge and the nature of that knowledge. Burrell and Morgan (1979) argue that researchers should make certain assumptions during their research. Saunders et al. (2016, pp. 125-126) state that "A well-thought-out and consistent set of assumptions will constitute a credible research philosophy, which will underpin your methodological choice, research strategy, data collection techniques, and analysis procedures". It is important to identify and understand the philosophical position underpinning one's research strategy as it will significantly form their understanding, shape what they will do in their research, and identify which research designs will work and which will not (Easterby-Smith et al., 2018; Johnson and Clark, 2006). Accordingly, failure to understand the research philosophies may mitigate the quality of research design.

Research philosophies in business and management research can be scattered along a multidimensional set of continua between the two opposing extremes: objectivism and subjectivism (Niglas, 2010; Saunders et al., 2016). These are linked to two main research philosophies known as the extremities of a continuum line of philosophies: positivism and interpretivism, respectively. Saunders et al. (2016) identify three main assumptions to distinguish between these two research philosophies: ontological assumptions about realities that researchers encounter in their research, epistemological assumptions about human knowledge, and axiological assumptions on the extent and ways researchers' own values affect the research process. Collis and Hussey (2014) add a fourth assumption that relates to the methodological stance followed in the research process. Crotty (1998) highlights that those

assumptions affect the researcher's understanding of the research questions, adopted methods and interpretation of results.

Firstly, the ontological assumptions about the nature of reality affect how researchers recognise and examine their research objects. Collis and Hussey (2014) and Saunders et al. (2016) highlight that objectivism and subjectivism have two opposing scenes of reality. Objectivism adopts the natural sciences' presumptions, arguing that social reality is external to us and others (referred to as social actors). Hence, social actors' interpretations and experiences do not impact the existence of the social world, resulting in one single external reality perceived by the researcher (Saunders et al., 2016). Consequently, reality is objective, and everyone has the same understanding of that reality. This perspective of reality is adopted by positivists. Hence, they use empirical research methods like observations and experiments and claim to be external to the data collection process to yield pure facts that are not influenced by human interpretation or bias (Collis and Hussey, 2014; Saunders et al., 2016). Positivism promises an unambiguous and accurate knowledge that is derived from positive information and can be scientifically verified (Saunders et al., 2016).

Subjectivism incorporates the assumptions of arts and humanities, affirming that social actors' perceptions and subsequent actions form their social reality. Reality is subjective and is constructed individually through the use of language, conceptual categories, perceptions and consequent actions. This perspective of reality is adopted by interpretivists who consider that every individual experiences and perceives reality differently. Therefore, multiple different realities exist within which individual perceptions of that reality are held and the social world cannot be defined by a set of laws (Burrell and Morgan, 1979; Collis and Hussey, 2014). Their research examines differences amongst individuals as opposed to objects which help to create new, richer understandings and interpretations of social worlds and contexts.

Secondly, Burrell and Morgan (1979) define epistemology as personal beliefs of what is considered as acceptable and legitimate knowledge, and how this knowledge is communicated to others. Easterby-Smith et al. (2018) identify it as the best way of questioning the nature of the world and answering 'how do we know what we know?'. For example, positivists ensure an independent and objective stance, where knowledge is deemed as observable and measurable phenomena, and from which generalisations can be drawn about the universal social reality (Saunders et al., 2016). Under positivism, theories provide the basis for developing hypotheses and providing explanations. This helps them to extract possible relationships between variables to produce law-like generalisations and link them to deductive or integrated theory (Gill and Johnson, 2010). On the other hand, interpretivists build their knowledge and define facts based on their beliefs (Smith, 1983), minimising the distance between them and what is researched (Collis and Hussey, 2014).

Thirdly, Saunders et al. (2016) emphasise the important role played by the researcher's values and ethics in choosing the research philosophy; this is known as axiological assumptions. Positivists try to remain neutral and detached from their research and data to avoid influencing the research findings (Collis and Hussey, 2014; Crotty, 1998), resulting in research that is undertaken, as far as possible, in a value-free environment. In contrast, interpretivists believe that they cannot detach themselves from what is being researched because it is impossible to separate what exists in the social world with what is in the researcher's mind (Creswell, 2014; Saunders et al., 2016; Smith, 1983). Thus, researchers' values impact and shape what they consider as facts, and motivate them to acknowledge, reflect upon, question, and incorporate their values within their research (Collis and Hussey, 2014).

Fourthly, Saunders et al. (2016) contend that different epistemological and axiological assumptions have different implications on the selected research methods and the strengths, limitations, and interpretations of subsequent research findings. Collis and Hussey (2014)

differentiate between positivists and interpretivists with regards to the sample selected, and the methodologies followed based on the objectivity required in the research findings. Positivists use structured methodologies to allow replication (Gill and Johnson, 2010), and are interested in ensuring that any concept can be operationalised; that is, described in such a way that can be measured. They tend to use quantitative research methods and large sample size to conduct statistical analysis that helps them to retrieve objective and generalizable research findings (Collis and Hussey, 2014). Interpretivists undertake an in-depth investigation to understand what is going on. They tend to utilise a small sample and various research methods to attain different perceptions of the phenomena. Corbin and Strauss (2008) conclude that interpretive research is any type of research where the findings are derived from the analysis of qualitative methods, based on the interpretation of qualitative research data rather than the statistical analysis of quantitative data.

The primary aim of this study is to investigate the empirical substance of the association between EAR adoption and the recognition and value relevance of goodwill impairment. This is to retrieve an objective and generalizable research finding in a value-free way. Given this empirical focus, the subjective ontology adopted by the interpretivists does not seem to be useful in achieving the study objectives. Existing theories and prior literature have been used to build the study hypotheses. To test these hypotheses, archival data have been collected from the annual reports of UK public companies, and quantitative research methods have been used to conduct a suitable statistical analysis. In this regard, the research philosophy underpinning the study is positivism.

4.3 Research paradigm

Burrell and Morgan (1979, p. 23) define the research paradigm as a term that has "an underlying unity in terms of its basic and often 'taken for granted' assumptions, which separate a group of theorists in a very fundamental way from theorists located in other paradigms". This term has not been used consistently in the literature. Different people in different fields and over different time periods have allocated different meanings for the term paradigm. Morgan (1979) pointed out three different levels at which this term has been used; (1) philosophical level, where the term is used to reflect basic beliefs about the world; (2) social level, in which it provides guidelines on how the researcher should direct his or her undertakings; and (3) technical level, where the term is used to postulate the methods needed to conduct the research.

Collis and Hussey (2014) provide a comprehensive definition that combines those different levels in a way that generally explains how this term is commonly used in management studies. According to them, the research paradigm is defined as the philosophical framework that (1) guides how scientific research should be conducted based on people's philosophies and their assumptions about the world, and (2) affects the way in which researchers choose to investigate their research question (s).

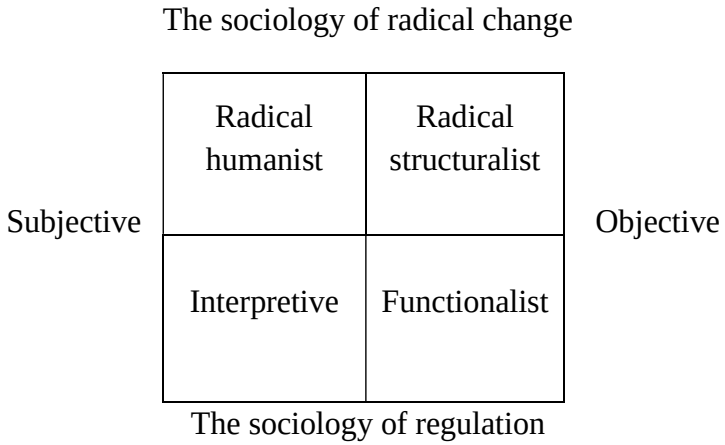
As previously stated, the distinction between objectivism and subjectivism is one of the main dimensions that help to differentiate between different research philosophies. Another principal dimension has been introduced by Burrell and Morgan (1979) to differentiate between different research paradigms. It relates to the ideological and the political orientation of researchers towards the social world under investigation (nature of society). They argue that this dimension can be considered a powerful tool for identifying and analysing the assumptions which underlie social theories. This dimension distinguishes between two main extremes: sociology of

regulation and sociology of radical change. Hence, it is called “the regulation-radical change” dimension.

According to Saunders et al. (2016), researchers working within the regulation perspective emphasise the need for the regulation of societies and human behaviour to ensure the underlying unity and cohesiveness of societal systems and structures. Business and management researchers who adopt this perspective seek to explain the way by which organisational affairs are regulated and endorse how they can be improved within the framework of how things are done at present as opposed to drastically challenging the current position. On the other hand, radical change research approaches organisational problems from the perspective of overturning the existing state of affairs. “It looks towards potentiality as much as actuality; it is concerned with what is possible rather than with what is; with alternatives rather than with acceptance of the status quo” (Burrell and Morgan, 1979, p.17). Proponents of this research would be interested in questioning the way things are done in organisations and offer insights on how to change the organisational and social worlds.

Considering the previous two dimensions, a 2 × 2 matrix of four distinct sociological paradigms was constructed by Burrell and Morgan (1979) through the combination of the objective-subjective perspective with the regulation–radical change one. Figure 4-1 shows the relationship between these paradigms, which were labelled as functionalist’, interpretive’, ‘radical humanist’, and ‘radical structuralist’. Each paradigm shares a common set of features with its neighbours on the horizontal and vertical axes, showing four different ways of viewing the social and organisational world based on different meta-theoretical assumptions (Burrell and Morgan, 1979; Saunders et al., 2016).

Figure 4-1 Four paradigms for the analysis of social theory



Source: Burrell and Morgan (1979, p.22)

This study acknowledges the role played by the auditing regulations in enhancing the auditor's role in mitigating the agency problem and ensuring the underlying unity and cohesiveness of the audit service provided. The study examines the implications of the change in the audit reporting regime to find out how auditing regulation can be improved within the framework of how things are done at present. Accordingly, this study copes with the regulation perspective. Since this study is conducted from an objectivist stance (as highlighted in the previous section), the suitable research paradigm for this study according to Figure 4-1 is the functionalist paradigm. It combines both the regulatory standpoint and the objectivist approach. This is supported by Saunders et al. (2016) who state that research carried out within the functionalist paradigm is most likely to be underpinned by the positivist research philosophy, hence it is often being referred to as 'positivist-functionalist'. This research paradigm is generally considered to be the mainstream in empirical accounting research (Chua, 1986; Riahi-Belkaoui, 2004). Riahi-Belkaoui (2004, p.316) states that:

> **"**The functionalist view in accounting focuses on explaining the social order, in which accounting plays a role, from a realist, positivist, determinist and nomothetic standpoint. It is concerned with effective regulation on the basis of objective evidence. The functionalist paradigm in accounting views accounting phenomena as concrete real world relations possessing regularities and casual relationships that are amenable to scientific explanation and prediction".

According to Bryman (2012), Collis and Hussey (2014), and Saunders et al. (2016), researchers that adopt the functionalist paradigm start by surveying the literature to identify the theoretical structure on which the study hypotheses are developed. These research hypotheses are developed to explore the relationship between the variables of interests and to be tested and explained according to the theory. Then, for the purpose of retrieving generalizable results, quantitative approaches are used to test the study hypotheses and provide empirical evidence using the statistical analysis (Bisman, 2010). This research approach is known as "deductive approach", where the research moves from the general to the particular (Collis and Hussey, 2014).

The current study focuses on gathering empirical evidence rather than individuals' opinions to identify the association between EAR adoption and the recognition and value relevance of goodwill impairment. Data will be collected from DataStream and the annual reports of UK non-financial listed companies on the period from 2010 to 2016. A numerical data analysis using inferential statistics will be conducted to derive explanations on the association between the dependent variables "goodwill impairment loss" and "market valuation", and the independent variables "EAR, goodwill impairment related auditor's disclosures and other control variables". The following section develops the research design used to examine the study hypotheses.

4.4 Research design

The first four hypotheses (H1 to H4) of this study investigate the association between EAR adoption and the recognition of goodwill impairment. To test them, the first econometric model treats recorded goodwill impairment loss as a dependent variable while the firm's low-performance proxies, EAR's measures, and other control variables are the independent ones. Furthermore, there are variables that help to explain (predict) the size of goodwill impairment

losses. Accordingly, these variables should be considered to control for their impact and to derive an unnoisy relationship between the main independent variables of interest and the dependent one. Building on what is explained earlier in the literature review chapter, it can be concluded that reported goodwill impairment loss is mainly explained by three main groups of variables: economic-related factors, management-related incentives and motives, and other control variables that capture other company, industry, and auditor-related characteristics. The econometric model that addresses the association between these variables and the recording of goodwill impairment is named in prior studies as "the determinants model of goodwill impairment". This model will be used as a starting point, and the main variables of interest are introduced as the main independent variables. It will be presented in section 4.4.1.

The remaining hypotheses (H5 to H7) investigate the association between EAR adoption and the value relevance of goodwill impairment losses. To test them, a second econometric model is introduced. It treats the company's market value of equity as a dependent variable, while recognised goodwill impairment loss, EAR's measures, and other control variables are the independent ones. This econometric model is named in the literature as "the value relevance model of goodwill impairment" and will be presented in section 4.4.2.

4.4.1 The determinants model

Two equations are estimated for the determinants model. Equation (1) is used to test the first hypothesis (H1), while Equation (2) introduces the EAR to test the remaining hypotheses of the determinant study (H2 to H4). Dummy variables are included for each industry (using the Industry Classification Benchmark) and year to control for industry and year fixed effect (effects related to certain industries or years).

$$GITA_i = \alpha_0 + \alpha_1 \text{ LOW.PERF} + \alpha_2 \text{ Economic impairment related variables} + \alpha_3 \text{ Management incentive related variables} + \alpha_4 \text{ Industry related variables} + \alpha_5 \text{ Auditor related variables} + \alpha_6 \text{ Industry fixed effect} + \alpha_7 \text{ Year fixed effect} + u_i \quad \text{(Equation 1)}$$

$$GITA_i = \alpha_0 + \alpha_1 \text{ LOW.PERF} + \alpha_2 \text{ EAR} + \alpha_3 \text{ LOW.PERF*EAR} + \alpha_4 \text{ Economic impairment related variables} + \alpha_5 \text{ Management incentive related variables} + \alpha_6 \text{ Industry related variables} + \alpha_7 \text{ Auditor related variables} + \alpha_8 \text{ Industry fixed effect} + \alpha_9 \text{ Year fixed effect} + u_i \quad \text{(Equation 2)}$$

$$GITA_i = \alpha_0 + \alpha_1 \text{ LOW.PERF} + \alpha_2 \text{ POST} + \alpha_3 \text{ LOW.PERF*POST} + \alpha_4 \text{ Economic impairment related variables} + \alpha_5 \text{ Management incentive related variables} + \alpha_6 \text{ Industry related variables} + \alpha_7 \text{ Auditor related variables} + \alpha_8 \text{ Industry fixed effect} + \alpha_9 \text{ Year fixed effect} + u_i \quad \text{(Equation 2a)}$$

$$GITA_i = \alpha_0 + \alpha_1 \text{ LOW.PERF} + \alpha_2 \text{ ADGI} + \alpha_3 \text{ LOW.PERF*ADGI} + \alpha_4 \text{ Economic impairment related variables} + \alpha_5 \text{ Management incentive related variables} + \alpha_6 \text{ Industry related variables} + \alpha_7 \text{ Auditor related variables} + \alpha_8 \text{ Industry fixed effect} + \alpha_9 \text{ Year fixed effect} + u_i \quad \text{(Equation 2b)}$$

$$GITA_i = \alpha_0 + \alpha_1 \text{ LOW.PERF} + \alpha_2 \text{ ADIS} + \alpha_3 \text{ LOW.PERF*ADIS} + \alpha_4 \text{ Economic impairment related variables} + \alpha_5 \text{ Management incentive related variables} + \alpha_6 \text{ Industry related variables} + \alpha_7 \text{ Auditor related variables} + \alpha_8 \text{ Industry fixed effect} + \alpha_9 \text{ Year fixed effect} + u_i \quad \text{(Equation 2c)}$$

Where: $GITA_i$ is the ratio of goodwill impairment losses to total assets; LOW.PERF is the firm's low-performance indicator; EAR is the extended audit report that is measured using three proxies (*POST*, *ADGI*[38] and *ADIS*[39]); RETURN is the company's stock return; ΔSALES is the ratio of the change in sales; ΔROA is the ratio of the change in ROA; ΔOCF is the ratio of the change in OCF; ΔMV/BV is the change in the company market-to-book value; LEVERAGE is the ratio total liabilities to total assets; ΔCEO is the change in the CEO; BATH

[38] ADGI is used in the rest of the thesis to stand for the auditor's disclosure of goodwill impairment as a risk of material misstatements.
[39] ADIS is used in the rest of the thesis to stand for the extent (length) of goodwill impairment-related auditor's disclosure.

stands for big bath; SMOOTH stands for income smoothing; GW/TA is the ratio of goodwill to total assets; CGU is the natural logarithm of the total number of cash-generating units; L-IMP is the company's tendency to record goodwill impairment; Size is the natural logarithm of total assets; BETA is the company's risk; FREEFLOAT is the percentage of shares available to trade; CROSSLIST is for companies that are cross-listed in the U.S.; INDΔROA is the change in the industry return on assets; ΔAUDITOR is the audit partner change. Table 4-1 provides the definitions of these variables and the main source of data for each one of them.

Table 4-1 Summary of variables definition and main sources of data - The determinants model

Dependent variable	***GITA$_i$***	Continuous variable: recorded goodwill impairment in year $_t$ deflated by total assets before goodwill impairment $_t$ (Annual report)
Main Independent Variables of Interest	***LOW.PERF***	Indicator variable: equal 1 if the difference between market value and book value is less than the goodwill before impairment, 0 otherwise.
	EAR-POST	Indicator variable: equal 1 if the auditor issued an extended audit report (Annual report).
	EAR-ADGI	Indicator variable: equal 1 if the auditor discloses goodwill impairment as a risk item (Annual report).
	EAR-ADIS	Indicator variable: equal 1 if goodwill impairment-related auditor's disclosure is higher than the median level of the industry distribution at the end of year $_t$, 0 otherwise (Annual report).
Economic Impairment Related Variables	***RETURN***	Stock return for firm $_i$ in year $_t$ (Worldscope)
	ΔSALES	The ratio of the change in sales; calculated as (sales $_t$ – sales $_{t-1}$)/ sales $_{t-1}$ (Worldscope)
	ΔROA	Current ROA minus the lagged one. ROA is EBITDA before impairment for year $_t$ divided by total assets before impairment $_t$ (Worldscope)
	ΔOCF	Current OCF minus the lagged one. OCF is calculated by dividing cash flow from operation for year $_t$ over total assets before impairment $_t$ (Worldscope)
	ΔMV/BV	Current MV/BV minus the lagged one. MV/BV is the market value of firm $_i$ in year $_t$ to book value before impairment $_t$ (Worldscope)
Management Incentives Related Variables	***LEVERAGE***	Total liabilities divided by total assets before goodwill impairment for firm $_i$ in year $_t$ (Worldscope)
	ΔCEO	Indicator variable: equals one if there is a change in CEO in the current year, and zero otherwise (Annual report)
	BATH	Indicator variable: equals one if the management of firm $_i$ in year $_t$ is likely to pursue big-bath accounting (income is year $_t$ is negative

		and firm $_i$ experiences a negative change in income which is below median among those companies with a negative change in income), zero otherwise (Worldscope)
	SMOOTH	Indicator variable: equals one if management of firm $_i$ in year $_t$ is likely to pursue income smoothing (income in year $_t$ is positive and the change in income in the current year is above the median among companies with a positive change in income), zero otherwise (Worldscope)
	GW/TA	Goodwill before impairment of year $_t$ deflated by total assets before impairment $_t$ (Worldscope)
	CGU (log)	Natural logarithm of the total number of cash-generating units to which goodwill is allocated (Annual report)
	L-IMP	Indicator variable: equal 1 if the firm recorded goodwill impairment last year.
Other firm, Industry, and Auditor Related Variables	***Size***	Natural logarithm of total assets (Worldscope)
	Beta	firm beta (Datastream)
	Free Float	Percentage of shares available to trade (Worldscope)
	Cross-Listed	Dummy variable equal 1 if the company is cross-listed in the U.S., 0 otherwise (Worldscope).
	INDΔROA	Current mean ROA in the industry minus lagged mean
	ΔAUDITOR	Indicator variable: equals one if there is a change in the audit partner in the current year, and zero otherwise (FAME and Annual report)
Fixed Effect variables	***INDUSTRY***	Dummy variable for each industry based on ICB (Datastream)
	YEAR	Dummy variable for each fiscal Year

Measures of the dependent variable (goodwill impairment) are presented in 4.4.1.1. Then, the main independent variables of interest and control variables are discussed in 4.4.1.2 and 4.4.1.3, respectively.

4.4.1.1 Dependent variable

The dependent variable of this model reflects the size of goodwill impairments, and it takes the form of a continuous measure. Following previous studies, a Tobit regression model[40] is developed to explain the variations in the magnitude of recorded goodwill impairment[41]. The

[40] Tobit regression is used because the percentage of goodwill impaired has non-negative values and the majority of them tend to be zero [it is censored below at zero and above at 100% (Beatty and Weber, 2006)].

[41] Following previous research (Beatty and Weber, 2006; Francis et al., 1996; Giner and Pardo, 2015; Glaum et al., 2018; Godfrey and Koh, 2009; Gu and Lev, 2011; Hayn and Hughes, 2006; Kabir and Rahman, 2016; Lobo et al., 2017; Paugam et al., 2015; Riedl, 2004; Zang, 2008), as an additional analysis, this study runs a Logit regression model, where the dependent variable takes the value of one if companies report goodwill impairment, zero otherwise. This is to examine the likelihood of recording goodwill impairment.

dependent variable for the Tobit model is commonly measured in the literature by deflating the amount of goodwill impairment loss by total assets (Abdul Majid, 2015; AbuGhazaleh et al., 2011; Al-Dabbous et al., 2015; Caplan et al., 2017; Giner and Pardo, 2015; Godfrey and Koh, 2009; Gu and Lev, 2011; Kabir and Rahman, 2016; Lapointe-Antunes et al., 2008; Li et al., 2011; Paugam et al., 2015; Ramanna and Watts, 2012; Stokes and Webster, 2009; Zang, 2008) or goodwill (Beatty and Weber, 2006; Francis et al., 1996; Hayn and Hughes, 2006; Hussainey et al., 2016; Lobo et al., 2017; Riedl, 2004). For the purpose of this study, the dependent variable is measured by deflating recorded goodwill impairment by year-end total assets before goodwill impairment[42]. This is to consider circumstances where a company might recognise an impairment loss for new goodwill recognised in a recent acquisition that took place in the same year. The independent variables used in this model can be classified into two main explanatory groups. The first group reflects the main independent variables of interest (explained in section 4.4.1.2), while the second group represents other control variables (explained in section 4.4.1.3).

4.4.1.2 Main independent variables

Two main independent variables are presented in the determinants model: the firm's low-performance indicator (LOW.PERF) and extended audit report (EAR).

4.4.1.2.1 Low-performance indicator (LOW.PERF)

As outline before, IAS 36 requires companies to test for goodwill impairment annually and if there is an indication that goodwill may be impaired. To do that, goodwill should be allocated to the unit or group of units that represent the lowest level at which goodwill is internally monitored, which is known as the cash-generating unit (CGU). If the net book value of the

[42] The study deflates the dependent variable and most of the independent variables by the same deflator (year-end total assets before impairment) to reduce potential heteroscedasticity problems (Glaum et al., 2018; Lapointe-Antunes et al., 2008; Riedl, 2004; Zang, 2008).

CGU is greater than its recoverable amount[43] and this CGU has allocated goodwill, companies should charge a goodwill impairment loss in the statement of profit and loss up to the level of goodwill recorded[44]. Determining the recoverable amount involves an estimation of the future cash flows, which is forecasted using the current cash flows and certain valuation assumptions (for example; assumptions about profitability, growth rate, discount rate, and risk) (Lobo et al., 2017). These assumptions involve considerable discretion (Roychowdhury and Martin, 2013), and this is why IAS 36 requires management to assess the sensibleness of these estimates by making a comparison between the forecasted and the actual cash flows.

Prior studies have considered current poor performance as an economic indicator of impairment. Hence, economic impairment is expected to be incurred and needs to be booked when a company reports low performance[45] (André et al., 2016; Beatty and Weber, 2006; EFRAG, 2016; Hayn and Hughes, 2006; Lapointe-Antunes et al., 2009; Li and Sloan, 2017; Li et al., 2011; Lobo et al., 2017; Ramanna and Watts, 2012; Verriest and Gaeremynck, 2009). They identified companies with low-performance indicators to investigate the motives of recording goodwill impairment (Beatty and Weber, 2006; Verriest and Gaeremynck, 2009); to examine the patterns of goodwill impairment recording to investigate whether it has been misused using unverifiable estimates to report untimely goodwill impairment (André et al., 2016; Li and Sloan, 2017; Ramanna and Watts, 2012); to control for the expected impairment losses for the purpose of examining the market reaction to the announcement of goodwill impairment loss (Li et al., 2011); and to test the effect of joint auditor pair composition as a

[43] The recoverable amount is the higher of assets' fair value less cost of disposal and the value in use.
[44] If the difference between the book value and the recoverable amount is greater than the recorded goodwill, impairment is charged to other non-current assets in that CGU on a pro-rata basis.
[45] Although the economic performance of the CGU containing the goodwill is a better indicator of whether goodwill has been impaired, prior studies have used firm-level performance measures rather than CGU levels to assess whether the firm should record goodwill impairment because economic performance data are only available at the firm level.

measure for audit quality on the recording of goodwill impairments conditional on the existence of low-performance indicators[46] (Lobo et al., 2017).

Different indicators have been used in the literature to capture poor performance and indications for economic impairments. Using a metric developed by Bear Stearns (Tergesen, 2002) that reflects the market indication of goodwill impairment, André et al. (2016), Beatty and Weber (2006), Li et al. (2011), and Verriest and Gaeremynck (2009) identify companies to have indications of economic impairment and hence are expected to record goodwill impairment loss if the difference between the market and book value of their equity is less than their recorded goodwill. Furthermore, some studies (e.g., André et al., 2016; Li and Sloan, 2017; Lobo et al., 2017; Ramanna and Watts, 2012) use a similar proxy to reflect the market indication of goodwill impairment. They argue that the market would believe goodwill to be impaired if the market-to-book ratio is less than one for companies with non-zero positive goodwill. This case would indicate that the current book value is too high, demonstrating that goodwill is more likely to be impaired (Lobo et al., 2017; Ramanna and Watts, 2012).

Furthermore, other proxies have recently been introduced to refer to companies currently showing low-performance indicators. Lobo et al. (2017) used two additional proxies that are derived based on two of the main performance measures that have been used in the literature: return on assets (ROA) and operating cash flow (OCF). According to them, economic impairments are more likely to take place; hence goodwill impairment should be recorded if the company ROA or OCF lies in the lowest 25^{th} percentile of the sample distribution.

The first hypothesis of this study tests the association between firms' low-performance indicators (LOW.PERF) and recognised goodwill impairment loss (GITA). To test this hypothesis, the first metric developed by Bear Stearns and used by André et al. (2016); Beatty

[46] This thesis follows the same methodology adopted by Lobo et al. (2017) while deriving the first research model and testing the first four research hypotheses.

and Weber (2006); Li et al. (2011), and Verriest and Gaeremynck (2009) will be used to capture firms' low-performance and signs of economic impairments. It takes the value of one if the difference between the market and book value of their equity is less than their recorded goodwill, and zero otherwise. The remaining proxies presented earlier will be used, and results will be provided in the additional analysis section to check the sensitivity of firms' low-performance to the selected measure. As mentioned in the development of the research hypotheses in the previous chapter, a positive association between firms' low-performance indicators and recorded goodwill impairment is predicted.

4.4.1.2.2 Extended audit report (EAR)

The second hypothesis of this study tests whether EAR adoption is associated with an improvement in recognition of goodwill impairment (represented as a stronger association between LOW.PERF and GITA). For this hypothesis, the study sample is divided into two sub-samples: The first consists of firm-year observations before the implementation of EAR; the second consists of firm-year observations whereas the auditor has issued an EAR at the end of year t. This is to research whether the change in the audit reporting regime has affected the recognition of goodwill impairment. If the positive association between LOW.PERF and GITA is more robust following the EAR adoption; it is likely that the recognition of goodwill impairment could have improved and become timelier. This can be explained as an outcome to the possible increase in the auditor's litigation risk after being required to disclose information about the RMMs (Backof et al., 2017; Gimbar et al., 2016). This could have resulted in auditors feeling more accountable, hence exercising more professional scepticism and challenging the management in the estimates they have used while testing goodwill for impairment (Christensen et al., 2014; Gutierrez et al., 2018; Reid et al., 2019). As highlighted by DeFond

and Zhang (2014), the literature on audit quality has generally demonstrated that reputation, litigation, and regulatory concerns shape the incentives that drive audit quality.

The third hypothesis of this study investigates whether the revelation of goodwill impairment as a risk item (ADGI) by the auditor has positively affected the association between LOW.PERF and GITA. To test this hypothesis, ADGI is captured as a dummy variable that takes the value of one, if the auditor announced goodwill impairment as one of the RMMs at the end of year t, otherwise takes zero. Then, an interaction term (LOW.PERF*ADGI) is measured through multiplying LOW.PERF by ADGI. This is to explore whether managers' opportunistic behaviour concerning goodwill impairment recognition has changed when the auditor discloses goodwill impairment as an RMM. This hypothesis is examined using the second sub-sample that consists of firm-year observations in which the auditor has issued an EAR at the end of year t, and the dummy variable (ADGI) divides this sub-sample into two groups based on the auditor's decision to consider goodwill impairment as an RMM. If results show LOW.PERF*ADGI significant and positive, it is more likely that the recording of goodwill impairment might have improved and become more timely. A possible explanation might be due to the pressure imposed on managers to recognise goodwill impairment and on auditors to exercise more effort and do more checks when there are indications of economic impairments, and goodwill impairment is one of the RMMs.

The fourth hypothesis of this study explores whether the magnitude of goodwill impairment-related auditor's disclosure (ADIS) has positively affected the association between LOW.PERF and GITA. For this hypothesis, ADIS is measured as a dummy variable that takes the value of one, if the length of auditor's disclosure about goodwill impairment is higher than the median level of goodwill impairment-related auditors' disclosures in the industry at the end of year t, otherwise takes zero (Gutierrez et al., 2018). This variable captures the incremental effect of more extended auditor's disclosures. An interaction term (LOW.PERF*ADIS) is

measured through multiplying LOW.PERF by ADIS. Therefore, this hypothesis is tested using the sample of firm-year observations in which goodwill impairment is considered as an RMM, and the variable (ADIS) splits this sub-sample into high versus low auditor's disclosure based on the length of auditor's disclosure about goodwill impairment.

Knowing that the FRC has not requested a certain level of disclosure, and left it open to auditors to decide the volume and kind of disclosures to provide, a significant positive LOW.PERF*ADIS can be explained as auditors who voluntarily disclosed a high amount of goodwill impairment disclosures have also exerted more audit effort. If the extent of auditor's disclosure is associated with more audit effort, one could expect higher audit quality. If this is the case, auditors would exercise more professional scepticism, challenge the management in the estimates they have made while testing goodwill for impairment and put more pressure on managers to recognise timely goodwill impairment.

4.4.1.3 Control variables

Consistent with prior research (Abdul Majid, 2013; AbuGhazaleh et al., 2012; Ahmed and Guler, 2007; Glaum et al., 2018; Hussainey et al., 2016; Lapointe-Antunes et al., 2009; Lobo et al., 2017; Riedl, 2004; Zang, 2008), the control variables consist of three main variables sets. The first set presented consists of economic factors that reflect the underlying performance of the company. The second one presents variables that reflect management-related incentives and motives, while the third one captures other company, industry, and auditor-related characteristics that are shown in the literature to affect recorded goodwill impairment losses[47].

[47] To ensure that the accounting treatment of goodwill impairment losses does not influence our tests and findings, our control variables exclude goodwill impairment losses where relevant (Godfrey and Koh, 2009).

4.4.1.3.1 Economic impairment-related factors

These variables help to explain the portion of the dependent variable (goodwill impairment losses) that reflects the decline in the economic value of the company's goodwill. This is based on the notion that impairment is associated with poor historical company performance and declining industry trends (Francis et al., 1996). Wilson (1996) emphasises the importance of controlling for economic impairment factors to derive credible research findings in studies that point to the evidence of manipulation, such as asset write-offs and goodwill impairment studies. However, prior studies have highlighted two main challenges while controlling for the economic performance of the CGUs to which goodwill was allocated and tested. First, managers' unbiased expectations regarding the future performance of these CGUs need to be considered (AbuGhazaleh et al., 2011; Riedl, 2004). These expectations cannot be observed. However, Riedl (2004, p. 831) argues that "managers' expectations are presumably conditioned on information available to the manager at the time of analysis". Therefore, managers might base their decisions to write down the assets by looking at the change in the company's performance. Hence, prior research has used some proxies (i.e. change in pre-write-off earnings/sales/operating cash flow/market-to-book value from the prior year to the current year) to reflect certain parts of managers' expectations.

Second, financial information about the acquired business[48] that gave rise to the goodwill or the CGUs or segments (some companies identify some CGUs on a segment level) to which goodwill is allocated is not publicly available unless each CGU is a public company (AbuGhazaleh et al., 2012; Hayn and Hughes, 2006; Hussainey et al., 2016).

[48] "The acquired business may be completely integrated within the other units of the company, making its operational results difficult, if not impossible, to extract from the aggregate, firm-level, reports. In other cases, when the acquired business is reported as a single segment, or part of an operating segment, more information is available to evaluate the goodwill. However, even then, segment data are unavailable for individual assets (such as cash, inventory, or accounts receivable), non-existent for liabilities, and undefined for equity accounts" (Hayn and Hughes, 2006, p. 236)

Therefore, firm-level proxies are used to capture the economic impairment of firm-wide goodwill[49] (Beatty and Weber, 2006; Francis et al., 1996; Glaum et al., 2018; Hayn and Hughes, 2006; Lapointe-Antunes et al., 2008; Lobo et al., 2017; Ramanna and Watts, 2012; Riedl, 2004; Zang, 2008). In the UK, AbuGhazaleh et al. (2011) and Hussainey et al. (2016) only observe goodwill data for the company as a whole, as even with goodwill allocated to CGUs that have been identified on a segmental level, segmental performance data are not available for all companies on a standardised basis. Similarly, this thesis does not directly capture the economic performance of the CGUs containing goodwill. Nevertheless, following studies on the determinants of goodwill impairment, this thesis uses five variables (measured at the firm level) to account for firm-specific past performance. These are RETURN, ΔSALES, ΔROA, ΔOCF, ΔMV/BV.

Following Francis et al. (1996), Glaum et al. (2018), Hayn and Hughes (2006), Hussainey et al. (2016), Ramanna and Watts (2012) and Zang (2008), this study uses the company's stock market return in year t, RETURN, as a market-based proxy for economic performance based on the notion that share prices generally reflect information about companies' abilities to generate cash flows (Glaum et al., 2018). Therefore, a negative market return might generally indicate the inability of assets (including goodwill) to generate future cash flows and hence the need be impaired. Hereafter, a negative relationship between RETURN and goodwill impairment is predicted.

[49] Firm-level proxies might not properly capture the need to record goodwill impairment, since companies might show signs of poor performance at the firm level and still are not required to record goodwill impairment if the CGUs that include goodwill perform particularly well, and vice versa (AbuGhazaleh et al., 2011). According to Hussainey et al. (2016), this limitation results in some insignificant results for some of the independent variables included in their study such as proxies for corporate governance and accounting enforcement quality. On the other hand, Hayn and Hughes (2006) argue that firm-level variables such as companies' return and changes in the overall profitability reflect the market's assessment of the aggregate changes in the firm's value and thus would provide more general information about the performance and profitability of certain reporting units (CGUs), particularly in cases where goodwill is allocated to multiple reporting units (CGUs) or where the validity of the segment data is low.

Consequently, following AbuGhazaleh et al. (2011), Francis et al. (1996), Glaum et al. (2018), Hayn and Hughes (2006), Lapointe-Antunes et al. (2008), Li and Sloan (2017), Lobo et al. (2017) and Riedl (2004), change in companies' sales and pre-write off earnings, ΔSALES and ΔROA, are used to capture accrual-related performance attributes. They help to gain further insights on the recoverability of the assets' value (including goodwill). ΔSALES is a gross measure of current year changes in the company performance, while ΔROA is a net measure of current year changes in the company profitability that reflect more of the return on investment in the asset (including goodwill) (AbuGhazaleh et al., 2011; Riedl, 2004). For the purpose of this study, ΔSALES is defined as the percentage change in total sales (Hayn and Hughes, 2006; Riedl, 2004). Similarly, ΔROA is measured by the difference between current and lagged ROA (Francis et al., 1996; Lobo et al., 2017).

Few studies (e.g., AbuGhazaleh et al., 2011; Lobo et al., 2017; Riedl, 2004) used the total assets at the end of t-1 as a deflator for the calculation of the ROA ratio. However, following Glaum et al. (2018), this thesis measures the current year pre-write off earnings (ROA) by deflating the company's EBITDA before goodwill impairment by end-of-year total assets before goodwill impairment. Using EBITDA before goodwill impairment to capture earnings is necessary to properly test the association between recorded goodwill impairment and earnings level before the company's decision to record goodwill impairment, while using the end-of year total assets before goodwill impairment considers goodwill that arises from current year acquisition, and correctly captures the company' assets before any reduction that caused by recording goodwill impairment.

Considering that an improvement in the company's sales or returns would suggest an improvement in its performance – which reflects the recoverability of recorded goodwill – a negative relationship is predicted between changes in either sales or returns and the amount of goodwill impaired (e.g. AbuGhazaleh et al., 2011; Francis et al., 1996; Hussainey et al., 2016;

Riedl, 2004). This means that poorer company performance, reflected by reductions in current year sales or returns, is associated with a higher amount of goodwill impairment.

The fourth variable used to capture cash-related performance attributes, ΔOCF, is the change in company' operating cash flow. Likewise, ΔOCF is a net measure of changes in current year performance, reflecting more of changes in the return on investment in the asset (including goodwill) (Riedl, 2004). Therefore, improvement in the operating cash flow suggests that the company is performing well and achieving more returns from its assets (including goodwill). Following Lobo et al. (2017), this study measures ΔOCF as the difference between the current ratio of operating cash flow to total assets at the end of t-1 and its lagged one. According to IAS 36, estimating the value in use of the CGUs that contain goodwill is typically done based on valuation approaches that are mainly based on the estimation of future cash flows. Knowing that future cash flows are mainly forecasted based on current cash flows, and certain assumptions of the company expected growth, profitability, and risk (Lobo et al., 2017), current OCFs are expected to be a key economic driver that determines the amount of goodwill impairment loss. Consequently, decreases in the company's cash flow would be associated with more goodwill impairment charges (AbuGhazaleh et al., 2011; Hussainey et al., 2016; Lobo et al., 2017; Riedl, 2004). Hence, this thesis predicts a negative association between ΔOCF and the amount of goodwill impairment losses.

Finally, according to IAS 36, when the carrying amount of the net assets of the entity are more than its recoverable amount (IASB, 2004a), companies are expected to report more goodwill impairment losses. Beatty and Weber (2006) argue that companies with higher growth opportunities (higher market-to-book ratio) have a lower likelihood of recording goodwill impairment losses. On the other hand, companies who witnessed poor performance in the past and did not take a write-off to reduce their book value are more likely to record goodwill impairment write-off (Beatty and Weber, 2006). Therefore, the fifth variable, ΔMV/BV,

employed in this study helps to capture the change in the company' market value of equity (as a measure of its recoverable amount) to its book value of equity before goodwill impairment (as a measure of its carrying value) from year t-1 to t. This change provides an indication of potential goodwill impairments at the firm level. Following (AbuGhazaleh et al., 2011; Beatty and Weber, 2006; Francis et al., 1996; Glaum et al., 2018; Li and Sloan, 2017; Lobo et al., 2017; Ramanna and Watts, 2012), it is expected that companies with a positive change in the market-to-book value are more likely to report less goodwill impairment losses. Hence, a negative relationship between ΔMV/BV and the size of goodwill impairment is predicted.

4.4.1.3.2 Management incentives related factors

After controlling for economic impairment indicators that would drive the management to recognise a goodwill impairment loss, additional variables are employed to explain the portion of the dependent variable (goodwill impairment losses) that reflects management incentives to record more or less or even delay the recognition of goodwill impairment loss. Following the evidence presented in prior studies and as explained in the literature review chapter in this study, rather than improving the information content of acquired goodwill through signalling private information, management may opportunistically use the discretion inherent in the impairment test process to overstate, understate, or simply not recognise goodwill impairment loss (AbuGhazaleh et al., 2011; Beatty and Weber, 2006; Glaum et al., 2018; Hayn and Hughes, 2006; Hussainey et al., 2016; Li and Sloan, 2017; Ramanna and Watts, 2012). Managers might be selective regarding the underlying accounting choices they make when testing goodwill for impairment (AbuGhazaleh et al., 2011). Consequently, four variables are used to proxy for potential managerial opportunism in the recording of goodwill impairment. These are LEVERAGE, ΔCEO, BATH, and SMOOTH.

Leverage

Several studies suggest that companies' leverage may play a role in the asset write-offs decision (e.g. Elliott and Shaw, 1988; Riedl, 2004; Strong and Meyer, 1987; Zucca and Campbell, 1992) and goodwill impairments (e.g. AbuGhazaleh et al., 2011; Beatty and Weber, 2006; Glaum et al., 2018; Godfrey and Koh, 2009; Hussainey et al., 2016; Lapointe-Antunes et al., 2008; Ramanna and Watts, 2012; Zang, 2008). Two different arguments are presented in the literature. First, companies may delay or avoid the recording of goodwill impairment if they are close to violating their debt covenants (Beatty and Weber, 2006; Ramanna and Watts, 2012; Zang, 2008), especially if they operate in industries where certain debt to equity or interest coverage ratios are required to be met as a part of the conditions of their debt covenants (Glaum et al., 2018). This is based on the assumption provided by Watts and Zimmerman (1986, 1990) that accounting choices are affected by companies' debt contracts and the closer the company to its debt covenants, the more likely that its management select income-increasing accounting methods and estimates (such as avoiding or delaying the recording of goodwill impairment) to avoid costly violations of debt covenants. This scenario presumes that companies with significant debts are less likely to record goodwill impairment losses to maximise their current earnings to avoid costly violations of debt covenants.

On the other hand, leverage also reflects financial risk (Glaum et al., 2018) and thus heavily indebted companies are subject to a larger amount of pressure and a higher level of scrutiny from large debt holders, such as banks and large financial institutions. This is to acquire private information that enables them to monitor management actions and to evaluate their accounting choices in an unbiased way (AbuGhazaleh et al., 2011; Jensen, 1993; Shleifer and Vishny, 1997). This would result in constraining managers' opportunistic behaviour and force the recognition of existing impairments that reflect the underlying performance of the company (AbuGhazaleh et al., 2012).

Similar to (AbuGhazaleh et al., 2012; Elliott and Shaw, 1988; Glaum et al., 2018; Godfrey and Koh, 2009; Hussainey et al., 2016; Lapointe-Antunes et al., 2008; Ramanna and Watts, 2012; Strong and Meyer, 1987; Zang, 2008; Zucca and Campbell, 1992), this thesis captures the company proximity to violate its debt covenants using the debt ratio, as a simple measure to its leverage, based on the notion that that debt covenant constraints are only likely to be relevant where companies have significant debt[50]. Following Glaum et al. (2018), LEVERAGE is measured by dividing the company's total liabilities at the end of year t by total assets before goodwill impairment at the end of year t. In view of the competing arguments discussed above, the sign for LEVERAGE is not predicted.

CEO change (ΔCEO)

Prior studies provide evidence on the relationship between change in the CEO and the recording of goodwill impairment. Companies with relatively longer tenures CEO are less likely to record or tend to delay asset write-offs including goodwill impairment losses (Beatty and Weber, 2006; Li and Sloan, 2017; Ramanna and Watts, 2012), while companies with recently appointed CEO tend to accelerate and take larger asset write-offs and goodwill impairment losses (AbuGhazaleh et al., 2011; Beatty and Weber, 2006; Elliott and Shaw, 1988; Francis et al., 1996; Glaum et al., 2018; Hussainey et al., 2016; Lapointe-Antunes et al., 2008; Masters-Stout et al., 2008; Riedl, 2004; Strong and Meyer, 1987). Three possible reasons have been provided to explain these findings.

First, CEOs' decision to delay recording goodwill impairment loss depends on how far they want to protect their reputation from the consequences of writing off goodwill. This is more likely to take place if they have made the original acquisition decision that generated goodwill since the impairment might suggest that this acquisition was overpaid and hence future

[50] Ramanna and Watts (2012, p. 759) argues that 'the more debt the firm has, the more costly it will be to renegotiate contracts once covenants are violated'.

synergies are not as initially expected (Beatty and Weber, 2006; Li and Sloan, 2017; Ramanna and Watts, 2012). However, this is not the case for new CEOs who are not responsible for acquisition decisions made by their predecessors and therefore do not suffer reputational costs arising from impairment of goodwill in their first year (Glaum et al., 2018).

Second, since new CEOs are not held responsible for the company's past performance, they tend to "take a bath" and accelerate the recording of goodwill impairment loss and attribute these losses to former CEOs' poor-performance (AbuGhazaleh et al., 2011; Elliott and Shaw, 1988; Francis et al., 1996; Lapointe-Antunes et al., 2008; Masters-Stout et al., 2008; Riedl, 2004; Strong and Meyer, 1987). This attitude which is known as "clearing the deck" or "cleaning house" would help new CEOs in reducing the benchmark against which their future performance will be judged (Elliott and Shaw, 1988; Francis et al., 1996; Moore, 1973). Furthermore, it reduces future years' impairments, releasing future earnings from these losses that show better company performance in subsequent years (Glaum et al., 2018). The two previous explanations are consistent with predictions from the agency theory and opportunistic CEOs driving the decision to delay or accelerate goodwill impairment loss (Ramanna and Watts, 2012).

Third, new CEOs might be appointed because of the company's poor-performance (Murphy and Zimmerman, 1993). Hence, they might change the company strategies and evaluate goodwill differently from their predecessors, concluding that goodwill associated with prior acquisition is not realised and goodwill impairment is required (AbuGhazaleh et al., 2011; Wilson, 1996). This argument supports the idea that goodwill impairment losses are recognised to reflect true economic impairment rather than managerial opportunism (Francis et al., 1996).

Following previous studies (e.g., AbuGhazaleh et al., 2011; Beatty and Weber, 2006; Elliott and Shaw, 1988; Francis et al., 1996; Glaum et al., 2018; Hussainey et al., 2016; Lapointe-

Antunes et al., 2008; Masters-Stout et al., 2008; Riedl, 2004; Strong and Meyer, 1987), ΔCEO is measured as a dummy variable that takes the value of one if the company experiences a change in the CEO in year t, and zero otherwise. Consistent with the explanations provided, newly appointed CEOs tend to recognise more goodwill impairment losses than senior CEOs. Hence, a positive relationship is predicted.

Big bath (BATH)

Prior studies argue that managers might opportunistically overstate the amounts of assets written off (Alciatore et al., 1998; Francis et al., 1996; Rees et al., 1996; Riedl, 2004; Zucca and Campbell, 1992) and goodwill impaired (AbuGhazaleh et al., 2011; Giner and Pardo, 2015; Glaum et al., 2018) when companies achieve remarkably unusual low pre-write off income. It is known as managers taking "big bath" charges in periods in which pre-write off earnings are low and below expectations (Zucca and Campbell, 1992). A possible reason might be that managers want to signal that past problems have been overcome and better times will follow (Alciatore et al., 1998; Zucca and Campbell, 1992). Besides, this helps to reduce future goodwill impairments and increase earnings accordingly (Giner and Pardo, 2015; Glaum et al., 2018). Furthermore, as explained earlier in this chapter, new CEOs might charge more impairments in their first year to reduce the benchmark against which future earnings will be judged. On the other hand, according to AbuGhazaleh et al. (2011), Christie and Zimmerman (1994), Healy and Wahlen (1999), Riedl (2004), and Strong and Meyer (1987), managers' behaviour might not be opportunistic and they might use big bath to signal their private information about the extent of asset (goodwill) value declines.

Adopted from AbuGhazaleh et al. (2011), Glaum et al. (2018), and Riedl (2004), BATH is measured as a dummy variable that takes the value of one if the company has negative pre-impairment earnings and a negative change in the current year income that is below the median

among those companies with a nonzero negative change in income, and zero otherwise[51]. Consistent with the two arguments presented, companies with unusual low pre-impairment income are expected to record more goodwill impairment losses. Thus, a positive association is predicted.

Income smoothing (SMOOTH)

Similarly, managers tend to opportunistically overstate asset write-offs and goodwill impairment when companies achieve remarkably unusual high pre-write off income (AbuGhazaleh et al., 2011; Alciatore et al., 1998; Francis et al., 1996; Giner and Pardo, 2015; Glaum et al., 2018; Rees et al., 1996; Riedl, 2004; Zucca and Campbell, 1992). It is known as managers 'smoothing' earnings in periods in which pre-write off earnings are high and above expectations (Zucca and Campbell, 1992). According to Francis et al. (1996), Healy (1985), and Holthausen et al. (1995), managers are highly motivated to smooth income if earnings before asset write-offs or goodwill impairments exceed the upper bound specified in earnings-based bonus plans, hence saving some future earnings that would maximise their future periods' bonuses. This would help them in reducing fluctuations of their companies' earnings realizations and setting up lower future income expectations for analysts and investors (Beidleman, 1973; Dechow et al., 2010; Graham et al., 2005). Similar to the big bath strategy, absorbing more goodwill impairment losses through income smoothing in periods with higher income helps to reduce future goodwill impairments, and increase earnings accordingly in periods with lower income (Giner and Pardo, 2015; Glaum et al., 2018). On the other hand, managers' behaviour might not be opportunistic, and they might use the reporting discretion to signal their private information and expectations regarding the future cash flows of the

[51] BATH and SMOOTH are measured when below/above their respective medians to focus on ranges where managers are more likely to have incentives to engage in these reporting behaviours (AbuGhazaleh et al., 2011).

company (AbuGhazaleh et al., 2011; Christie and Zimmerman, 1994; Healy and Wahlen, 1999; Riedl, 2004).

For the purpose of this study and following AbuGhazaleh et al. (2011), Glaum et al. (2018), and Riedl (2004), a company is classified to have abnormal high pre-write off income if it has positive pre-impairment earnings and a positive change in the current year income that is above the median among those companies with a nonzero positive change in income. For such a company, the indicator variable SMOOTH equals one; otherwise SMOOTH equals zero. Accordingly, companies with unusual high pre-impairment income are expected to record more goodwill impairment losses. Thus, a positive association is predicted.

4.4.1.3.3 Firm, industry, and auditor related factors

Following studies examining the determinants of goodwill impairment, nine more variables are included to control for other firm-related characteristics, industry-related characteristics, and auditor-related characteristics. Out of these nine variables, seven variables relate to company characteristics. Three variables are included to proxy for the characteristics of goodwill; Size of goodwill (GW), the number of cash-generating units to which goodwill is allocated (CGUs), and the company's tendency to record goodwill impairment (L-IMP). Other variables include the company size (SIZE), company risk (BETA), the company's percentage of shares available for trading (FREEFLOAT), and companies that are cross-listed in the U.S. (CROSSLIST). The last two variables include the change in the industry return on assets (INDΔROA) and audit partner change (ΔAUDITOR).

Size of goodwill (GW/TA)

Previous studies expect companies with a large goodwill balance to record greater amounts of impairment losses than the ones with a small goodwill balance because they are more exposed to the impairment test (AbuGhazaleh et al., 2011; Giner and Pardo, 2015; Glaum et al., 2018;

Hussainey et al., 2016; Lapointe-Antunes et al., 2008; Li and Sloan, 2017; Ramanna and Watts, 2012; Zang, 2008). Following Glaum et al. (2018), size of goodwill (GW/TA) is measured as year-end goodwill before impairment deflated by the year-end total assets before goodwill impairment. Following prior research, a positive relationship between the magnitude of goodwill impairment and the company's size of goodwill is predicted.

Cash-generating units containing goodwill (CGU)

Prior studies provide two main arguments to explain the association between reported goodwill impairment losses and the number of CGUs (reporting units) to which goodwill is allocated. The first argument states that companies with goodwill allocated to more CGUs are exposed to more impairment tests and hence may report higher goodwill impairment losses because an existing loss in a certain CGU cannot be netted against an increase in another CGU (AbuGhazaleh et al., 2011; Beatty and Weber, 2006; Lapointe-Antunes et al., 2008). Accordingly, a positive relationship is expected between the number of CGUs and goodwill impairment losses. Nevertheless, Beatty and Weber (2006) and Ramanna and Watts (2012) argue that managers gain greater flexibility in allocating goodwill as the number of reporting units (CGUs) increases. Consequently, the second argument supports the notion that managers allocate goodwill to a large number of CGUs (reporting units) to opportunistically delay or accelerate the recording of goodwill impairment loss. This can be done by allocating a large amount of goodwill to CGUs with high internal growth, unrecorded internally generated goodwill, and lower probability of failing the impairment test to avoid or delay the recording of goodwill impairment (Ramanna and Watts, 2012). In this case, less amount of goodwill impairments is associated with a larger number of CGUs. On the other hand, managers can allocate goodwill to CGUs with lower growth rate to accelerate the recording of goodwill impairment, resulting in more goodwill impairments are associated with larger numbers of CGUs. In view of the competing arguments discussed above, the sign for CGUs is not

predicted. Previous studies (e.g. Beatty and Weber, 2006; Glaum et al., 2018; Ramanna and Watts, 2012) use the number of segments to proxy for the CGUs (reporting units) to which goodwill is allocated, because of the unavailability or the difficulty of getting this data. However, following AbuGhazaleh et al. (2011), data about the number of CGUs that contains goodwill has been collected manually from the annual reports. AbuGhazaleh et al. (2011) and Beatty and Weber (2006) measure it as a dummy variable that takes the value of one if the company has more than CGU (reporting units) at the end of the year, and zero otherwise. Though, this measure treats all companies with multiple CGUs equally and this might result in loss of information. Therefore, this study measures cash-generating units (CGUs) as a continuous variable that reflects the natural log of CGUs that contains goodwill at the end of the year.

The tendency of recording goodwill impairment (L-IMP)

Prior studies argue that companies tend to report asset write-offs and goodwill impairment losses in a given year if they have done it before in prior years (Beatty and Weber, 2006; Elliott and Hanna, 1996; Francis et al., 1996; Glaum et al., 2018). This study uses lagged impairment (L-IMP) to capture the company's tendency to record goodwill impairment. It is represented as a dummy variable that takes the value of one if the company reported goodwill impairment losses at the end of year t-1, otherwise zero. It is expected that companies with a history of recording goodwill impairment are more likely to record goodwill impairment losses that are greater than companies that are recording impairment losses for the first time in the current year. Therefore, following previous studies, a positive relationship is predicted.

Firm size (SIZE)

The majority of prior studies control for companies' differential size effect as it might affect the company's decision to record asset write-offs and goodwill impairment losses. They argue

that managers of large companies are more likely to record goodwill impairment losses than managers of small ones (Chalmers et al., 2011; Godfrey and Koh, 2009; Zang, 2008). Three possible explanations are provided in the literature. First, Watts and Zimmerman (1986) argue that managers of big companies might opportunistically exercise income-decreasing earnings practices, in an attempt to limit wealth transfers imposed from potential adverse political actions. Second, larger companies are more likely to do larger numbers of mergers and acquisition (AbuGhazaleh et al., 2011), and are capable of paying higher acquisition premium (overpayment), resulting in recognition of larger amounts of goodwill, which subsequently results in larger amounts of goodwill impairments. Third, company size may proxy for factors such as the quality of financial reporting, managerial expertise, and economies of scale (Ball and Foster, 1982). Consequently, Chalmers et al. (2011) and Godfrey and Koh (2009) claim that size might capture the companies' capabilities to apply complex impairment testing procedures, and hence record more goodwill impairment losses.

On the other hand, large companies are usually followed by a large number of analysts. This would expose them to a higher level of public scrutiny. Additionally, reporting large amounts of goodwill impairment can attract more attention (Godfrey and Koh, 2009), resulting in more public oversight over them. This would constrain management from manipulating earnings through goodwill impairment losses.

This study measures the size of the company assets (SIZE) as the natural log of total assets before goodwill impairment at the year-end (Beatty and Weber, 2006; Francis et al., 1996; Glaum et al., 2018; Ramanna and Watts, 2012). Following previous researchers (AbuGhazaleh et al., 2011; Beatty and Weber, 2006; Glaum et al., 2018; Lapointe-Antunes et al., 2008; Ramanna and Watts, 2012; Zang, 2008), the current study does not predict a sign for the company size.

Business risk (BETA)

Some studies (e.g., Beatty and Weber, 2006; Glaum et al., 2018; Lobo et al., 2017) argue a positive association between the company's business risk and the amount of goodwill impairment losses. Following Lobo et al. (2017), this study uses the company's BETA to proxy for its business risk. It is expected that high beta companies are more likely than low beta ones to recognise higher amounts of goodwill impairment losses. Thus, a positive relationship is expected.

Shares available for trading (FREEFLOAT)

Free float provides information about the ownership structure of the company (Glaum et al., 2018; Leuz et al., 2003; Li and Sloan, 2017; La Porta et al., 1999). It is defined as equity shares freely available to public investing (Lobo et al., 2017), and it is commonly used to reflect ownership dispersion and as an inverse proxy for insider control and concentrated ownership (Cormier et al., 2013; Leuz and Verrecchia, 2000). Accordingly, prior studies argue that the percentage of shares available for public trading (FREEFLOAT) is positively associated with lower information asymmetry and higher disclosure quality (e.g., Ding et al., 2016; Gros and Koch, 2018). Following Glaum et al. (2018) and Lobo et al. (2017), FREEFLOAT is measured as the percentage of shares available to public investment, and it is downloaded from DATASTREAM. Considering that prior studies on goodwill impairment (e.g. Glaum et al., 2018; Gros and Koch, 2018; Lobo et al., 2017) provide mixed results, the sign for FREEFLOAT is not predicted in this study.

Cross-listed company (CROSSLIST)

Cross-Listed company (CROSSLIST) is a dummy variable that takes the value of one if the company is cross-listed in the U.S., otherwise takes zero. Some studies contend that UK cross-listed companies are likely to face a stricter enforcement regime that results in their UK

earnings being more conservative than earnings reported by UK companies that are not cross-listed in the U.S. (AbuGhazaleh et al., 2011; Huijgen and Lubberink, 2005). Furthermore, cross-listed companies are more familiar with goodwill impairment tests because they have been required to carry out such tests under the requirements of the U.S. SFAS No. 142 since the year 2001 (AbuGhazaleh et al., 2011). Consequently, these studies expect cross-listed companies to recognise more goodwill impairments than other companies. However, Lapointe-Antunes et al. (2008) provide evidence that Canadian companies that are cross-listed in the U.S. report less goodwill impairment to avoid charging the transitional loss to the net income in accordance with U.S. GAAP and disclose a restated earnings figure. Furthermore, Hussainey et al. (2016) in the UK and Lobo et al. (2017) in France report an insignificant association between CROSSLIST and reported goodwill impairment. Giving these mixed results, this study does not predict a sign for the relationship between goodwill impairment and CROSSLIST.

Change in the industry ROA (INDΔROA)

Riedl (2004) highlights that economic activity may also map into the value of the company's assets at the industry level. Therefore, some studies (e.g., Francis et al., 1996; Lapointe-Antunes et al., 2008; Lobo et al., 2017; Riedl, 2004) include an additional variable that captures the change in the industry ROA (INDΔROA) to control for the industry performance. A positive change in the industry ROA is more likely to be associated with less goodwill impairment, while industries with declining INDΔROA are more likely to recognise bigger goodwill impairment losses. Thus, a negative relationship between INDΔROA and the amount of goodwill impairment is predicted. Following Lobo et al. (2017), INDΔROA is measured as the difference between mean industry ROA at the end of year t and lagged mean industry ROA at the end of year t-1.

Audit partner rotation (ΔAUDITOR)

Considering that this study presents the auditor's role in the reporting of goodwill impairment after the EAR adoption, it is important to control for other auditor-related variables that might affect the reporting of goodwill impairment. In this study, it is difficult to implement analyses of other common audit-related variables that have been used in the related literature for many reasons. First, this study is implemented on UK nonfinancial companies listed in FTSE ALL SHARES, where the majority of them are audited by Big-4 audit firms. Consequently, controlling for the audit firm size (Big-4 versus non Big-4) would not statistically have significant powers. Secondly, in the UK, going-concern opinions and financial restatements[52], as proxies for audit quality, have a very low incidence and arguably have limited consequences (Gutierrez et al., 2018).

On the other hand, prior studies provide evidence on the impact of auditor rotation[53] on audit quality. Consequently, this study controls for audit partner rotation (ΔAUDITOR), through adding a dummy variable that takes the value of one if the audit partner has changed and zero otherwise. Two competing arguments are provided in the literature. First, newly appointed partners are likely to be more independent of their clients as they had not yet had time to develop close personal relationships with the management, compared to long tenure audit partners who had been in place for several years and may have become overly trusting (Daugherty et al., 2013; Sharma et al., 2017). On the other hand, possibilities for negative and unintended consequences resulting from mandatory rotation could be detrimental during the initial years of a partner's client engagement, as it leads to a loss of client-specific knowledge (lack of client familiarity and information asymmetry). The incoming partner is less likely to

[52] Each year, the FRC typically examines 300 annual reports from all listed companies and asks about 15 to 20 companies either to restate their accounts or to change their practices for the following year (Gutierrez et al., 2018).
[53] In the UK partner name disclosure is required for financial statements ending after March 2009.

be well informed; hence is less likely to spot a financial reporting problem (Chi et al., 2009; Daugherty et al., 2012; Litt et al., 2014). Accordingly, this study does not predict a sign for the relationship between ΔAUDITOR and the amount of goodwill impairment losses.

Table 4-2 summarises the findings of previous studies on the determinants of goodwill impairment (asset write-offs) regarding the control variables used in the research model of the current study.

Table 4-2 Summary of the findings of previous studies

Variable Name	Prediction	Findings	Supporting studies
Economic impairment-related variables			
RETURN	(–)	Significant Insignificant	(Francis et al., 1996) Glaum et al., 2018 (Zang, 2008) (Hayn and Hughes, 2006) (Hussainey et al., 2016) (Ramanna and Watts, 2012)
ΔSALES	(–)	Significant Insignificant	(Riedl, 2004) (AbuGhazaleh et al., 2011) (Hayn and Hughes, 2006) Glaum et al., 2018
ΔROA	(–)	Significant Insignificant	(AbuGhazaleh et al., 2011) (Riedl, 2004) (Francis et al., 1996) (Glaum et al., 2018) (Hayn and Hughes, 2006) (Li and Sloan, 2017) (Lapointe-Antunes et al., 2008) Hussainey et al. (2016) (Lobo et al., 2017)
ΔOCF	(–)	Significant Insignificant	(AbuGhazaleh et al., 2011) (Hussainey et al., 2016) (Riedl, 2004) (Lobo et al., 2017)
ΔMV/BV	(–)	Significant Insignificant	(AbuGhazaleh et al., 2011) (Francis et al., 1996) (Glaum et al., 2018) (Li and Sloan, 2017) (Beatty and Weber, 2006) (Lobo et al., 2017)
Management incentives-related variables			
LEVERAGE	?	Significant (+) Significant (–) Insignificant	(Strong and Meyer, 1987) (Elliott and Shaw, 1988) (Hussainey et al., 2016) (Ramanna and Watts, 2012) (Lapointe-Antunes et al., 2008) (Zang, 2008) (Beatty and Weber, 2006) (Riedl, 2004) (AbuGhazaleh et al., 2011) (Glaum et al., 2018) (Zucca and Campbell, 1992)
ΔCEO	(+)	Significant Insignificant	AbuGhazaleh et al., 2011; Beatty and Weber, 2006; Elliott and Shaw, 1988; Francis et al., 1996; Glaum et al., 2018; Hussainey et al., 2016; Lapointe-Antunes et al., 2008; Masters-Stout et al., 2008; Riedl, 2004; Strong and Meyer, 1987 Ramanna and Watts, 2012
BATH	(+)	Significant Insignificant	AbuGhazaleh et al., 2011; Giner and Pardo, 2015; Riedl, 2004; Zucca and Campbell, 1992 Glaum et al., 2018; Strong and Meyer, 1987; Francis et al., 1996
SMOOTH	(+)	Significant Insignificant	AbuGhazaleh et al., 2011; Giner and Pardo, 2015; Glaum et al., 2018; Zucca and Campbell, 1992 Riedl, 2004; Francis et al., 1996

Other company, industry, and auditor-related variables			
GW/TA	(+)	Significant	Glaum et al., 2018; Giner and Pardo, 2015; Hussainey et al., 2016; Ramanna and Watts, 2012; Lapointe-Antunes et al., 2008; Li and Sloan, 2017; Zang, 2008
		Insignificant	AbuGhazaleh et al., 2011; Lobo et al., 2017
CGUs	?	Significant (+)	Glaum et al., 2018; Lapointe-Antunes et al., 2008
		Significant (–)	Ramanna and Watts, 2012
		Insignificant	AbuGhazaleh et al., 2011; Beatty and Weber, 2006
L-IMP	(+)	Significant	Beatty and Weber, 2006; Elliott and Hanna, 1996; Francis et al., 1996; Glaum et al., 2018
		Insignificant	None
SIZE	?	Significant (+)	Beatty and Weber, 2006; Francis et al., 1996; Zang, 2008; Godfrey and Koh, 2009; Chalmers et al., 2011; Giner and Pardo, 2014; Glaum et al., 2018
		Insignificant	AbuGhazaleh et al., 2011; Ramanna and Watts, 2012; Lapointe-Antunes et al., 2008
BETA	(+)	Significant	Beatty and Weber, 2006; Lobo et al., 2017; Glaum et al., 2018
		Insignificant	None
FREEFLOAT	?	Significant (+)	Lobo et al., 2017; Gros and Koch, 2018
		Insignificant	Glaum et al., 2018
CROSSLIST	?	Significant (+)	AbuGhazaleh et al., 2012
		Significant (–)	Lapointe-Antunes et al., 2008
		Insignificant	Lobo et al., 2017; Hussainey et al., 2016
IND∆ROA	(–)	Significant	Francis et al., 1996
		Insignificant	Lobo et al., 2017; Riedl, 2004

4.4.2 The value relevance model

As previously explained in section 2.3, Barth et al. (2001) define 'value relevance' in the existing research literature as being the association between accounting metrics (or 'amounts') and security market values. Hence, an accounting amount or measure, within a well-defined accounting metric, is deemed to be value relevant if it provides investors with information that is measured sufficiently reliably for its worth to be reflected in the share price, in consequence of which it can be used directly by investors in valuing a company's equity (Barth et al., 2000; Beaver, 2002)[54].

[54] It is worth noting that, unlike fundamental analysis studies, value relevance studies do not attempt to estimate or explain firm value. Instead, they help to enrich our knowledge regarding the relevance and reliability of accounting amounts by assessing how well particular accounting amounts reflect information that is used by equity investors in valuing the firm's equity (Barth et al., 2001; Beaver, 2002; Beisland, 2009; Kothari, 2001; Lev and Ohlson, 1982). Therefore, compared to fundamental analysis studies, it is not common to examine the value relevance using measures that are commonly used to estimate firm value (such as, Tobin Q).

Two main study approaches are used in the literature to investigate the value relevance of particular accounting metrics: the information content approach and the long-term association approach. The former is used to examine whether or not the announcement of accounting numbers adds new information to investors. Studies that utilise this approach analyse stock price reactions over short periods of time, usually a day or two, surrounding specific announcement dates, to examine how fast the market reacts to new information. On the other hand, the long-term association approach is used to examine the long term relationships of accounting numbers with stock prices (returns), for time horizons varying from 3-4 months to several years. This latter approach aims to observe whether such accounting numbers capture and summarise useful information, that, in turn, can explain the firm's value effectively, regardless of whether or not this information is new (Alciatore et al., 1998; Hitz, 2007). For the purpose of this study, the value relevance of goodwill impairment following the EAR adoption will be examined using the long-term association approach. The reasons for this are as follows.

First, the use of the information content approach requires EAR to provide (unpredictable) news that alters market prices or trading volume (Almulla and Bradbury, 2018; Gutierrez et al., 20018; Lennox et al., 2019). Almulla and Bradbury (2018) and Lennox et al. (2019) have highlighted that investors might not view auditors' risk disclosures as informative because they already knew about the risks from other sources, such as annual reports, conference calls, and earnings announcements. These additional information sources could make the disclosures by auditors largely redundant or superfluous. Consistent with this, the PCAOB noted that "…when describing critical audit matters in the auditor's report, the auditor is not expected to provide information about the company that has not been made publicly available by the company" (PCAOB, 2017, p. 34). Therefore, prior studies that employed the information content approach to investigate the market reaction to EAR reported insignificant results, suggesting

that extended auditor's disclosures are not incrementally relevant to investors (Gutierrez et al., 20018; Lennox et al., 2019).

Second, under the long-term association approach, the usefulness of auditors' disclosures is measured by their ability to capture information that is contemporaneously obtained by the market during the same period. Therefore, Almulla and Bradbury (2018) and Lennox et al. (2019) have adopted this approach to see whether KAMs reflect value-relevant information that is significantly associated with equity market value.

Prior value relevance studies employed two main regression models: price-level regressions[55] and returns (price change) regressions. According to Landsman and Magliolo (1988) and Kothari and Zimmerman (1995), neither of the two regression models is superior to the other, and the choice between them should be based on the research questions and hypotheses under investigation. Barth et al. (2001) and Beaver (2002) emphasise that price-level regressions are suitable for investigating what is reflected in firm value, while return regressions are suitable for investigating what is reflected in changes in firm value. While Kothari and Zimmerman (1995) have found that price-level regressions offer less biased estimated slope coefficients, the return models were found to have less serious econometric problems[56].

For the purpose of this study, price-level regression will be used for two main reasons. First, as Barth et al. (2000, p. 22) has stated:

> "[R]eturns approaches require additionally assuming that valuation parameters are intertemporal constants (Landsman and Magliolo, 1988). Failure to recognize the

[55] The basic types of price-level regressions include three main models: First, balance-sheet models that explain the company's market value using balance sheet data. Second, earnings-discount models that explain the company's market value using income statement data. Third, empirical versions of the Ohlson (1995) model which combine elements of balance sheet and earnings discount models to explain the company's market value using both balance sheet and income data.

[56] Price-level regressions, however, are expected to suffer potential econometric problems such as heteroscedasticity caused by scale effects. These can be handled in a known econometric fashion, and they are carefully investigated in the empirical analysis of chapter 6.

> resulting coefficient bias can lead to incorrect experimental inferences. One type of study particularly prevalent in accounting research is examination of the value relevance of recently required disclosures or changes in recognition rules. In these settings, investors may require several years to understand fully the valuation implications of the new disclosures. Similarly, preparers may take several years to develop expertise in measuring the new accounting amounts, resulting in the measurement characteristics of the disclosed amounts changing over time. This makes the task of investors determining the value relevance of the disclosures even more difficult".

Accordingly, Barth et al. (1992) and Barth et al. (1996) used the price-level regressions while studying the value relevance of SFAS No. 87 and SFAS No. 107 in the first few years following adoption. This to consider the impact that preparers and investors' learning process would have on the value relevance of pension disclosures and banks' fair value estimates, respectively. Similarly, this study examines the first 3 years following the EAR adoption where auditors are required to provide for the first time extended disclosures about companies' RMMs, and investors may require several years to fully understand the valuation implications of the new disclosures. Hence, the use of return regression could result in biased findings.

Second, as Lennox et al. (2019) have found, nearly three-quarters of the RMMs reported by auditors in the UK in year t recur in year t+1. This indicates that most of the risks reported by auditors remain unchanged, suggesting that RMMs are unlikely to be informative in future years. Hence, their results showed insignificant results while using the return regression model, compared to the price-level regression model, where the latter did capture a significant impact on companies' stock prices. Likewise, since auditors' disclosure of goodwill impairment, as a risk item, is less likely to change across the study period, the use of price-level regressions will be suitable for capturing goodwill impairing related-auditor disclosures that become impounded in equity prices.

Consistent with the literature on the value relevance of goodwill impairment (e.g., AbuGhazaleh et al., 2012; Amel-Zadeh et al., 2018; Baboukardos and Rimmel, 2014; Bugeja and Gallery, 2006; Hamberg and Beisland, 2014; Al Jifri and Citron, 2009), an adaptation of Ohlson's (1995) model is estimated for the value relevance model. Equation (3) is the basic value relevance model, and it is used to test the fifth hypothesis (H5). Then, Equation (4) introduces the EAR to test the remaining hypotheses of the value relevance study (H6 & H7). Dummy variables are included for each industry (using the Industry Classification Benchmark) and year to control for any other effects that might be specific to certain industries or years. To lessen potential heteroscedasticity problems, which is one of the common limitations of the price-level regressions, all the following regression models are estimated on a per share basis (Barth and Clinch, 2009)[57].

$$PR_i = \alpha_0 + \alpha_1 BV\_GWS + \alpha_2 GWS + \alpha_3 EPS\_IMP + \alpha_4 IMP + \alpha_5 LOSS + \alpha_6 \text{Industry fixed effect} + \alpha_7 \text{Year fixed effect} + u_i \quad \text{(Equation 3)}$$

$$PR_i = \alpha_0 + \alpha_1 BV\_GWS + \alpha_2 GWS + \alpha_3 EPS\_IMP + \alpha_4 IMP + \alpha_5 EAR + \alpha_6 IMP*EAR + \alpha_7 LOSS + \alpha_6 \text{Industry fixed effect} + \alpha_7 \text{Year fixed effect} + u_i \quad \text{(Equation 4)}$$

Where: PR_i is the market value of equity per share[58]; IMP is goodwill impairment loss per share; EAR is the extended audit report that is measured using four proxies (*POST*, *ADIS*, *DescDIS* and *SpecDIS*); BV_GWS is the book value of equity per share; GWS is goodwill per share; EPS_IMP is the earnings per share; LOSS is the firm's net loss. Table 4-3 provides the definitions of these variables and the main source of data for each one of them.

[57] Barth and Clinch (2009) show that per share specifications of Ohlson's (Ohlson, 1995) model outperform other 5 alternative estimation models specifications in mitigating size effects and heteroscedasticity problems. They suggest that per share specifications attenuate such problems as it yields more stable and less biased estimates of the coefficients' p-values and regression explanatory power.

[58] Since the whole value relevance model is estimated on a per share basis, the dependent variable (market value of equity per share) is knowns in prior studies as the share price (PR). Therefore, the two terms 'market value of equity per share' and 'share price' are used interchangeably in this study.

Table 4-3 Summary of variables definition and main sources of data - The value relevance model

Dependent variable	***PR$_i$***	Continuous variable: the market value of equity per share five months after the year-end (Worldscope).
Main Independent Variables of Interest	***IMP***	Continuous variable: recorded goodwill impairment loss in year $_t$, deflated by the number of shares $_t$ (Annual report).
	EAR-POST	Indicator variable: equal 1 if the auditor issued an extended audit report (Annual report).
	EAR-ADIS	Indicator variable: equal 1 if goodwill impairment-related auditor's disclosure is higher than the median level of the industry distribution at the end of year $_t$, 0 otherwise (Annual report).
	EAR- DescDIS	Indicator variable: equal 1 if the auditor's disclosure of the goodwill impairment risk description is higher than the median level of other auditors' disclosure of the same information at the end of year $_t$, 0 otherwise (Annual report).
	EAR- SpecDIS	Indicator variable: equal 1 if the auditor's disclosure of the goodwill impairment entity-specific audit procedures is higher than the median level of other auditors' disclosure of the same information at the end of year $_t$, 0 otherwise (Annual report).
Control variables	***BV_GWS***	Continuous variable: firm's book value of equity excluding goodwill in year $_t$ deflated by the number of shares $_t$ (Worldscope).
	GWS	Continuous variable: goodwill before impairment in year $_t$ deflated by the number of shares $_t$ (Annual report).
	EPS_IMP	Continuous variable: earnings before goodwill impairment deductions in year $_t$ deflated by the number of shares $_t$ (Worldscope).
	LOSS	Indicator variable: equal 1 if the firm recognised a net loss (Worldscope).
Fixed Effect variables	***INDUSTRY***	Dummy variable for each industry based on ICB (Datastream)
	YEAR	Dummy variable for each fiscal Year

The fifth hypothesis predicts a negative association between reported goodwill impairment loss and the company's market value of equity. Following Aharony et al. (2010) and Amel-Zadeh et al. (2013), the dependent variable is the market value of equity per share five months after the year-end (*PR*). The market value of equity five months after the year-end is selected to avoid hindsight bias (Hamberg and Beisland, 2014) since UK listed companies are required to publish their annual reports within a maximum period of 4 months following their year-end date. The main independent variable of interest is the recorded goodwill impairment loss per share (*IMP*). Moreover, the basic regression model (equation 3) controls for the following

variables on a per-share basis: firm' book value of equity excluding goodwill (*BV_GWS*); recognised goodwill before impairment (*GWS*); earnings before goodwill impairment deductions (*EPS_IMP*); and whether the firm has realised a net loss (*LOSS*).

The sixth hypothesis expects EAR to provide value-relevant information that moderates the negative association between goodwill impairment losses and the market value of equity. Hence, in addition to the variables included in the basic model, extended audit report (*POST*) and its interaction with goodwill impairment losses (*IMP*POST*) are investigated in Equation 4a. So, Equation 4 is rewritten again as follows:

$$PR_i = \alpha_0 + \alpha_1 \text{ BV\_GWS} + \alpha_2 \text{ GWS} + \alpha_3 \text{ EPS\_IMP} + \alpha_4 \text{ IMP} + \alpha_5 \text{ POST} + \alpha_6 \text{ IMP*POST} + \alpha_7 \text{ LOSS} + \alpha_6 \text{ Industry fixed effect} + \alpha_7 \text{ Year fixed effect} + u_i \quad \text{(Equation 4a)}$$

The seventh hypothesis predicts that the extent of goodwill impairment-related auditor's disclosure would affect the value relevance of goodwill impairment losses. Hence, the length of auditor's disclosure about goodwill impairment losses (*ADIS*) and its interaction with goodwill impairment losses (*IMP*ADIS*) are examined in Equation 4b. So, Equation 4 is rewritten again as follows:

$$PR_i = \alpha_0 + \alpha_1 \text{ BV\_GWS} + \alpha_2 \text{ GWS} + \alpha_3 \text{ EPS\_IMP} + \alpha_4 \text{ IMP} + \alpha_5 \text{ ADIS} + \alpha_6 \text{ IMP*ADIS} + \alpha_7 \text{ LOSS} + \alpha_6 \text{ Industry fixed effect} + \alpha_7 \text{ Year fixed effect} + u_i \quad \text{(Equation 4b)}$$

Then, to test H7a and H7b, ADIS is segregated into two parts: (1) descriptive auditor's disclosure (*DescDIS*); (2) entity-specific auditor's disclosure (*SpecDIS*).

So, Equation 4 is rewritten again as follows:

$$PR_i = \alpha_0 + \alpha_1 \text{ BV\_GWS} + \alpha_2 \text{ GWS} + \alpha_3 \text{ EPS\_IMP} + \alpha_4 \text{ IMP} + \alpha_5 \text{ DescDIS} + \alpha_6 \text{ IMP*DescDIS} + \alpha_7 \text{ LOSS} + \alpha_6 \text{ Industry fixed effect} + \alpha_7 \text{ Year fixed effect} + u_i \quad \text{(Equation 4c)}$$

$$PR_i = \alpha_0 + \alpha_1 \text{ BV\_GWS} + \alpha_2 \text{ GWS} + \alpha_3 \text{ EPS\_IMP} + \alpha_4 \text{ IMP} + \alpha_5 \text{ SpecDIS} + \alpha_6 \text{ IMP*SpecDIS} + \alpha_7 \text{ LOSS} + \alpha_6 \text{ Industry fixed effect} + \alpha_7 \text{ Year fixed effect} + u_i \quad \text{(Equation 4d)}$$

4.4.3 Sample characteristics

The initial sample consists of all UK companies listed on the London Stock Exchange (LSE) FTSE ALL SHARES index. Data are collected for the period 2010 – 2016, to cover a window of 3 years before and after the change in the UK auditing regulation. Table 4-4 presents the sample selection procedures for the research sample used in the analysis. This study excludes (1) financial companies because they are required to follow industry-specific regulations, (2) companies that did not recognise goodwill in their balance sheet in any of the seven years covered in this study, and (3) companies not following the IFRS. The initial sample consists of 347 non-financial companies reflecting 2002 firm-year observations. For the determinants model, 551 firm-year observations are excluded due to missing control variables, resulting in a final sample of 1451 (2002 – 551) firm-year observations employed in the analysis of the determinants model. Regarding the value relevance model, only 180 firm-year observations are excluded due to missing control variables, resulting in a final sample of 1822 (2002 – 180) firm-year observations employed in the analysis of the determinants model.

Table 4-4 Sample selection procedures

Sample Procedures	No. of Firm	Firm-year observations
UK companies listed in FTSE ALL Shares index	634	4,438
(-) Financial companies	287	2,009
(-) Firm-year observations with no goodwill		342
(-) Firm-year observations not following IFRS		85
The initial number of firm-year observations		2002
(-) Observations with missing control variables (Determinants model)		551
The final number of firm-year observations used in the analysis of the determinants model (2002 – 551)		**1451**
(-) Observations with missing control variables (Value relevance model)		180
The final number of firm-year observations used in the analysis of the value relevance model (2002 – 180)		**1822**

Table 4-5 reports the sample distribution across nine industries, following the Industry Classification Benchmark (ICB-level 1), with the utility group (industrial group) having the lowest (highest) level of representation.

Table 4-5 Sample distribution by industry

Industry	2010	2011	2012	2013	2014	2015	2016	Total	Per cent
Basic Materials	19	22	21	19	18	19	18	136	6.79%
Consumer Goods	31	31	31	32	32	34	33	224	11.19%
Consumer Services	62	65	66	67	73	80	77	490	24.48%
Health Care	12	12	12	15	16	15	16	98	4.90%
Industrials	105	108	109	112	115	115	110	774	38.66%
Oil & Gas	9	10	12	14	14	13	13	85	4.25%
Technology	13	13	13	15	16	16	16	102	5.09%
Telecommunications	6	7	7	7	7	7	6	47	2.35%
Utilities	7	7	6	7	7	6	6	46	2.30%
Total	**264**	**275**	**277**	**288**	**298**	**305**	**295**	**2,002**	**100%**

4.4.4 Main sources for data collection

Three primary sources of data are used in this study. They are Worldscope (Datastream), Fame, and companies' annual reports. Most of the variables identified in the study are collected from the Worldscope database. Other variables that are not available through the database are either downloaded from FAME or manually collected from the annual reports. Annual reports are collected from the relevant companies' official website. Details about these sources are included in Table 4-1 for the determinants model variables and Table 4-3 for the value relevance model variables.

4.5 Summary

This chapter outlined the research methodology followed in the current study. It started with a presentation of the philosophy underpinning the research, the research paradigm and the research approach. Then, two research models are designed to test the research hypotheses empirically. The dependent variable in the first research model is the firm's reported goodwill

impairment loss deflated by lagged total assets before impairment. It is regressed against two main independent variables (low-performance indicator and EAR adoption) and other control variables. Regarding the second research model, the dependent variable is the company's market value, and it is regressed against two main independent variables: recorded goodwill impairment loss and EAR-related variables, and other control variables. Finally, the chapter discussed the sample selection process, main sample characteristics, and the primary sources used for data collection. The next two chapters report the empirical results of the research models developed in this chapter.

Chapter Five: Extended Audit Report and the Recognition of Goodwill Impairment: Empirical analysis and discussion

5.1 Introduction

Previous chapters presented the related literature, the theoretical framework, the research hypotheses, and the research design. This chapter reports the empirical results of testing the research hypotheses in four main sections. Firstly, section 5.2 introduces the descriptive statistics of all the variables examined in the study. Secondly, section 5.3 provides the correlation matrix that reports the correlation coefficients for all the variables used in the main analysis. Section 5.4 presents the findings and the discussion of the main analysis. Then, section 5.5 presents the sensitivity analyses. Finally, section 5.6 concludes the chapter.

5.2 Descriptive statistics and univariate analysis

Table 5-1 shows information about the proportion of companies reporting goodwill impairment over the years and by the industry. As presented in Table 5-1 – Panel A, the average percentage of companies reporting goodwill impairment is 21%, showing an overall increase over the years. Table 5-1 – Panel B shows the incidence of goodwill impairment by industry. The Oil & Gas group has the highest recurrence and volume of goodwill impairment (if companies chose to record goodwill impairment), reflecting the higher risk associated with this industry group. On the other hand, the consumer goods group has, on average, the lowest amount of goodwill impairment recognised, and the health care group has a lower incidence of recording goodwill impairment. Overall, Table 5-1 Panel B highlights an average of 13.6% of impairment as a percentage of goodwill for those companies who chose to recognise goodwill impairment.

Table 5-1 The proportion of companies reporting impairment by year and Industry

Panel A – The proportion of companies reporting impairment over the years

Year	Goodwill Impairment		Total Observations
	No	Yes	
2010	219 (82.95%)	45 (17.05%)	264
2011	223 (81.09%)	52 (18.91%)	275
2012	216 (77.98%)	61 22.02%)	277
2013	223 (77.43%)	65 (22.57%)	288
2014	243 (81.54%)	55 (18.46%)	298
2015	229 (75.08%)	76 (24.92%)	305
2016	233 (78.98%)	62 (21.02%)	295
Total	1,586 (79.22%)	416 (20.78%)	2,002

Panel B – The incidence and propensity of goodwill impairment by industry

Industry	N	GW IMP (Yes-No)		Size of GW IMP*	
		Mean	Std.Dev.	Mean	Std.Dev.
Basic Materials	136	0.1765	0.3826	0.2694	0.2754
Consumer Goods	224	0.1652	0.3722	0.0721	0.0800
Consumer Services	490	0.2204	0.4150	0.1445	0.2392
Health Care	98	0.1020	0.3043	0.1953	0.3947
Industrials	774	0.2054	0.4043	0.0955	0.1417
Oil & Gas	85	0.3412	0.4769	0.2796	0.3519
Technology	102	0.2059	0.4063	0.1493	0.1408
Telecommunication	47	0.2766	0.4523	0.1368	0.1129
Utilities	46	0.3261	0.4740	0.1088	0.1714
Total	2,002	0.2078	0.4058	0.1360	0.2117

* This is limited to the sample of companies that reported goodwill impairment (GW IMP = 1)

Table 5-2 shows the descriptive statistics for all the study variables for the years 2010 – 2016. In Panel A, the dependent variable – goodwill impairment to total assets (GITA) has an average impairment of 0.5% of total assets before impairment with a median of 0% and a maximum of 31%. However, this ratio rises to 2.5% on average for the impairment sample (416 firm-year observations). In addition, the ratio of goodwill to total assets (GW/TA) ranges from 0% to 82% with a mean of 21.8%, and the ratio of impairment to total goodwill balance is 13.6% for the impairment sample, emphasising the significance of the goodwill balance in the statement of financial position and the importance of studying its related impairment. As previously

presented in Table 5-1, Table 5-2 Panel A indicates that the incidence of recording goodwill impairment (GIMP) is 21% on average. Moving on to the independent variables of interest, an average of 28% of companies are showing a low-performance indicator (LOW.PERF). A simple comparison between the incidence of goodwill impairment across the whole sample (GIMP, mean=21%) and the percentage of companies showing a sign of low-performance (LOW.PERF, mean=28%) supports the notion that companies are more likely to avoid recording impairment, hence reporting untimely goodwill impairment losses (Hayn and Hughes, 2006; Ramanna and Watts, 2012). This further highlights the importance of investigating the goodwill impairment variable as a dependent variable and justifies the lower percentage to total assets it has, given the significance of the goodwill balance to total assets (21% on average). Regarding the extended audit report variables, 63% of the research sample has goodwill impairment disclosed by the auditor as a risk item (ADGI). This is in line with the FRC (2015) review report which demonstrates that goodwill impairment is one of the highest three matters that the auditor considers as risk item and hence requires further attention. With regards to the control variables, their values demonstrate a widespread variation, reducing the potentials for having a biased sample. Moreover, the return on assets (ROA) has an average of 0.136 (median 0.121) and ranges from -0.169 to 0.501, indicating that most of the companies in the research sample are profitable. Also, the firm size (SIZE) ranges from £0.053 to £155.9, with a mean of £5.789 million. Lastly, the distribution of other variables reported in Table 5-2 indicates widespread variations in the research sample.

Table 5-2 Descriptive Statistics for firm-year observations – The determinants model

Variables	N	Mean	Median	Sd	Min	Max
Dependent variables						
GITA	2002	0.005	0.000	0.022	0.000	0.309
Main independent variables						
LOW.PERF	2002	0.278	0.000	0.448	0.000	1.000
POST	2002	0.515	1.000	0.500	0.000	1.000
ADGI	1032	0.628	1.000	0.484	0.000	1.000
ADIS	648	0.509	1.000	0.500	0.000	1.000
Other control variables						
L-IMP	2002	0.203	0.000	0.403	0.000	1.000
GW/TA	2002	0.218	0.185	0.178	0.000	0.816
RETURN	1924	0.142	0.103	0.398	-0.856	8.500
MV/BV	1906	3.733	2.384	4.920	0.212	45.31
ROA	1988	0.136	0.121	0.088	-0.169	0.501
OCF	2002	0.103	0.090	0.075	-0.078	0.428
SALES	1992	1.119	0.935	0.772	0.122	4.410
CGUs	1992	4.372	3.000	4.313	1.000	42.00
SIZE	2002	5.789	1.024	16.57	0.053	155.9
LEVERAGE	2002	0.225	0.209	0.177	0.000	1.019
BETA	1763	0.899	0.850	0.649	-0.560	3.720
FREEFLOAT	1967	81.33	87.00	17.74	25.00	100.0
INDΔROA	2002	0.001	0.002	0.082	-0.612	0.589
CROSSLIST	2002	0.265	0.000	0.441	0.000	1.000
ΔCEO	1975	0.136	0.000	0.343	0.000	1.000
ΔAUDITOR	1844	0.251	0.000	0.434	0.000	1.000
BATH	2002	0.011	0.000	0.104	0.000	1.000
SMOOTH	2002	0.255	0.000	0.436	0.000	1.000

Notes: *GITA* is the ratio of goodwill impairment losses to total assets. Independent variables include firm's low-performance indicators (*LOW.PERF*), EAR adoption (*POST*), auditor's disclosure of goodwill impairment as a risk item (*ADGI*), and extent of auditor disclosure (*ADIS*). Control variables include firm's tendency to record goodwill impairment (*L-IMP*), goodwill to total assets (*GW/TA*), stock return (*RETURN*), market-to-book value (*MV/BV*), return on assets (*ROA*), cash flow to total assets (*OCF*), sales to total assets (*SALES*), total number of cash-generating units (*CGU*), total assets in millions (*SIZE*), total liabilities to total assets (*LEVERAGE*), the firm's risk (*BETA*), percentage of shares available to trade (*FREEFLOAT*), change in the industry ROA (*INDΔROA*), cross-listed companies (*CROSSLIST*), change in the CEO (*ΔCEO*), audit partner change (*ΔAUDITOR*), big bath (*BATH*), and income smoothing (*SMOOTH*). See Table 4-1 for the definition of each variable.

Table 5-3 presents the univariate analysis among different sub-samples. Panel A shows the univariate analysis between companies that reported goodwill impairment (Impairment

Sample) against others that did not recognise any impairment (control sample). A statistically significant difference in mean exists between the two groups in all the main independent variables of interest (LOW.PERF, POST, ADGI, ADIS) and most of the control variables as well. Consistent with the first hypothesis, companies in the impairment sample perform poorly (significant at 1%) than the ones in the control group, with a mean difference of 15.6% (t-test = 5.92). This initially indicates that a firm with low-performance indicators is more likely to recognise a goodwill impairment loss.

Furthermore, Panel A indicates that more impairment is reported following the EAR adoption with a mean difference of 6.5% (significant at 10%). This supports the second hypothesis of this study, suggesting that EAR adoption is associated with an improvement in recognition of goodwill impairment. Moreover, 81% of the impairment sample is recognised by auditors as a risk of material misstatement, compared to 58% in the control sample, with a mean difference of 23% (significant at 1%). Consistent with the third hypothesis of this study, this result suggests more goodwill impairment is associated with the auditor's disclosure of goodwill as a risk item. Moreover, the 19% difference in mean (significant at 1%) among the two groups regarding the extent of auditor's disclosure (ADIS) suggests that recorded goodwill impairment is positively associated with the size of audit's disclosure, providing preliminary support to the fourth hypothesis.

Table 5-3 Panel A also demonstrates that companies with recorded goodwill impairment loss have larger goodwill balances, more CGUs, a more substantial volume of assets, higher percentage of shares available for trading, higher likelihood of CEOs' change, more practice of big bath and income smoothing strategies, and finally more dual listing shares, compared to the control group. Besides, Panel A highlights that the impairment sample has lower levels of returns, market-to-book value, return on assets, operating cash flow, and sales, supporting the

argument that related economic factors are negatively associated with the recognition of goodwill impairment loss.

Table 5-3 Panel B shows the univariate analysis between two groups; companies by which their auditors have considered goodwill impairment as a risk item against other companies where goodwill impairment was not considered as a risk item. GITA, LOW.PERF, L-IMP, GW/TA, MV/BV, ROA, OCF, and CGUs have a significant mean difference (at 1%) between the two groups. This proposes that the auditor's decision to disclose goodwill impairment as a risk item (ADGI) is positively associated with the size of goodwill (GW/TA), the recognition of goodwill impairment (GITA), the existence of low-performance indicators (LOW.PERF), the tendency of the firm to record goodwill impairment (L-IMP), total assets (SIZE), and the number of cash-generating units (CGUs). ADGI is also negatively associated with the market-to-book value (MV/BV), the return on an assets (ROA), the operating cash flow (OCF), the volume of sales (SALES), and the firm's risk (BETA).

Table 5-3 Panel C shows the univariate analysis between companies with low-performance indicators against others with no signs of low-performance. As expected, recorded goodwill impairment is significantly higher (at 1%) when there is an indication of economic impairment. Furthermore, RETURN, MV/BV, ROA, OCF, SALES are significantly lower (at 1%) when there is an indication of economic impairment. These results also support the first hypothesis and endorse the use of low-performance measure (LOW.PERF) to capture companies with economic impairment indicators.

Table 5-3 Univariate analysis – The determinants model

Panel A –Impairment sample & Control sample

	Impairment Sample		Control Sample		Diff. in means	t-test
	N	Mean	N	Mean		
LOW.PERF	416	0.401	1586	0.245	0.156***	5.92
POST	416	0.567	1586	0.502	0.065*	2.39
ADGI	236	0.805	796	0.575	0.230***	7.36
ADIS	190	0.642	458	0.454	0.188***	4.48
GW/TA	416	0.240	1586	0.211	0.029**	2.87
RETURN	409	0.054	1515	0.160	-0.105***	-5.51
MV/BV	394	2.703	1512	4.002	-1.298***	-6.29
ROA	413	0.106	1575	0.144	-0.038***	-8.42
OCF	416	0.086	1585	0.107	-0.020***	-5.63
SALES	412	1.052	1580	1.136	-0.084*	-2.21
CGUs	412	5.689	1580	4.028	1.661***	6.17
SIZE	416	11.494	1586	4.293	7.202***	5.34
LEVERAGE	416	0.241	1586	0.220	0.020	2.25
BETA	370	0.887	1393	0.902	-0.014	-0.45
FREEFLOAT	410	83.320	1557	80.808	2.512**	2.62
IND∆ROA	416	0.000	1586	0.002	-0.001	-0.30
CROSSLIST	416	0.368	1586	0.238	0.130***	5.01
∆CEO	409	0.191	1566	0.122	0.069**	3.25
∆AUDITOR	389	0.226	1455	0.258	-0.032	-1.31
BATH	416	0.024	1586	0.008	0.017*	2.10
SMOOTH	416	0.361	1586	0.227	0.134***	5.18

Panel B – Goodwill impairment is an RMM & control sample

Goodwill Impairment Is Risk Item (ADGI)	Yes		No		Diff. in means	t-test
	N	Mean	N	Mean		
GITA	648	0.010	384	0.001	0.009***	7.21
LOW.PERF	648	0.287	384	0.133	0.154***	6.21
L-IMP	648	0.267	384	0.135	0.132***	5.33
GW/TA	648	0.263	384	0.157	0.107***	9.58
RETURN	632	0.093	365	0.108	-0.015	-0.68
MV/BV	634	3.509	371	5.163	-1.654***	-4.29
ROA	644	0.117	379	0.150	-0.033***	-5.02
OCF	647	0.088	384	0.123	-0.035***	-6.73
SALES	644	1.022	382	1.188	-0.166**	-3.11
CGUs	647	5.269	382	2.770	2.499***	11.68
SIZE	648	5.293	384	6.924	-1.632	-1.45
LEVERAGE	648	0.228	384	0.214	0.015	1.27
BETA	570	0.855	339	0.983	-0.128**	-2.69
FREEFLOAT	644	81.023	381	79.646	1.378	1.17
IND∆ROA	648	-0.005	384	-0.011	0.006	0.88
CROSSLIST	648	0.261	384	0.237	0.024	0.86
∆CEO	643	0.159	380	0.129	0.029	1.32
∆AUDITOR	622	0.246	370	0.286	-0.041	-1.39
BATH	648	0.009	384	0.016	-0.006	-0.86
SMOOTH	648	0.239	384	0.245	-0.006	-0.20

Panel C – Low-performance sample & Control sample

Low-performance Indicator (LOW.PERF)	Yes		No		Diff. in means	t-test
	N	Mean	N	Mean		
GITA	556	0.011	1446	0.003	0.008***	5.35
ADGI	237	0.785	795	0.581	0.204***	6.37
ADIS	186	0.511	462	0.509	0.002	0.05
L-IMP	556	0.275	1446	0.176	0.099***	4.64
GW/TA	556	0.287	1446	0.190	0.097***	10.60
RETURN	544	0.034	1380	0.178	-0.144***	-8.07
MV/BV	556	1.214	1350	4.771	-3.557***	-22.92
ROA	555	0.081	1433	0.157	-0.075***	-21.80
OCF	556	0.064	1445	0.118	-0.054***	-18.12
SALES	550	0.907	1442	1.199	-0.292***	-9.04
CGUs	552	4.172	1440	4.449	-0.277	-1.37
SIZE	556	8.513	1446	4.742	3.771***	3.46
LEVERAGE	556	0.220	1446	0.226	-0.006	-0.78
BETA	492	0.935	1271	0.885	0.050	1.36
FREEFLOAT	553	82.647	1414	80.817	1.831*	2.14
INDΔROA	556	0.002	1446	0.001	0.001	0.41
CROSSLIST	556	0.268	1446	0.263	0.005	0.20
ΔCEO	555	0.153	1420	0.130	0.023	1.33
ΔAUDITOR	510	0.227	1334	0.260	-0.033	-1.48
BATH	556	0.018	1446	0.008	0.010	1.58
SMOOTH	556	0.227	1446	0.266	-0.039	-1.83

Notes: * p<0.10, ** p<0.05, *** p<0.01. *GITA* is the ratio of goodwill impairment losses to total assets. Independent variables include firm's low-performance indicator (*LOW.PERF*), EAR adoption (*POST*), auditor's disclosure of goodwill impairment as a risk item (*ADGI*), and extent of auditor disclosure (*ADIS*). Control variables include firm's tendency to record goodwill impairment (*L-IMP*), goodwill to total assets (*GW/TA*), stock return (*RETURN*), market-to-book value (*MV/BV*), return on assets (*ROA*), cash flow to total assets (*OCF*), sales to total assets (*SALES*), total number of cash-generating units (*CGU*), total assets in millions (*SIZE*), total liabilities to total assets (*LEVERAGE*), the firm's risk (*BETA*), percentage of shares available to trade (*FREEFLOAT*), change in the industry ROA (*INDΔROA*), cross-listed companies (*CROSSLIST*), change in the CEO (*ΔCEO*), audit partner change (*ΔAUDITOR*), big bath (*BATH*), and income smoothing (*SMOOTH*). See Table 4-1 for the definition of each variable.

5.3 Correlation matrix

Table 5.4 presents Pearson correlations between all the variables included in the determinants model over the period 2010 – 2016. All the independent variables have predicted relationships with the dependent variables (GITA). The firm's low-performance proxy (*LOW.PERF*), and the three proxies used to capture the EAR adoption and related auditor's disclosures (*POST, ADGI, ADIS*) are found to be positively and significantly (at 5%) associated with the amount of goodwill impairment recognised (GITA). Other control variables also show the expected

associations with the dependent variables (GITA). As anticipated, the size of goodwill balance (GW/TA), the firm's tendency to record goodwill impairment (L-IMP), the change in the CEO (ΔCEO), and earnings management tools (*BATH, SMOOTH*) are positively associated (significant at 5%) with the amount of goodwill impairment. Besides, companies' stock return (RETURN), change in market-to-book value (ΔMV/BV), change in return on assets (ΔROA), change in cash flow (ΔOCF), and change in sales (ΔSALES) are negatively associated (significant at 5%) with reported goodwill impairment loss.

Finally, given that the correlation coefficients between the independent variables in the determinants model do not exceed 0.80, this regression analysis will not be affected by the multicollinearity problem between the independent variables (Gujarati, 2009).

Table 5-4 Pearson correlation matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)
(1)	1.000																						
(2)	0.160*	1.000																					
(3)	0.065*	-0.111*	1.000																				
(4)	0.172*	0.177*	.	1.000																			
(5)	0.094*	0.036	.	.	1.000																		
(6)	0.121*	0.111*	0.038	0.154*	0.111*	1.000																	
(7)	0.195*	0.246*	0.038	0.288*	0.088*	0.034	1.000																
(8)	-0.169*	-0.192*	-0.118*	-0.022	0.053	-0.044	0.029	1.000															
(9)	-0.086*	-0.329*	0.083*	-0.150*	0.065	-0.069*	-0.108*	0.147*	1.000														
(10)	-0.159*	-0.382*	-0.074*	-0.168*	-0.055	-0.138*	-0.102*	0.218*	0.422*	1.000													
(11)	-0.096*	-0.321*	-0.026	-0.225*	-0.016	-0.100*	-0.087*	0.169*	0.379*	0.773*	1.000												
(12)	-0.063*	-0.169*	-0.047*	-0.103*	-0.095*	-0.036	-0.186*	0.026	0.263*	0.160*	0.115*	1.000											
(13)	0.026	-0.029	-0.007	0.295*	0.038	0.122*	0.189*	0.017	-0.013	-0.007	-0.015	-0.018	1.000										
(14)	-0.020	0.128*	0.038	0.095*	0.083*	0.207*	-0.056*	-0.123*	-0.120*	-0.212*	-0.170*	-0.269*	0.160*	1.000									
(15)	-0.011	-0.016	-0.010	0.042	0.068	0.061*	0.056*	-0.072*	0.117*	-0.086*	-0.124*	-0.227*	0.014	0.283*	1.000								
(16)	-0.035	0.035	0.006	-0.094*	0.048	-0.022	-0.061*	-0.064*	0.002	-0.026	0.045	-0.093*	0.012	0.239*	0.110*	1.000							
(17)	0.020	0.046*	-0.048*	0.037	0.057	0.080*	0.079*	0.019	0.018	-0.010	-0.055*	-0.011	0.051*	0.181*	0.070*	-0.017	1.000						
(18)	-0.023	0.008	-0.108*	0.028	-0.008	-0.014	-0.003	0.053*	0.006	0.030	0.020	0.007	-0.005	-0.006	0.016	-0.017	-0.002	1.000					
(19)	-0.006	0.005	-0.030	0.027	0.021	0.122*	-0.005	-0.042	0.011	-0.023	0.014	-0.210*	0.173*	0.584*	0.136*	0.163*	0.227*	0.006	1.000				
(20)	0.144*	0.031	0.034	0.040	-0.043	0.080*	0.022	-0.064*	-0.009	-0.075*	-0.026	-0.012	0.007	0.007	0.023	0.014	0.025	0.017	0.004	1.000			
(21)	-0.003	-0.034	0.025	-0.045	-0.013	0.019	-0.002	-0.006	-0.013	-0.026	-0.012	-0.009	0.006	-0.003	0.028	-0.018	-0.011	-0.001	-0.026	0.018	1.000		
(22)	0.083*	0.042	0.006	-0.029	0.063	0.006	-0.043	-0.084*	-0.024	-0.190*	-0.074*	-0.010	-0.046*	-0.017	-0.053*	0.016	-0.010	-0.033	-0.009	0.056*	-0.012	1.000	
(23)	0.192*	-0.040	-0.032	-0.006	0.037	-0.030	-0.002	0.183*	0.047*	0.169*	0.139*	0.029	-0.040	-0.113*	-0.028	-0.094*	-0.040	0.029	-0.055*	0.026	-0.000	-0.062*	1.000

* shows significance at the 0.05 level

Where: (1) GITA; (2) LOW.PERF; (3) POST; (4) ADGI; (5) ADIS; (6) L-IMP; (7) GW/TA; (8) RETURN; (9) ΔMV/BV; (10) ΔROA; (11) ΔOCF; (12) ΔSALES; (13) CGU; (14) SIZE; (15) LEVERAGE; (16) BETA; (17) FREEFLOAT; (18) *INDΔROA*; (19) CROSSLIST; (20) ΔCEO; (21) ΔAUDITOR; (22) BATH; (23) SMOOTH.
Notes: GITA is the ratio of goodwill impairment losses to total assets. Independent variables include firm's low-performance indicator (*LOW.PERF*), EAR adoption (*POST*), auditor's disclosure of goodwill impairment as a risk item (*ADGI*), and extent of auditor disclosure (*ADIS*). Control variables include firm's tendency to record goodwill impairment (*L-IMP*), goodwill to total assets (*GW/TA*), stock return (*RETURN*), change in market-to-book value (*ΔMV/BV*), change in return on assets (*ΔROA*), change in cash flow (*ΔOCF*), change in sales (*ΔSALES*), the total number of cash-generating units (*CGU*), firm size (*SIZE*), total liabilities to total assets (*LEVERAGE*), the firm's risk (*BETA*), percentage of shares available to trade (*FREEFLOAT*), change in the industry ROA (*INDΔROA*), cross-listed companies (*CROSSLIST*), change in the CEO (*ΔCEO*), audit partner change (*ΔAUDITOR*), big bath (*BATH*), and income smoothing (*SMOOTH*). See Table 4-1 for the definition of each variable.

5.4 Findings and discussion of the main analysis

This section presents the regression results related to the determinants model for the fiscal years 2010 to 2016. The research sample investigated excludes missing observations for all the variables included in the model. Furthermore, all the following regression models control for industry and year fixed effect by adding various dummy variables for all the industries and years to account for the systematic differences in the dependent variable (the size of goodwill impairment) across industries and years. However, these models do not account for the firm fixed effect, since the independent variables of interest (EAR variables) are dummy variables and do not substantially vary within companies over the study period. Zhou (2001) argue that the lack of within-firm variation in the independent variables works against finding a significant relationship with the dependent one. Hence, the use of a firm-fixed effect model may bias the results and makes it difficult to find a meaningful relationship even if one existed. This is also supported by Chen et al. (2018) and Kim et al. (2011).

Furthermore, since the dependent variable 'the percentage of goodwill impaired' has non-negative values and the majority of them tend to be zero, censored regression analysis called 'Tobit regression analysis' is used to test this first study's research hypotheses (H1 to H4)[59]. Accordingly, all the regression models are estimated using pooled Tobit regression analysis with industry and year fixed effects.

Moreover, White's t-statistic adjustments are used (White, 1980) in all the regression models to lessen potential heteroscedasticity problems that frequently occur in cross-sectional level-based designs and panel datasets. In the additional analysis, the regression models are re-estimated with standard errors clustered at the firm level as recommended by Petersen (2009)

[59] Following previous studies, such as AbuGhazaleh et al., 2011; Beatty and Weber, 2006; Li et al., 2011; and Ramanna and Watts, 2012.

in panel data. This is to mitigate the problem of standard errors being biased if the residuals are not independent and correlated across companies (known as residual dependence created by the firm effect). Finally, the regression results are presented in chronological order according to the hypothesis being tested.

5.4.1 H1: Recognition of goodwill impairment loss: Firm's poor-performance

Table 5-5 presents the regression results from testing H1 over the period from 2010 to 2016. It shows the estimated coefficients of the pooled Tobit regression analysis for the basic model shown in Equation 1. H1 predicts a positive association between a firm's low-performance indicator and the amount of goodwill impairment. Accordingly, the dependent variable is the size of the goodwill impairment loss (*GITA*), while the primary independent variable of interest is the proxy used to capture firms' poor-performance (*LOW.PERF*).

Table 5-5 presents the regression results in three columns. Column (1) shows the regression results for the initial research sample (N=2002), demonstrating the relationship between the dependent variable (*GITA*) and the main independent variable (*LOW.PERF*). Column (2) adds the control variables, showing the regression results for the final research sample (N=1451). If goodwill is not material, companies might not test it for impairment to avoid the cost of performing these tests and/or auditors might not pay attention to this account. If so, the relationship between goodwill impairment and a firm's low performance might not be pronounced when goodwill is immaterial. Although the ratio of goodwill to total assets is one of the control variables, Column (3) considers only firm-year observations with material goodwill, where the ratio of goodwill to book value of equity is higher than 5% (Mazzi et al., 2017). This would limit the analysis to the level of goodwill where the relationship between companies' poor-performance and goodwill impairment is expected to be linear and exclude

observations with immaterial goodwill that could potentially affect such relationship. Doing so resulted in a research sample of 1299 firm-year observations.

In line with the prediction in H1, poor-performance indicators show a significant positive relationship with recognised goodwill impairment loss. Specifically, the regression coefficients are 0.041, 0.039 and 0.041 (all statistically significant at the 1% level) across the three regressions, respectively. The similarity between the three regression coefficients suggests that results are robust after adding the control variables and limiting the analysis to firm-year observations with material goodwill balances. Consistent with prior studies (e.g., André et al., 2016; Beatty and Weber, 2006; EFRAG, 2016; Hayn and Hughes, 2006; Lapointe-Antunes et al., 2009; Li and Sloan, 2017; Li et al., 2011; Lobo et al., 2017; Ramanna and Watts, 2012; Verriest and Gaeremynck, 2009), it can be argued that firms' low-performance is one of the main determinants of goodwill impairment. These results also support the use of firms' low-performance indicators, while testing the following hypotheses of this study (H2 to H4), to indicate the need to record goodwill impairment and to some extent capture the timeliness of goodwill impairment reporting.

The regression coefficients for the control variables in Table 5-5 are also consistent with prior studies (e.g., Glaum et al., 2018; Lobo et al., 2017), with *L-IMP, GW/TA, CGUs, SIZE, ΔCEO and SMOOTH* show a significant and positive relationship (at 1%) with recognised goodwill impairment, while *ΔROA* shows a significant negative association. These results show companies with a history of recording goodwill impairment (*L-IMP*) recognising more impairments than other companies that report impairment for the first time. Findings also show companies with large goodwill balances (*GW/TA*) and a large number of CGUs (*CGU*) are more exposed to the impairment test, hence booking more impairments than other companies. Moreover, large companies (*SIZE*) recognise larger amounts of goodwill impairment; either because they are more likely to do larger numbers of mergers and acquisitions and pay higher

acquisition premiums (overpayments which subsequently result in larger amounts of goodwill impairments), or because companies' size captures their capabilities to apply complex impairment testing procedures. On the other hand, the negative association between changes in companies' returns (*ΔROA*) and the amount of goodwill impairment emphasise the role accrual-related performance attributes play in identifying the recoverability of assets (including goodwill). Finally, the positive association between CEO change (*ΔCEO*) and income smoothing (*SMOOTH*), and recognised goodwill impairment support the notion that low-performance measures might not be the only determinants of goodwill impairment since managers could act opportunistically to manipulate goodwill impairment reporting.

Table 5-5 Recognition of goodwill impairment loss: Firm's poor-performance - Main test

$GITA_i = \alpha0 + \alpha1$ LOW.PERF + $\alpha2$ Economic related variables + $\alpha3$ Management incentive related variables + $\alpha4$ Industry related variables + $\alpha5$ Auditor related variables + $\alpha6$ Industry fixed effect + $\alpha7$ Year fixed effect + u_i

Tobit Regression Analysis	(1)	(2)	(3)
LOW.PERF	0.041***	0.039***	0.041***
	(5.34)	(5.20)	(4.97)
L-IMP		0.035***	0.035***
		(7.45)	(6.93)
GW/TA		0.061***	0.062***
		(4.56)	(4.34)
RETURN		-0.009	-0.010
		(-1.35)	(-1.26)
ΔMV/BV		-0.000	-0.000
		(-0.43)	(-0.96)
ΔROA		-0.168***	-0.182***
		(-4.19)	(-3.95)
ΔOCF		0.020	0.025
		(0.45)	(0.50)
ΔSALES		-0.017	-0.011
		(-1.03)	(-0.59)
CGUs		0.010***	0.011***
		(3.94)	(3.84)
SIZE		0.005***	0.005***
		(2.69)	(2.65)
LEVERAGE		-0.001	0.002
		(-0.08)	(0.12)
BETA		-0.005*	-0.006*
		(-1.71)	(-1.82)
FREEFLOAT		-0.000	-0.000
		(-0.22)	(-0.39)
INDΔROA		-0.014	-0.012
		(-0.69)	(-0.57)
CROSSLIST		-0.001	-0.002
		(-0.25)	(-0.30)
ΔCEO		0.013**	0.014***
		(2.42)	(2.59)
ΔAUDITOR		-0.006	-0.004
		(-1.32)	(-0.97)
BATH		0.029	0.033
		(1.15)	(1.05)
SMOOTH		0.047***	0.050***
		(7.81)	(7.80)
CONSTANT	-0.053***	-0.164***	-0.181***
	(-4.79)	(-5.61)	(-5.64)
Industry FE	Included	Included	Included
Year FE	Included	Included	Included
N	2002	1451	1299

Notes: * p<0.10, ** p<0.05, *** p<0.01. *GITA* is the ratio of goodwill impairment losses to total assets. Independent variable is the firm's low-performance indicator (*LOW.PERF*). Control variables include firm's tendency to record goodwill impairment (*L-IMP*), goodwill to total assets (*GW/TA*), stock return (*RETURN*), market-to-book value (*MV/BV*), return on assets (*ROA*), cash flow to total assets (*OCF*), sales to total assets (*SALES*), the total number of cash-generating units (*CGU*), total assets in millions (*SIZE*), total liabilities to total assets (*LEVERAGE*), the firm's risk (*BETA*), percentage of shares available to trade (*FREEFLOAT*), change in the industry ROA (*INDΔROA*), cross-listed companies (*CROSSLIST*), change in the CEO (*ΔCEO*), audit partner change (*ΔAUDITOR*), big bath (*BATH*) and income smoothing (*SMOOTH*). See Table 4-1 for the definition of each variable.

5.4.2 H2: Recognition of goodwill impairment loss: The impact of the EAR

Table 5-6 presents the regression results from testing H2 over the period from 2010 to 2016. It shows the estimated coefficients of the pooled Tobit regression analysis for the model shown in Equation 2a. H2 expects EAR adoption to strengthen the positive association between companies' poor-performance and the amount of goodwill impairment, improving the timeliness of recognised goodwill impairment. Accordingly, in addition to the variables included in Equation 1, extended audit report (*POST*) and its interaction with goodwill impairment losses (*LOW.PERF*POST*) are investigated in Equation 2a. The coefficient of interest in testing this hypothesis is α3. It captures the incremental impact of EAR adoption (*POST*) on the association between companies' poor-performance (*LOW.PERF*) and the amount of goodwill impairment (*GITA*). Hence, the coefficient α3 shows the difference in the timeliness of goodwill impairment before and after the EAR adoption. A positive coefficient α3 suggests more timely goodwill impairment is reported following the EAR adoption. In other words, if goodwill impairment reporting quality (timeliness) did not differ following EAR adoption, the difference in recognised goodwill impairment between observations with and without low-performance indicators will not differ between pre & post EAR adoption, resulting in the coefficient α3 to be zero.

Table 5-6 shows the regression results for Equation 2a in five columns. Column (1) provides results for the period before the EAR adoption (658 firm-year observations), while Column (2) presents the period after the EAR adoption (793 firm-year observations). Column (3) shows the results for the main independent variables of interests using the initial research sample (2002 firm-year observations), with the interaction term utilised to get more insights on the moderating effect of the EAR adoption on the firm's low-performance – goodwill impairment nexus. Column (4) presents the regression results considering other control variables with a

final sample of 1451 firm-year observations. Similar to H1, Column (5) considers the sub-sample of material goodwill (1299 firm-year observations).

Results show that the relationship between companies' poor performance (*LOW.PERF*) and size of goodwill impairment (*GITA*) is much stronger after the implementation of the EAR (coefficient=0.055 in column 2), compared to the period before its adoption (coefficient=0.019 in Column 1), showing preliminary support to the second hypothesis of this study. The interaction terms (α3) in Column (3) and Column (4) show significant positive regression coefficients of 0.032 and 0.030 (significant at the 5% level). Although the coefficients of LOW.PERF (α1) in Column (3) and (4) show a significant positive relationship of 0.026 and 0.023 (significant at the 1% level) with the dependent variable (*GITA*) for the period before the EAR adoption, the interaction term (α3) shows a significant positive impact of the EAR adoption that strengthens the relationship between *LOW.PERF* and *GITA*.

As predicted, these results indicate that EAR adoption is associated with an improvement in the recognition and timeliness of goodwill impairment (i.e., the positive association between the firm's low-performance and reported goodwill impairment loss is more pronounced following the EAR adoption). This outcome suggests that goodwill impairment losses are better recognised, and less understated subsequent to the EAR. Finally, Column (5) reports similar results, confirming that the relationship still holds for the sub-sample of firm-year observations with material goodwill balance.

This study puts an effort to resolve conflicting findings in recent papers examining the impact of EAR adoption on the overall financial reporting quality (e.g., Bédard et al., 2019; Almulla and Bradbury, 2018; Gutierrez et al., 2018; Lennox et al., 2019; Li et al., 2019; Reid et al., 2019) by examining the financial reporting quality of a specific account (goodwill impairment). Since goodwill impairment is one of the main accounts that are prone to manipulation and in

which auditors are required to challenge the management in the estimates they have used in the impairment tests, the findings of this analysis provide sharpener evidence that suggests an improvement in the reporting of goodwill impairments post the EAR adoption. Investigating goodwill impairment is supported by the FRC (2015) report that highlighted it as one of the highest three items that auditors consider as risk items, hence require further attention from them.

Accordingly, consistent with the role auditors play in mitigating the agency problem, these findings imply that EAR adoption could be associated with (1) an increase in the audit quality that minimises management opportunistic behaviour and hence improve the recognition of goodwill impairment; and (2) a change to managers' reporting behaviour in a way that improves the recognition of goodwill impairment. Regarding the control variables, findings are consistent with what was reported in table 5-5 (section 5.4.1).

Table 5-6 Recognition of goodwill impairment loss: The impact of EAR - Main test

$GITA_i = \alpha0 + \alpha1$ LOW.PERF + $\alpha2$ POST + $\alpha3$ LOW.PERF*POST + $\alpha4$ Economic related variables + $\alpha5$ Management incentive related variables + $\alpha6$ Industry related variables + $\alpha7$ Auditor related variables + $\alpha8$ Industry fixed effect + $\alpha9$ Year fixed effect + u_i

Tobit Regression Analysis	(1)	(2)	(3)	(4)	(5)
LOW.PERF	0.019**	0.055***	0.026***	0.023***	0.017*
	(2.36)	(4.96)	(2.87)	(2.72)	(1.77)
POST			0.021**	0.004	0.003
			(2.50)	(1.11)	(0.64)
*LOW.PERF*POST*			0.032**	0.030**	0.041***
			(2.31)	(2.26)	(2.81)
L-IMP	0.024***	0.041***		0.034***	0.034***
	(3.58)	(6.69)		(7.51)	(7.01)
GW/TA	0.053**	0.060***		0.061***	0.061***
	(2.53)	(3.51)		(4.58)	(4.39)
RETURN	-0.013*	-0.009		-0.008	-0.020**
	(-1.76)	(-1.06)		(-1.34)	(-2.43)
ΔMV/BV	0.000	-0.000		-0.000	-0.001
	(1.48)	(-0.18)		(-0.40)	(-0.98)
ΔROA	-0.175**	-0.147***		-0.174***	-0.192***
	(-2.26)	(-3.70)		(-4.35)	(-3.97)
ΔOCF	0.040	0.009		0.016	0.020
	(0.66)	(0.17)		(0.36)	(0.42)
ΔSALES	-0.043*	-0.004		-0.016	-0.021
	(-1.79)	(-0.19)		(-1.03)	(-0.95)
CGUs	0.006*	0.013***		0.009***	0.011***
	(1.82)	(3.52)		(3.70)	(3.72)
SIZE	0.009***	0.001		0.005***	0.005***
	(3.41)	(0.48)		(2.75)	(2.71)
LEVERAGE	-0.034	0.025		0.001	0.000
	(-1.55)	(1.39)		(0.04)	(0.02)
BETA	-0.005	-0.006		-0.006*	-0.007**
	(-1.33)	(-1.51)		(-1.91)	(-2.12)
FREEFLOAT	-0.000	0.000		-0.000	-0.000
	(-0.65)	(0.35)		(-0.00)	(-0.24)
INDΔROA	-0.057	0.010		-0.007	-0.003
	(-1.63)	(0.44)		(-0.34)	(-0.15)
CROSSLIST	-0.015**	0.008		-0.003	-0.004
	(-2.09)	(1.13)		(-0.55)	(-0.65)
ΔCEO	0.007	0.013*		0.013**	0.014***
	(0.98)	(1.96)		(2.50)	(2.58)
ΔAUDITOR	0.002	-0.012**		-0.006	-0.004
	(0.33)	(-2.01)		(-1.33)	(-0.90)
BATH	0.048	0.016		0.034	0.043
	(0.82)	(0.90)		(1.32)	(1.29)
SMOOTH	0.041***	0.050***		0.046***	0.050***
	(4.41)	(6.89)		(7.76)	(7.94)
CONSTANT	-0.194***	-0.106***	-0.054***	-0.153***	-0.162***
	(-4.18)	(-2.80)	(-5.20)	(-5.33)	(-5.30)
Industry FE	Included	Included	Included	Included	Included
Year FE	Included	Included	Included	Included	Included
N	658	793	2002	1451	1299

Notes: * p<0.10, ** p<0.05, *** p<0.01. *GITA* is the ratio of goodwill impairment losses to total assets. Independent variables include firm's low-performance indicator (*LOW.PERF*) and EAR adoption (*POST*). Control variables include firm's tendency to record goodwill impairment (*L-IMP*), goodwill to total assets (*GW/TA*), stock return (*RETURN*), market-to-book value (*MV/BV*), return on assets (*ROA*), cash flow to total assets (*OCF*), sales to total assets (*SALES*), total number of cash-generating units (*CGU*), total assets in millions (*SIZE*), total liabilities to total assets (*LEVERAGE*), the firm's risk (*BETA*), percentage of shares available to trade (*FREEFLOAT*), change in the industry ROA (*INDΔROA*), cross listed companies (*CROSSLIST*), change in the CEO (*ΔCEO*), audit partner change (*ΔAUDITOR*), big bath (*BATH*) and income smoothing (*SMOOTH*). See Table 4-1 for the definition of each variable.

5.4.3 H3: Recognition of goodwill impairment loss: The impact of ADGI

Table 5-7 presents the regression results from testing H3 over the period from 2013 to 2016 after the EAR has been adopted. It shows the estimated coefficients of the pooled Tobit regression analysis for the model shown in Equation 2b. H3 predicts that auditor's disclosure of goodwill impairment as one of the RMMs (*ADGI*) affects the recognition of goodwill impairment losses. The key variable of interest in Table 5-7 is the interaction term (*LOW.PERF*ADGI)*. The coefficient of interest in testing this hypothesis is α3. It captures the incremental effect of the ADGI on the association between companies' poor-performance (*LOW.PERF*) and the amount of goodwill impairment (*GITA*). Hence, the coefficient α3 shows the difference in the timeliness of goodwill impairment between the two sub-samples (firm-year observations where ADGI=1 & firm-year observations where ADGI=0). A positive coefficient α3 suggests more timely goodwill impairment is reported when auditors disclose goodwill impairment as a risk item. If goodwill impairment reporting quality (timeliness) did not differ between the two sub-samples, the difference in recognised goodwill impairment between observations with and without low-performance indicators would not differ for the ADGI, resulting in the coefficient α3 to be zero.

Table 5-7 shows the regression results for Equation 2b in three columns. Column (1) presents the regression results for the association between the dependent variable (*GITA*) and the main independent variables of interest (*LOW.PERF, ADGI and the interaction term*) using an initial research sample of 1032 firm-year observations. Column (2) shows these results given the other control variables (793 firm-year observations). Similar to H1 and H2, Column (3) considers firm-year observations with material goodwill (710 firm-year observations).

Findings in Table 5-7 across the three columns indicate that the relationship between companies' poor performance (LOW.PERF) and size of goodwill impairment (*GITA*) is more pronounced when auditors disclose goodwill impairment as a risk matter (*ADGI*), with significant positive coefficients (α3) of 0.030, 0.035 and 0.042, respectively. Although the coefficients of LOW.PERF (α1) in Column (1) and (2) show a significant positive relationship of 0.033 and 0.026 with the dependent variable (*GITA*) for the sub-sample of companies where goodwill impairment is not a risk item, the interaction term (α3) shows a significant positive impact of the *ADGI* that intensifies the relationship between *LOW.PERF* and *GITA*. Consistent with the third hypothesis of this study, these results suggest that ADGI is associated with an improvement in the recognition and timeliness of goodwill impairment.

These results provide a shred of new archival evidence that extends and endorses experimental studies (e.g., Asbahr and Ruhnke, 2019; Gold et al., 2020) that investigate whether managers are less likely to act opportunistically and engage in earning management practices in the presence of firm-specific KAMs. This archival evidence suggests that, following the EAR adoption, auditors and managers could behave differently with regards to the individual accounts disclosed as RMMs, causing the financial reporting quality of these accounts to differ. This can be explained in two possible ways. First, the disclosure of goodwill impairment as a risk matter could attract more public oversight that places some pressure on the management to record goodwill impairment, especially where there are economic conditions that highlight the need to record an impairment loss (Bédard et al., 2019; Reid et al., 2019). Asbahr and Ruhnke (2019, p. 167) note that "Knowing that KAMs draw public attention to the disclosed matters, it can be expected that auditors will process information in a more balanced way and consider evidence that disapproves management's estimate more thoroughly".

Second, auditors could feel more accountable, and this triggers their professional scepticism towards areas of risks, like goodwill impairments estimates, putting more pressure on the

management either to recognise goodwill impairment or to provide justifications for not doing that. Following Reid et al. (2019), it can be concluded that ADGI provides users of the financial statements with a higher level of assurance and reduces uncertainties surrounding the goodwill impairment risk. This could place more scrutiny on the management to adopt more acceptable estimates and judgment regarding the identified risk matters (e.g., goodwill impairment), hence avoiding avoid the "threat of disclosure". Finally, the results of the control variables in table 5-7 are compatible with what is outlined previously.

Table 5-7 Recognition of goodwill impairment loss: The impact of ADGI - Main test

$GITA_i = \alpha0 + \alpha1$ LOW.PERF $+ \alpha2$ ADGI $+ \alpha3$ LOW.PERF*ADGI $+ \alpha4$ Economic related variables $+ \alpha5$ Management incentive related variables $+ \alpha6$ Industry related variables $+ \alpha7$ Auditor related variables $+ \alpha8$ Industry fixed effect $+ \alpha9$ Year fixed effect $+ u_i$

Tobit Regression Analysis	(1)	(2)	(3)
LOW.PERF	0.033**	0.026*	0.016
	(2.52)	(1.81)	(0.81)
ADGI	0.039***	0.019***	0.020***
	(6.00)	(3.10)	(3.00)
*LOW.PERF*ADGI*	0.030*	0.035**	0.042*
	(1.75)	(2.14)	(1.90)
L-IMP		0.039***	0.039***
		(6.60)	(6.27)
GW/TA		0.041**	0.044**
		(2.33)	(2.41)
RETURN		-0.010	-0.031**
		(-1.07)	(-2.49)
ΔMV/BV		-0.000	-0.001
		(-0.23)	(-1.12)
ΔROA		-0.151***	-0.158***
		(-3.75)	(-3.10)
ΔOCF		0.009	0.024
		(0.17)	(0.39)
ΔSALES		-0.000	-0.009
		(-0.02)	(-0.35)
CGUs		0.010***	0.011***
		(2.68)	(2.67)
SIZE		0.001	0.001
		(0.37)	(0.36)
LEVERAGE		0.022	0.027
		(1.25)	(1.46)
BETA		-0.004	-0.003
		(-0.86)	(-0.71)
FREEFLOAT		0.000	0.000
		(0.58)	(0.34)
INDΔROA		0.006	0.004
		(0.25)	(0.21)
CROSSLIST		0.010	0.011
		(1.52)	(1.43)
ΔCEO		0.014**	0.016**
		(2.10)	(2.28)
ΔAUDITOR		-0.010*	-0.008

		(-1.82)	(-1.34)
BATH		0.014	0.013
		(0.80)	(0.62)
SMOOTH		0.050***	0.054***
		(6.95)	(6.99)
CONSTANT	-0.064***	-0.107***	-0.109***
	(-4.26)	(-2.81)	(-2.64)
Industry FE	Included	Included	Included
Year FE	Included	Included	Included
N	1032	793	710

Notes: * p<0.10, ** p<0.05, *** p<0.01. *GITA* is the ratio of goodwill impairment losses to total assets. Independent variables include the firm's low-performance indicator (*LOW.PERF*) and auditor's disclosure of goodwill impairment as a risk item (*ADGI*). Control variables include firm's tendency to record goodwill impairment (*L-IMP*), goodwill to total assets (*GW/TA*), stock return (*RETURN*), market-to-book value (*MV/BV*), return on assets (*ROA*), cash flow to total assets (*OCF*), sales to total assets (*SALES*), the total number of cash-generating units (*CGU*), total assets in millions (*SIZE*), total liabilities to total assets (*LEVERAGE*), the firm's risk (*BETA*), percentage of shares available to trade (*FREEFLOAT*), change in the industry ROA (*INDΔROA*), cross-listed companies (*CROSSLIST*), change in the CEO (*ΔCEO*), audit partner change (*ΔAUDITOR*), big bath (*BATH*) and income smoothing (*SMOOTH*). See Table 4-1 for the definition of each variable.

5.4.4 H4: Recognition of goodwill impairment loss: The impact of ADIS

Table 5-8 presents the regression results from testing H4 over the period from 2013 to 2016, focusing only on the research sub-sample after the implementation of the EAR, in which the auditor announced goodwill impairment as a risk matter. It shows the estimated coefficients of the pooled Tobit regression analysis for the model shown in Equation 2c. H4 expects goodwill impairment to be positively associated with the extent of related auditor disclosure when economic conditions suggest the need to record an impairment loss. Hence, the principal variable of interest in Table 5-8 is the interaction term (*LOW.PERF*ADIS),* and the coefficient of interest for testing this hypothesis is α3. It captures the incremental effect of the ADIS on the relationship between companies' poor-performance indicators (*LOW.PERF*) and the amount of goodwill impairment (*GITA*). Hence, the coefficient α3 shows the difference in the timeliness of goodwill impairment between high versus low goodwill impairment related auditor disclosure. A positive coefficient α3 supports the notion that more detailed auditor's disclosure (*ADIS*) is associated with improvement in goodwill impairment recognition, hence more timely reporting.

Table 5-8 shows the regression results for Equation 2C in three columns. Column (1) provides findings for the main independent variables using a sample of 648 firm-year observations, while Column (2) shows results given other control variables (502 firm-year observations).

Finally, Column (3) considers firm-year observations with material goodwill (486 firm-year observations).

Results in Table 5-8 across the three columns indicate that the interaction term is not statistically significant, rejecting the fourth hypothesis of this study. A potential explanation could be that auditors might only choose to disclose the material procedures they followed to comply with the auditing standard, and simultaneously avoid the extra costs from providing a large volume of disclosures. Furthermore, if extended auditor's disclosures are associated with an increase in their legal liability (Gimbar et al., 2016; Kadous and Mercer, 2016), auditors could be reluctant to provide lengthy disclosures to minimise their litigation risk. Hence, the extent of auditor's disclosure might not capture the effort exerted by auditors while testing goodwill impairments. These results extend Gutierrez et al.' (2018) work through investigating the incremental effect of detailed audit reports on the financial reporting quality, focusing on an individual account over which managers have considerable discretion, hence the auditor's role would be more pronounced.

Table 5-8 Recognition of goodwill impairment loss: The impact of ADIS - Main test

$GITA_i = \alpha0 + \alpha1$ LOW.PERF + $\alpha2$ ADGI + $\alpha3$ LOW.PERF*ADIS + $\alpha4$ Economic related variables + $\alpha5$ Management incentive related variables + $\alpha6$ Industry related variables + $\alpha7$ Auditor related variables + $\alpha8$ Industry fixed effect + $\alpha9$ Year fixed effect + u_i

Tobit Regression Analysis	(1)	(2)	(3)
LOW.PERF	0.034***	0.020*	0.015
	(2.93)	(1.91)	(1.48)
ADIS	0.035***	0.022***	0.021***
	(3.94)	(2.87)	(2.70)
*LOW.PERF*ADIS*	-0.007	-0.002	-0.000
	(-0.47)	(-0.17)	(-0.02)
L-IMP		0.039***	0.039***
		(4.92)	(4.85)
GW/TA		0.057**	0.063**
		(2.35)	(2.53)
RETURN		-0.006	-0.036**
		(-0.74)	(-2.14)
ΔMV/BV		-0.002*	-0.002
		(-1.82)	(-1.53)
ΔROA		-0.226***	-0.218**
		(-2.85)	(-2.32)
ΔOCF		0.058	0.084
		(0.72)	(0.89)
ΔSALES		0.003	-0.001
		(0.15)	(-0.03)
CGUs		0.010**	0.010**
		(2.13)	(2.12)
SIZE		-0.003	-0.003
		(-1.09)	(-0.99)
LEVERAGE		0.040*	0.041*
		(1.76)	(1.74)
BETA		-0.002	-0.002
		(-0.26)	(-0.37)
FREEFLOAT		0.000	0.000
		(0.66)	(0.37)
INDΔROA		0.006	0.013
		(0.19)	(0.47)
CROSSLIST		0.013	0.013
		(1.46)	(1.37)
ΔCEO		0.024***	0.023***
		(2.62)	(2.67)
ΔAUDITOR		-0.008	-0.006
		(-1.00)	(-0.71)
BATH		-0.013	-0.012
		(-0.40)	(-0.38)
SMOOTH		0.056***	0.058***
		(6.15)	(6.20)
CONSTANT	-0.067***	-0.071	-0.058
	(-3.10)	(1.43)	(1.13)
Industry FE	Included	Included	Included
Year FE	Included	Included	Included
N	648	502	486

Notes: * p<0.10, ** p<0.05, *** p<0.01. *GITA* is the ratio of goodwill impairment losses to total assets. Independent variables include the firm's low-performance indicator (*LOW.PERF*) and extent of auditor disclosure (*ADIS*). Control variables include firm's tendency to record goodwill impairment (*L-IMP*), goodwill to total assets (*GW/TA*), stock return (*RETURN*), market-to-book value (*MV/BV*), return on assets (*ROA*), cash flow to total assets (*OCF*), sales to total assets (*SALES*), the total number of cash-generating units (*CGU*), total assets in millions (*SIZE*), total liabilities to total assets (*LEVERAGE*), the firm's risk (*BETA*), percentage of shares available to trade (*FREEFLOAT*), change in the industry ROA (*INDΔROA*), cross-listed companies (*CROSSLIST*), change in the CEO (*ΔCEO*), audit partner change (*ΔAUDITOR*), big bath (*BATH*) and income smoothing (*SMOOTH*). See Table 4-1 for the definition of each variable.

5.5 Sensitivity analyses

This section presents some additional test to examine whether the results of the study are sensitive to alternative modelling specifications and variable definitions.

5.5.1 Different model specifications

To check whether outliers bias the study findings, Table 5-9 shows the estimated coefficients of the pooled Tobit regression analysis for winsorised variables. All the non-dummy variables are winsorised at 1st and 99th percentiles. The values at the lowest and highest percentiles are substituted with their nearest values beyond this range to avoid losing observations. The four columns provide the results for the four research hypotheses, respectively. The overall results presented in the four columns are unchanged, suggesting that the main study findings are not driven by data outliers.

Table 5-9 Recognition of goodwill impairment loss – Winsorised

$GITA_i = \alpha0 + \alpha1$ LOW.PERF + $\alpha2$ EAR + $\alpha3$ LOW.PERF*EAR + $\alpha4$ Economic related variables + $\alpha5$ Management incentive related variables + $\alpha6$ Industry related variables + $\alpha7$ Auditor related variables + $\alpha8$ Industry fixed effect + $\alpha9$ Year fixed effect + u_i

Tobit Regression Analysis	(1)	(2)	(3)	(4)
LOW.PERF	0.037***	0.020**	0.020	0.015
	(5.09)	(2.37)	(1.48)	(1.45)
EAR		0.003	0.019***	0.022***
		(0.73)	(3.20)	(2.85)
*LOW.PERF*EAR*		0.031**	0.037**	0.000
		(2.39)	(2.31)	(0.01)
L-IMP	0.035***	0.035***	0.039***	0.038***
	(7.48)	(7.57)	(6.64)	(4.93)
GW/TA	0.061***	0.060***	0.041**	0.055**
	(4.58)	(4.60)	(2.46)	(2.33)
RETURN	-0.021***	-0.018***	-0.033***	-0.033**
	(-2.92)	(-2.67)	(-3.28)	(-2.38)
ΔMV/BV	-0.001	-0.001	-0.001	-0.002
	(-1.05)	(-0.96)	(-0.97)	(-1.53)
ΔROA	-0.174***	-0.184***	-0.155***	-0.214**
	(-3.99)	(-4.28)	(-3.56)	(-2.53)
ΔOCF	0.026	0.023	0.019	0.074
	(0.60)	(0.55)	(0.34)	(0.86)
ΔSALES	-0.024	-0.024	-0.006	-0.004
	(-1.20)	(-1.27)	(-0.28)	(-0.11)
CGUs	0.010***	0.009***	0.009***	0.010**
	(3.96)	(3.72)	(2.66)	(2.15)
SIZE	0.004***	0.004***	0.001	-0.004
	(2.61)	(2.72)	(0.29)	(-1.16)
LEVERAGE	-0.002	-0.001	0.020	0.036
	(-0.17)	(-0.06)	(1.18)	(1.61)
BETA	-0.005	-0.006*	-0.002	-0.001
	(-1.61)	(-1.88)	(-0.56)	(-0.13)
FREEFLOAT	-0.000	-0.000	0.000	0.000
	(-0.43)	(-0.13)	(0.59)	(0.81)
INDΔROA	-0.016	-0.006	0.003	0.009
	(-0.79)	(-0.33)	(0.14)	(0.33)
CROSSLIST	-0.001	-0.003	0.011	0.013
	(-0.15)	(-0.50)	(1.59)	(1.50)
ΔCEO	0.012**	0.012**	0.012**	0.022***
	(2.26)	(2.38)	(1.97)	(2.61)
ΔAUDITOR	-0.006	-0.006	-0.010*	-0.007
	(-1.31)	(-1.30)	(-1.76)	(-0.95)
BATH	0.032	0.037	0.017	-0.012
	(1.28)	(1.44)	(1.06)	(-0.37)
SMOOTH	0.049***	0.048***	0.053***	0.058***
	(7.98)	(7.94)	(7.15)	(6.32)
CONSTANT	-0.158***	-0.148***	-0.102***	-0.063
	(-5.56)	(-5.31)	(-2.76)	(-1.27)
N	1451	1451	793	502

Notes: * p<0.10, ** p<0.05, *** p<0.01, firm-clustered standard error. *GITA* is the ratio of goodwill impairment losses to total assets. Independent variables include firm's low-performance indicator (*LOW.PERF*), EAR adoption (*POST in column 2*), auditor's disclosure of goodwill impairment as a risk item (*ADGI in column 3*), and extent of auditor disclosure (*ADIS in column 4*). Control variables include firm's tendency to record goodwill impairment (*L-IMP*), goodwill to total assets (*GW/TA*), stock return (*RETURN*), market-to-book value (*MV/BV*), return on assets (*ROA*), cash flow to total assets (*OCF*), sales to total assets (*SALES*), the total number of cash-generating units (*CGU*), total assets in millions (*SIZE*), total liabilities to total assets (*LEVERAGE*), the firm's risk (*BETA*), percentage of shares available to trade (*FREEFLOAT*), change in the industry ROA (*INDΔROA*), cross-listed companies (*CROSSLIST*), change in the CEO (*ΔCEO*), audit partner change (*ΔAUDITOR*), big bath (*BATH*), and income smoothing (*SMOOTH*). See Table 4-1 for the definition of each variable.

Furthermore, to check the sensitivity of the proxy used to capture companies' poor-performance in the main analysis, different proxies are used in Table 5-10, Table 5-11, Table 5-12, and Table 5-13 to identify companies with low-performance indicators. This section introduces five different proxies used in the literature to capture the firm's low-performance. Table 5-10 presents the results of using these proxies while testing the first hypothesis; Table 5-11 shows the results of testing the second hypothesis; Table 5-12 provides the results of testing the third hypothesis; Table 5-13 introduces the results of testing the fourth one.

Firstly, some studies (e.g., André et al., 2016; Li and Sloan, 2017; Lobo et al., 2017; Ramanna and Watts, 2012) identify companies to show signs of poor performance when the book value of their equity is higher than their market values. Accordingly, low-performance measures take the value of 1 if BV > MV, 0 otherwise. Column (1) across all the four tables shows the findings of using this measure to capture a firm's poor-performance while testing all the research hypotheses.

Secondly and thirdly, following Lobo et al. (2017), companies are classified as week performing companies, hence LOW.PERF takes the value of 1 if their (ROA and OCF) falls below the 25th percentile of the distribution (Column 2 & 3, respectively in all previously named tables), 0 otherwise.

They note (p. 129):

> "The use of ROA and operating cash flow is consistent with the estimation procedure for goodwill impairment specified in IAS 36. Impairment tests and, particularly, impairment tests for goodwill, usually involve discounted cash flow models, which rely on projecting current performance over a business plan and a terminal value. If current operating performance is low, then it is more likely that the present value of projected future cash flows will be below the carrying value of a given CGU."

Fourthly, Ramanna and Watts (2012, p. 751) note: “the condition BTM>1 suggests the market expects goodwill impairments; however, the condition can also be generated by other things like contingent losses, deferred taxes, and the impairment of (non-goodwill) long-lived assets.” Furthermore, managers could have private information about future positive cash flows, hence decide not to recognise goodwill impairment. To mitigate this probability, Ramanna and Watts (2012) identified a firm to be expected to report goodwill impairment if it has two successive years in which its book value is higher than its market value. Imposing this restriction would minimise the probability that managers hold private positive information about the recoverability of the CGU to which goodwill is allocated, hence goodwill is more likely to be economically impaired, and impairment is required to be reported.

Fifthly, Li and Sloan (2017) require the firm to have a combination of an unusually low rate of return and a large goodwill balance to be considered as a poor performing company, hence impairment is likely. Accordingly, the low-performance measure (*LOW.PERF*) in Column 5 across all the tables takes the value of one if the ratio of goodwill to total assets is higher than 10% (material goodwill) and firm has reported a negative return on assets, 0 otherwise.

The findings of table 5-10 in all the columns demonstrate a significant positive association (at 1%) between different measures of low-performance and the amount of goodwill impairment. The results in table 5-11 and 5-12 in all the Columns show significant positive coefficients for the interaction term (at different significance levels). These outcomes support the main regression results and endorse the first three hypotheses (H1-H3). Regarding the fourth hypothesis, some of the low-performance proxies used provide a significant positive interaction term (Column 1, Column 2 and Column 4).

Table 5-10 Recognition of goodwill impairment loss: Firm's poor-performance – Different low-performance measures

$GITA_i = \alpha0 + \alpha1$ LOW.PERF + $\alpha2$ Economic related variables + $\alpha3$ Management incentive related variables + $\alpha4$ Industry related variables + $\alpha5$ Auditor related variables + $\alpha6$ Industry fixed effect + $\alpha7$ Year fixed effect + u_i

Tobit Regression Analysis	(1)	(2)	(3)	(4)	(5)
LOW.PERF	0.019***	0.017***	0.014***	0.035***	0.064***
	(3.92)	(3.23)	(2.84)	(4.42)	(8.15)
L-IMP	0.037***	0.036***	0.037***	0.035***	0.030***
	(6.97)	(7.12)	(7.09)	(7.18)	(6.55)
GW/TA	0.056***	0.071***	0.070***	0.063***	0.051***
	(3.82)	(4.67)	(4.60)	(4.56)	(4.19)
RETURN	-0.013	-0.014*	-0.015*	-0.013	-0.012***
	(-1.59)	(-1.67)	(-1.67)	(-1.45)	(-2.60)
ΔMV/BV	-0.000	-0.000	-0.000	-0.000	-0.000
	(-0.18)	(-0.24)	(-0.34)	(-0.36)	(-0.43)
ΔROA	-0.184***	-0.154***	-0.185***	-0.179***	-0.087**
	(-4.45)	(-3.82)	(-4.47)	(-4.46)	(-2.55)
ΔOCF	0.024	0.016	0.047	0.023	0.009
	(0.51)	(0.33)	(0.94)	(0.49)	(0.21)
ΔSALES	-0.020	-0.021	-0.024	-0.020	-0.014
	(-1.18)	(-1.24)	(-1.37)	(-1.11)	(-1.07)
CGUs	0.009***	0.008***	0.008***	0.009***	0.007***
	(3.71)	(3.17)	(3.29)	(3.70)	(2.93)
SIZE	0.003*	0.003**	0.004**	0.004**	0.003**
	(1.70)	(2.00)	(2.21)	(2.55)	(2.29)
LEVERAGE	0.003	-0.003	-0.003	-0.001	-0.004
	(0.21)	(-0.21)	(-0.20)	(-0.08)	(-0.33)
BETA	-0.005	-0.004	-0.003	-0.004	-0.002
	(-1.48)	(-1.30)	(-1.05)	(-1.41)	(-0.79)
FREEFLOAT	-0.000	-0.000	-0.000	-0.000	0.000
	(-0.21)	(-0.18)	(-0.19)	(-0.33)	(0.23)
INDΔROA	-0.019	-0.018	-0.022	-0.019	-0.015
	(-0.93)	(-0.84)	(-1.06)	(-0.88)	(-0.99)
CROSSLIST	0.000	0.001	0.001	-0.001	0.002
	(0.05)	(0.21)	(0.11)	(-0.23)	(0.45)
ΔCEO	0.013**	0.012**	0.013**	0.014***	0.005
	(2.44)	(2.25)	(2.36)	(2.71)	(1.04)
ΔAUDITOR	-0.004	-0.005	-0.004	-0.005	-0.004
	(-0.78)	(-1.01)	(-0.95)	(-1.18)	(-1.10)
BATH	0.034	0.028	0.028	0.030	0.005
	(1.24)	(1.05)	(1.03)	(1.20)	(0.19)
SMOOTH	0.048***	0.048***	0.048***	0.048***	0.036***
	(7.46)	(7.52)	(7.52)	(7.65)	(7.22)
CONSTANT	-0.145***	-0.149***	-0.151***	-0.159***	-0.134***
	(-5.01)	(-5.12)	(-5.17)	(-5.38)	(-5.31)
N	1451	1451	1451	1451	1451

Notes: * p<0.10, ** p<0.05, *** p<0.01. *GITA* is the ratio of goodwill impairment losses to total assets. Independent variable is the firm's low-performance indicator (*LOW.PERF*). Control variables include firm's tendency to record goodwill impairment (*L-IMP*), goodwill to total assets (*GW/TA*), stock return (*RETURN*), market-to-book value (*MV/BV*), return on assets (*ROA*), cash flow to total assets (*OCF*), sales to total assets (*SALES*), the total number of cash-generating units (*CGU*), total assets in millions (*SIZE*), total liabilities to total assets (*LEVERAGE*), the firm's risk (*BETA*), percentage of shares available to trade (*FREEFLOAT*), change in the industry ROA (*INDΔROA*), cross-listed companies (*CROSSLIST*), change in the CEO (*ΔCEO*), audit partner change (*ΔAUDITOR*), big bath (*BATH*) and income smoothing (*SMOOTH*). See Table 4-1 for the definition of each variable.

Table 5-11 Recognition of goodwill impairment loss: The impact of EAR – Different low-performance measures

$GITA_i = \alpha 0 + \alpha 1$ LOW.PERF + $\alpha 2$ POST + $\alpha 3$ LOW.PERF*POST + $\alpha 4$ Economic related variables + $\alpha 5$ Management incentive related variables + $\alpha 6$ Industry related variables + $\alpha 7$ Auditor related variables + $\alpha 8$ Industry fixed effect + $\alpha 9$ Year fixed effect + u_i

Tobit Regression Analysis	(1)	(2)	(3)	(4)	(5)
LOW.PERF	0.013	0.012***	0.010**	0.026***	0.058***
	(1.61)	(2.62)	(2.35)	(3.16)	(8.12)
POST	0.015*	0.014	0.013	0.015*	0.014*
	(1.70)	(1.55)	(1.50)	(1.76)	(1.79)
*LOW.PERF*POST*	0.023*	0.033***	0.033***	0.024**	0.023***
	(1.80)	(3.15)	(3.19)	(2.08)	(2.65)
L-IMP	0.036***	0.035***	0.036***	0.035***	0.030***
	(7.16)	(7.17)	(7.15)	(7.21)	(6.60)
GW/TA	0.064***	0.066***	0.065***	0.060***	0.048***
	(4.53)	(4.57)	(4.53)	(4.47)	(4.07)
RETURN	-0.027***	-0.027***	-0.028***	-0.026***	-0.018***
	(-3.44)	(-3.60)	(-3.64)	(-3.34)	(-2.82)
ΔMV/BV	-0.001	-0.001	-0.001	-0.001	-0.001
	(-0.91)	(-0.91)	(-0.94)	(-0.98)	(-1.22)
ΔROA	-0.184***	-0.164***	-0.189***	-0.185***	-0.095**
	(-4.12)	(-3.67)	(-4.24)	(-4.26)	(-2.49)
ΔOCF	0.025	0.018	0.047	0.027	0.006
	(0.55)	(0.41)	(1.06)	(0.61)	(0.15)
ΔSALES	-0.026	-0.025	-0.029	-0.025	-0.017
	(-1.29)	(-1.28)	(-1.46)	(-1.21)	(-1.07)
CGUs	0.009***	0.009***	0.009***	0.010***	0.008***
	(3.58)	(3.47)	(3.55)	(3.81)	(3.26)
SIZE	0.003**	0.003*	0.003**	0.004**	0.003**
	(1.97)	(1.84)	(1.97)	(2.30)	(2.13)
LEVERAGE	0.003	0.003	0.003	0.003	0.000
	(0.26)	(0.23)	(0.26)	(0.20)	(0.00)
BETA	-0.005	-0.005*	-0.005	-0.005*	-0.004
	(-1.57)	(-1.65)	(-1.47)	(-1.65)	(-1.24)
FREEFLOAT	-0.000	-0.000	-0.000	-0.000	0.000
	(-0.27)	(-0.27)	(-0.29)	(-0.49)	(0.06)
INDΔROA	-0.019	-0.019	-0.022	-0.020	-0.015
	(-1.01)	(-0.98)	(-1.17)	(-1.05)	(-1.10)
CROSSLIST	-0.001	0.001	0.000	-0.001	0.002
	(-0.10)	(0.12)	(0.06)	(-0.19)	(0.44)
ΔCEO	0.012**	0.011**	0.012**	0.013**	0.005
	(2.31)	(2.16)	(2.21)	(2.47)	(1.10)
ΔAUDITOR	-0.005	-0.005	-0.004	-0.005	-0.005
	(-1.06)	(-1.05)	(-1.01)	(-1.18)	(-1.14)
BATH	0.036	0.033	0.033	0.035	0.010
	(1.31)	(1.19)	(1.17)	(1.33)	(0.40)
SMOOTH	0.050***	0.050***	0.050***	0.050***	0.039***
	(7.70)	(7.74)	(7.75)	(7.83)	(7.35)
CONSTANT	-0.146***	-0.144***	-0.145***	-0.150***	-0.131***
	(-5.03)	(-5.01)	(-5.05)	(-5.19)	(-5.18)
N	1451	1451	1451	1451	1451

Notes: * p<0.10, ** p<0.05, *** p<0.01. *GITA* is the ratio of goodwill impairment losses to total assets. Independent variables include the firm's low-performance indicator (*LOW.PERF*) and EAR adoption (*POST*). Control variables include firm's tendency to record goodwill impairment (*L-IMP*), goodwill to total assets (*GW/TA*), stock return (*RETURN*), market-to-book value (*MV/BV*), return on assets (*ROA*), cash flow to total assets (*OCF*), sales to total assets (*SALES*), the total number of cash-generating units (*CGU*), total assets in millions (*SIZE*), total liabilities to total assets (*LEVERAGE*), the firm's risk (*BETA*), percentage of shares available to trade (*FREEFLOAT*), change in the industry ROA (*INDΔROA*), cross-listed companies (*CROSSLIST*), change in the CEO (*ΔCEO*), audit partner change (*ΔAUDITOR*), big bath (*BATH*) and income smoothing (*SMOOTH*). See Table 4-1 for the definition of each variable.

Table 5-12 Recognition of goodwill impairment loss: The impact of ADGI – Different low-performance measures

$GITA_i = \alpha0 + \alpha1$ LOW.PERF + $\alpha2$ ADGI + $\alpha3$ LOW.PERF*ADGI + $\alpha4$ Economic related variables + $\alpha5$ Management incentive related variables + $\alpha6$ Industry related variables + $\alpha7$ Auditor related variables + $\alpha8$ Industry fixed effect + $\alpha9$ Year fixed effect + u_i

Tobit Regression Analysis	(1)	(2)	(3)	(4)	(5)
LOW.PERF	0.011***	0.013***	0.013***	0.011***	0.017***
	(3.51)	(3.96)	(4.00)	(3.53)	(3.12)
ADGI	0.005**	0.007***	0.004	0.002	0.034**
	(2.14)	(2.62)	(1.49)	(1.14)	(2.38)
*LOW.PERF*ADGI*	0.010***	0.008***	0.006**	0.011***	0.031*
	(3.56)	(2.88)	(1.98)	(3.77)	(1.90)
L-IMP	0.043***	0.040***	0.042***	0.041***	0.034***
	(6.06)	(6.17)	(6.20)	(6.20)	(5.51)
GW/TA	0.038*	0.054***	0.053***	0.043**	0.028*
	(1.92)	(2.72)	(2.66)	(2.39)	(1.74)
RETURN	-0.013	-0.014	-0.015	-0.014	-0.014**
	(-1.27)	(-1.35)	(-1.31)	(-1.18)	(-2.15)
ΔMV/BV	-0.000	-0.000	-0.000	-0.000	-0.000
	(-0.02)	(-0.14)	(-0.25)	(-0.20)	(-0.22)
ΔROA	-0.187***	-0.141***	-0.187***	-0.177***	-0.081**
	(-4.17)	(-3.42)	(-4.35)	(-4.30)	(-2.06)
ΔOCF	0.025	0.006	0.048	0.012	0.008
	(0.41)	(0.10)	(0.76)	(0.21)	(0.15)
ΔSALES	-0.002	-0.004	-0.005	-0.003	-0.002
	(-0.11)	(-0.24)	(-0.24)	(-0.15)	(-0.13)
CGUs	0.009**	0.008**	0.009**	0.009**	0.008**
	(2.35)	(2.19)	(2.32)	(2.30)	(2.31)
SIZE	-0.001	-0.001	-0.001	0.001	-0.000
	(-0.54)	(-0.63)	(-0.29)	(0.27)	(-0.16)
LEVERAGE	0.020	0.012	0.014	0.017	0.013
	(1.13)	(0.65)	(0.77)	(0.92)	(0.75)
BETA	-0.003	-0.002	-0.001	-0.003	0.000
	(-0.73)	(-0.41)	(-0.19)	(-0.71)	(0.03)
FREEFLOAT	0.000	0.000	0.000	0.000	0.000
	(0.44)	(0.28)	(0.26)	(0.42)	(0.90)
INDΔROA	-0.003	-0.002	-0.007	-0.002	-0.004
	(-0.12)	(-0.10)	(-0.30)	(-0.11)	(-0.26)
CROSSLIST	0.014*	0.017**	0.016**	0.011	0.015**
	(1.87)	(2.16)	(2.06)	(1.48)	(2.16)
ΔCEO	0.017**	0.014**	0.016**	0.018***	0.007
	(2.33)	(2.01)	(2.27)	(2.62)	(1.20)
ΔAUDITOR	-0.009	-0.009	-0.009	-0.010	-0.009
	(-1.43)	(-1.54)	(-1.53)	(-1.62)	(-1.64)
BATH	0.003	-0.005	-0.007	0.005	-0.016
	(0.15)	(-0.29)	(-0.32)	(0.26)	(-0.60)
SMOOTH	0.053***	0.054***	0.053***	0.054***	0.040***
	(6.37)	(6.61)	(6.56)	(6.76)	(5.98)
CONSTANT	-0.063	-0.057	-0.064	-0.082**	-0.079**
	(-1.57)	(-1.48)	(-1.61)	(-2.09)	(-2.34)
N	793	793	793	793	793

Notes: * p<0.10, ** p<0.05, *** p<0.01. *GITA* is the ratio of goodwill impairment losses to total assets. Independent variables include the firm's low-performance indicator (*LOW.PERF*) and auditor's disclosure of goodwill impairment as a risk item (*ADGI*). Control variables include firm's tendency to record goodwill impairment (*L-IMP*), goodwill to total assets (*GW/TA*), stock return (*RETURN*), market-to-book value (*MV/BV*), return on assets (*ROA*), cash flow to total assets (*OCF*), sales to total assets (*SALES*), the total number of cash-generating units (*CGU*), total assets in millions (*SIZE*), total liabilities to total assets (*LEVERAGE*), the firm's risk (*BETA*), percentage of shares available to trade (*FREEFLOAT*), change in the industry ROA (*INDΔROA*), cross-listed companies (*CROSSLIST*), change in the CEO (*ΔCEO*), audit partner change (*ΔAUDITOR*), big bath (*BATH*) and income smoothing (*SMOOTH*). See Table 4-1 for the definition of each variable.

Table 5-13 Recognition of goodwill impairment loss: The impact of ADIS – Different low-performance measures

$GITA_i = \alpha0 + \alpha1$ LOW.PERF + $\alpha2$ ADGI + $\alpha3$ LOW.PERF*ADIS + $\alpha4$ Economic related variables + $\alpha5$ Management incentive related variables + $\alpha6$ Industry related variables + $\alpha7$ Auditor related variables + $\alpha8$ Industry fixed effect + $\alpha9$ Year fixed effect + u_i

Tobit Regression Analysis	(1)	(2)	(3)	(4)	(5)
LOW.PERF	0.038**	0.015	0.017	-0.002	0.052***
	(2.34)	(1.44)	(1.59)	(-0.08)	(4.10)
ADIS	0.012**	0.014*	0.020***	0.015**	0.014**
	(2.02)	(1.88)	(2.68)	(2.27)	(2.49)
*LOW.PERF*ADIS*	0.038*	0.023*	0.003	0.069*	0.029
	(1.71)	(1.65)	(0.21)	(1.90)	(1.56)
L-IMP	0.035***	0.037***	0.039***	0.037***	0.030***
	(5.24)	(4.98)	(5.06)	(4.99)	(4.39)
GW/TA	0.055***	0.071***	0.073***	0.065***	0.031
	(2.64)	(3.06)	(3.05)	(2.98)	(1.63)
RETURN	-0.003	-0.006	-0.007	-0.007	-0.007
	(-0.49)	(-0.73)	(-0.80)	(-0.73)	(-1.52)
ΔMV/BV	-0.002*	-0.002*	-0.002*	-0.002*	-0.002
	(-1.86)	(-1.65)	(-1.67)	(-1.93)	(-1.64)
ΔROA	-0.167**	-0.138*	-0.217***	-0.223***	-0.007
	(-2.40)	(-1.78)	(-2.82)	(-3.22)	(-0.11)
ΔOCF	0.023	0.025	0.081	0.044	0.017
	(0.34)	(0.30)	(0.94)	(0.59)	(0.22)
ΔSALES	0.001	-0.002	0.001	0.005	-0.005
	(0.05)	(-0.10)	(0.04)	(0.20)	(-0.28)
CGUs	0.012***	0.011**	0.010**	0.009**	0.010***
	(2.73)	(2.39)	(2.16)	(2.07)	(2.63)
SIZE	-0.000	-0.004	-0.003	-0.001	-0.002
	(-0.08)	(-1.38)	(-1.11)	(-0.34)	(-0.64)
LEVERAGE	0.040*	0.028	0.033	0.037	0.023
	(1.90)	(1.21)	(1.44)	(1.64)	(1.11)
BETA	-0.003	-0.001	0.000	-0.003	-0.001
	(-0.60)	(-0.22)	(0.02)	(-0.51)	(-0.26)
FREEFLOAT	0.000	0.000	0.000	0.000	0.000
	(0.81)	(0.67)	(0.63)	(0.88)	(1.24)
INDΔROA	0.014	0.004	-0.000	0.009	-0.007
	(0.48)	(0.12)	(-0.00)	(0.29)	(-0.30)
CROSSLIST	0.006	0.017*	0.014	0.007	0.012
	(0.82)	(1.89)	(1.57)	(0.77)	(1.57)
ΔCEO	0.019**	0.020**	0.022**	0.024***	0.013*
	(2.26)	(2.26)	(2.52)	(2.87)	(1.65)
ΔAUDITOR	-0.011	-0.009	-0.009	-0.009	-0.008
	(-1.58)	(-1.14)	(-1.14)	(-1.24)	(-1.24)
BATH	0.001	-0.026	-0.026	-0.006	-0.067**
	(0.05)	(-0.83)	(-0.85)	(-0.25)	(-2.06)
SMOOTH	0.053***	0.056***	0.056***	0.057***	0.038***
	(6.87)	(6.40)	(6.36)	(6.79)	(5.31)
CONSTANT	-0.117**	-0.058	-0.067	-0.102**	-0.070
	(-2.53)	(-1.17)	(-1.35)	(-2.03)	(-1.64)
N	502	502	502	502	502

Notes: * p<0.10, ** p<0.05, *** p<0.01. *GITA* is the ratio of goodwill impairment losses to total assets. Independent variables include the firm's low-performance indicator (*LOW.PERF*) and extent of auditor disclosure (*ADIS*). Control variables include firm's tendency to record goodwill impairment (*L-IMP*), goodwill to total assets (*GW/TA*), stock return (*RETURN*), market-to-book value (*MV/BV*), return on assets (*ROA*), cash flow to total assets (*OCF*), sales to total assets (*SALES*), the total number of cash-generating units (*CGU*), total assets in millions (*SIZE*), total liabilities to total assets (*LEVERAGE*), the firm's risk (*BETA*), percentage of shares available to trade (*FREEFLOAT*), change in the industry ROA (*INDΔROA*), cross-listed companies (*CROSSLIST*), change in the CEO (*ΔCEO*), audit partner change (*ΔAUDITOR*), big bath (*BATH*) and income smoothing (*SMOOTH*). See Table 4-1 for the definition of each variable.

5.5.2 Different methodologies

To mitigate potential heteroscedasticity problems, which frequently occur in cross-sectional level-based and panel data designs, clustered standard errors at the firm level are employed in all the regression models in Table 5-14 as recommended by Petersen (2009). This helps to mitigate the problem of standard errors being biased if the residuals are not independent and correlated across companies (known as residual dependence created by the firm effect). Table 5-14 shows the estimated coefficients of the pooled Tobit regression analysis for the determinants model shown in Equation (1) and (2), controlling for both industry and year fixed effect. The four columns provide the results for the four research hypotheses, respectively. The overall results presented in the four columns are unchanged, hence supporting the four research hypotheses under investigation.

Table 5-14 Recognition of goodwill impairment loss – Clustered standard error

$GITA_i = \alpha0 + \alpha1$ LOW.PERF + $\alpha2$ EAR + $\alpha3$ LOW.PERF*EAR + $\alpha4$ Economic related variables + $\alpha5$ Management incentive related variables + $\alpha6$ Industry related variables + $\alpha7$ Auditor related variables + $\alpha8$ Industry fixed effect + $\alpha9$ Year fixed effect + u_i

Tobit Regression Analysis	(1)	(2)	(3)	(4)
LOW.PERF	0.039***	0.020**	0.020*	0.015
	(4.59)	(2.15)	(1.72)	(1.48)
EAR		0.003	0.019***	0.022***
		(0.84)	(3.01)	(2.80)
*LOW.PERF*EAR*		0.031**	0.037**	0.000
		(2.08)	(2.35)	(0.01)
L-IMP	0.035***	0.035***	0.039***	0.038***
	(6.34)	(6.39)	(6.51)	(5.14)
GW/TA	0.061***	0.060***	0.041**	0.055**
	(4.21)	(4.07)	(2.33)	(2.17)
RETURN	-0.009	-0.018***	-0.033***	-0.033**
	(-1.28)	(-2.70)	(-3.24)	(-2.33)
ΔMV/BV	-0.000	-0.001	-0.001	-0.002
	(-0.42)	(-0.95)	(-0.96)	(-1.50)
ΔROA	-0.168***	-0.184***	-0.155***	-0.214**
	(-3.91)	(-3.98)	(-3.57)	(-2.55)
ΔOCF	0.020	0.023	0.019	0.074
	(0.46)	(0.57)	(0.33)	(0.84)
ΔSALES	-0.017	-0.024	-0.006	-0.004
	(-1.05)	(-1.27)	(-0.28)	(-0.11)
CGUs	0.010***	0.009***	0.009***	0.010**
	(3.43)	(3.29)	(2.78)	(2.12)
SIZE	0.005***	0.004***	0.001	-0.004
	(2.59)	(2.65)	(0.32)	(-1.21)
LEVERAGE	-0.001	-0.001	0.020	0.036*
	(-0.08)	(-0.06)	(1.21)	(1.84)
BETA	-0.005	-0.006*	-0.002	-0.001
	(-1.58)	(-1.72)	(-0.54)	(-0.12)
FREEFLOAT	-0.000	-0.000	0.000	0.000
	(-0.18)	(-0.12)	(0.58)	(0.79)
INDΔROA	-0.014	-0.006	0.003	0.009
	(-0.63)	(-0.30)	(0.13)	(0.33)
CROSSLIST	-0.001	-0.003	0.011*	0.013
	(-0.22)	(-0.46)	(1.68)	(1.53)
ΔCEO	0.013***	0.012***	0.012**	0.022***
	(2.62)	(2.63)	(2.06)	(2.73)
ΔAUDITOR	-0.006	-0.006	-0.010*	-0.007
	(-1.35)	(-1.31)	(-1.76)	(-0.97)
BATH	0.029	0.037	0.017	-0.012
	(1.15)	(1.44)	(1.07)	(-0.32)
SMOOTH	0.047***	0.048***	0.053***	0.058***
	(6.22)	(6.32)	(6.83)	(6.16)
CONSTANT	-0.164***	-0.148***	-0.102***	-0.063
	(-5.01)	(-4.68)	(-2.90)	(-1.38)
N	1451	1451	793	502

Notes: * p<0.10, ** p<0.05, *** p<0.01, firm-clustered standard error. *GITA* is the ratio of goodwill impairment losses to total assets. Independent variables include firm's low-performance indicator (*LOW.PERF*), EAR adoption (*POST in column 2*), auditor's disclosure of goodwill impairment as a risk item (*ADGI in column 3*), and extent of auditor disclosure (*ADIS in column 4*). Control variables include firm's tendency to record goodwill impairment (*L-IMP*), goodwill to total assets (*GW/TA*), stock return (*RETURN*), market-to-book value (*MV/BV*), return on assets (*ROA*), cash flow to total assets (*OCF*), sales to total assets (*SALES*), the total number of cash-generating units (*CGU*), total assets in millions (*SIZE*), total liabilities to total assets (*LEVERAGE*), the firm's risk (*BETA*), percentage of shares available to trade (*FREEFLOAT*), change in the industry ROA (*INDΔROA*), cross-listed companies (*CROSSLIST*), change in the CEO (*ΔCEO*), audit partner change (*ΔAUDITOR*), big bath (*BATH*), and income smoothing (*SMOOTH*). See Table 4-1 for the definition of each variable.

Table 5-15 Column (1) provides the same analysis presented earlier using a balanced sample. According to Doyle and Magilke (2013), the use of a balanced sample helps to minimise the concern of correlated omitted variables on the firm level, and control for time-invariant firm-specific characteristics. Imposing this restriction on the sample helps to isolate and test the effect of the EAR adoption on the relationship between low-performance indicators and goodwill impairment. To find this balanced panel, companies are required to have their goodwill impairment disclosed as an RMM by the auditor since the standard was implemented. Under such a restriction, it can be assumed that they would probably have had their goodwill impairment disclosed as a risk matter (for the period before the EAR was adopted) if auditors were required to do so by this time. By doing this, the sample size dropped to 660 firm-year observations. Consistent with the previous regression models, Table 5-15 Column (1) uses pooled Tobit regression with both industry and year fixed effect. The findings of this analysis are similar to the main regression results, with the interaction term (LOW.PERF*POST) significant at 1%. This supports that notion the change in the UK audit reporting regime is associated with an improvement in financial reporting quality, which is reflected in a timely goodwill impairment recognition.

Furthermore, if the auditor's disclosure of goodwill impairment as a risk matter (ADGI) was mainly derived by the management decision to record goodwill impairment, a potential reverse causality could exist affecting the regression results of H2. To address this potential problem, a lagged independent variable ($ADGI_{t-1}$) is introduced in Table 5-15 Column (2), with as a sample size that consists of 582 firm-year observations. The use of a lagged independent variable mitigates the possibility that ADGI is derived by the amount of goodwill impairment recognised. Results show the interaction term (*LOW.PERF* L. ADGI*) is significant at 1%, supporting the findings of the main regression analysis.

Table 5-15 Recognition of goodwill impairment loss: The impact of EAR – Balanced sample and lagged ADGI

$GITA_i = \alpha0 + \alpha1$ LOW.PERF + $\alpha2$ EAR + $\alpha3$ LOW.PERF*EAR + $\alpha4$ Economic related variables + $\alpha5$ Management incentive related variables + $\alpha6$ Industry related variables + $\alpha7$ Auditor related variables + $\alpha8$ Industry fixed effect + $\alpha9$ Year fixed effect + u_i

Tobit Regression Analysis	(1)	(2)
POST	0.008	
	(0.81)	
LOW.PERF	0.015	-0.005
	(1.44)	(-0.30)
LOW.PERF POST*	0.045***	
	(2.85)	
L. ADGI		0.004
		(0.47)
LOW.PERF L. ADGI*		0.071***
		(3.72)
L-IMP	0.030***	0.040***
	(5.34)	(5.97)
GW/TA	0.077***	0.067***
	(3.91)	(3.29)
RETURN	-0.011	-0.044***
	(-1.23)	(-2.99)
ΔMV/BV	-0.002*	-0.000
	(-1.93)	(-0.13)
ΔROA	-0.207***	-0.155***
	(-2.79)	(-3.59)
ΔOCF	-0.004	0.013
	(-0.06)	(0.24)
ΔSALES	-0.033*	-0.002
	(-1.78)	(-0.11)
CGUs	0.010***	0.013***
	(2.86)	(2.70)
SIZE	0.005*	-0.001
	(1.79)	(-0.31)
LEVERAGE	0.006	0.029
	(0.34)	(1.31)
BETA	-0.000	-0.004
	(-0.00)	(-0.72)
FREEFLOAT	-0.000	-0.000
	(-0.73)	(-0.38)
INDΔROA	-0.003	-0.030
	(-0.09)	(-0.73)
CROSSLIST	-0.000	0.021**
	(-0.05)	(2.37)
ΔCEO	0.015**	0.019**
	(2.10)	(2.37)
ΔAUDITOR	-0.004	-0.011*
	(-0.62)	(-1.66)
BATH	0.016	0.011
	(0.75)	(0.69)
SMOOTH	0.057***	0.064***
	(7.40)	(7.10)
CONSTANT	-0.156***	-0.087*
	(-3.81)	(-1.92)
N	660	582

Notes: * p<0.10, ** p<0.05, *** p<0.01. *GITA* is the ratio of goodwill impairment losses to total assets. Independent variables include the firm's low-performance indicator (*LOW.PERF*), EAR adoption (*POST in column 2*) and lagged auditor's disclosure of goodwill impairment as a risk item (*L. ADGI in column 3*). Control variables include firm's tendency to record goodwill impairment (*L-IMP*), goodwill to total assets (*GW/TA*), stock return (*RETURN*), market-to-book value (*MV/BV*), return on assets (*ROA*), cash flow to total assets (*OCF*), sales to total assets (*SALES*), the total number of cash-generating

units (*CGU*), total assets in millions (*SIZE*), total liabilities to total assets (*LEVERAGE*), the firm's risk (*BETA*), percentage of shares available to trade (*FREEFLOAT*), change in the industry ROA (*INDΔROA*), cross-listed companies (*CROSSLIST*), change in the CEO (*ΔCEO*), audit partner change (*ΔAUDITOR*), big bath (*BATH*), and income smoothing (*SMOOTH*). See Table 4-1 for the definition of each variable.

Few studies (e.g., Beatty and Weber, 2006; Francis et al., 1996; Giner and Pardo, 2015; Glaum et al., 2018; Godfrey and Koh, 2009; Gu and Lev, 2011; Hayn and Hughes, 2006; Kabir and Rahman, 2016; Lobo et al., 2017; Paugam et al., 2015; Riedl, 2004; Zang, 2008) used the Logit regression analysis to examine the likelihood of recognising goodwill impairments, where the dependent variable takes the value of 1 if companies report goodwill impairment, zero otherwise. Table 5-16 shows the estimated coefficients of the pooled Logit regression analysis for the determinants model shown in Equation (1) and (2), controlling for both industry and year fixed effect. White's t-statistic adjustments (White, 1980) are also used to correct for heteroscedasticity. The four columns provide the results for the four research hypotheses, respectively. The overall results presented in the four columns are unchanged, confirming the main regression findings and supporting the four research hypotheses under investigation.

Finally, to investigate how robust the Tobit regression model, AbuGhazaleh et al. (2011) conducted an OLS regression analysis. Therefore, Table 5-17 shows the estimated coefficients of the pooled OLS regression analysis for the determinants model shown in Equation (1) and (2), controlling for both industry and year fixed effect. White's t-statistic adjustments (White, 1980) are also used to correct for heteroscedasticity. The four columns provide the results for the four research hypotheses, respectively. The overall results presented in the four columns are unchanged, confirming the main regression findings and supporting the four research hypotheses under investigation.

Table 5-16 Recognition of goodwill impairment loss – Logit regression analysis

$GIMP_i = \alpha0 + \alpha1$ LOW.PERF + $\alpha2$ EAR + $\alpha3$ LOW.PERF*EAR + $\alpha4$ Economic related variables + $\alpha5$ Management incentive related variables + $\alpha6$ Industry related variables + $\alpha7$ Auditor related variables + $\alpha8$ Industry fixed effect + $\alpha9$ Year fixed effect + u_i

LOGIT Regression Analysis	(1)	(2)	(3)	(4)
LOW.PERF	0.734***	0.318	0.175	0.799*
	(2.87)	(0.94)	(1.31)	(1.93)
EAR		0.831**	0.353***	0.750**
		(2.21)	(2.79)	(2.39)
*LOW.PERF*EAR*		0.880*	0.337***	-0.407
		(1.82)	(3.10)	(-0.76)
L-IMP	1.507***	1.529***	1.763***	1.584***
	(8.73)	(8.75)	(7.36)	(5.66)
GW/TA	0.951*	0.873*	-0.226	0.466
	(1.91)	(1.73)	(-0.30)	(0.53)
RETURN	-0.725**	-0.728**	-0.237	0.028
	(-2.08)	(-2.11)	(-0.56)	(0.13)
ΔMV/BV	-0.010	-0.009	-0.002	-0.047
	(-0.31)	(-0.27)	(-0.53)	(-1.24)
ΔROA	-5.151***	-5.219***	-6.560***	-8.403***
	(-3.13)	(-3.18)	(-3.02)	(-2.76)
ΔOCF	1.018	0.820	0.483	0.868
	(0.62)	(0.50)	(0.20)	(0.28)
ΔSALES	-0.735	-0.727	-0.007	0.244
	(-1.03)	(-1.05)	(-0.01)	(0.34)
CGUs	0.523***	0.523***	0.547***	0.655***
	(4.39)	(4.33)	(3.08)	(3.20)
SIZE	0.341***	0.343***	0.138	0.059
	(4.34)	(4.34)	(1.36)	(0.50)
LEVERAGE	-0.151	-0.115	0.774	1.752*
	(-0.25)	(-0.19)	(0.97)	(1.84)
BETA	-0.274**	-0.302**	-0.156	-0.175
	(-2.08)	(-2.26)	(-0.92)	(-0.82)
FREEFLOAT	-0.004	-0.004	-0.002	-0.004
	(-0.82)	(-0.87)	(-0.25)	(-0.56)
INDΔROA	0.236	0.190	0.130	0.116
	(0.27)	(0.23)	(0.14)	(0.11)
CROSSLIST	-0.163	-0.185	0.553*	0.628*
	(-0.72)	(-0.82)	(1.83)	(1.83)
ΔCEO	0.331	0.317	0.410	0.321
	(1.57)	(1.48)	(1.48)	(1.02)
ΔAUDITOR	-0.171	-0.160	-0.215	-0.147
	(-0.93)	(-0.87)	(-0.87)	(-0.50)
BATH	0.716	1.018	0.803	0.182
	(0.85)	(1.18)	(0.55)	(0.13)
SMOOTH	1.563***	1.565***	1.603***	1.583***
	(8.15)	(8.11)	(6.09)	(5.31)
CONSTANT	-8.123***	-8.119***	-4.307***	-3.942**
	(-6.53)	(-6.46)	(-2.62)	(-2.08)
N	1299	1299	710	486

Notes: * p<0.10, ** p<0.05, *** p<0.01. *GIMP* is the incidence of recording goodwill impairment loss. Independent variables include firm's low-performance indicator (*LOW.PERF*), EAR adoption (*POST in column 2*), auditor's disclosure of goodwill impairment as a risk item (*ADGI in column 3*), and extent of auditor disclosure (*ADIS in column 4*). Control variables include firm's tendency to record goodwill impairment (*L-IMP*), goodwill to total assets (*GW/TA*), stock return (*RETURN*), market-to-book value (*MV/BV*), return on assets (*ROA*), cash flow to total assets (*OCF*), sales to total assets (*SALES*), the total number of cash-generating units (*CGU*), total assets in millions (*SIZE*), total liabilities to total assets (*LEVERAGE*), the firm's risk (*BETA*), percentage of shares available to trade (*FREEFLOAT*), change in the industry ROA (*INDΔROA*), cross-listed companies (*CROSSLIST*), change in the CEO (*ΔCEO*), audit partner change (*ΔAUDITOR*), big bath (*BATH*), and income smoothing (*SMOOTH*). See Table 4-1 for the definition of each variable.

Table 5-17 Recognition of goodwill impairment loss – OLS regression analysis

$GITA_i = \alpha0 + \alpha1$ LOW.PERF + $\alpha2$ EAR + $\alpha3$ LOW.PERF*EAR + $\alpha4$ Economic related variables + $\alpha5$ Management incentive related variables + $\alpha6$ Industry related variables + $\alpha7$ Auditor related variables + $\alpha8$ Industry fixed effect + $\alpha9$ Year fixed effect + u_i

OLS Regression Analysis	(1)	(2)	(3)	(4)
LOW.PERF	0.016***	0.007**	0.005	0.005
	(4.53)	(1.99)	(1.60)	(1.63)
EAR		-0.002	0.002	0.005**
		(-0.72)	(1.40)	(2.32)
*LOW.PERF*EAR*		0.020***	0.032***	0.007
		(2.58)	(3.93)	(1.17)
L-IMP	0.006***	0.006***	0.008***	0.010***
	(3.67)	(3.76)	(3.20)	(2.94)
GW/TA	0.027***	0.028***	0.029***	0.036***
	(5.24)	(5.41)	(4.11)	(3.34)
RETURN	-0.007***	-0.007***	-0.006*	-0.007
	(-3.52)	(-3.60)	(-1.84)	(-1.35)
ΔMV/BV	-0.000	-0.000	0.000	-0.001
	(-0.85)	(-0.91)	(0.08)	(-1.50)
ΔROA	-0.049***	-0.049***	-0.037***	-0.070**
	(-3.22)	(-3.21)	(-3.30)	(-2.38)
ΔOCF	0.005	0.006	0.013	0.022
	(0.39)	(0.44)	(0.73)	(0.53)
ΔSALES	-0.005	-0.005	-0.002	-0.003
	(-0.86)	(-0.84)	(-0.39)	(-0.33)
CGUs	0.001*	0.001	0.001	0.000
	(1.69)	(1.12)	(0.51)	(0.16)
SIZE	-0.000	-0.000	-0.001	-0.003**
	(-0.95)	(-0.71)	(-1.59)	(-2.21)
LEVERAGE	-0.001	-0.001	0.006	0.008
	(-0.34)	(-0.19)	(0.94)	(0.86)
BETA	-0.001	-0.002	-0.001	0.000
	(-1.14)	(-1.64)	(-0.86)	(0.02)
FREEFLOAT	0.000	0.000	0.000	0.000
	(0.60)	(0.95)	(1.07)	(1.26)
INDΔROA	-0.006	-0.006	0.001	0.003
	(-0.88)	(-0.79)	(0.14)	(0.21)
CROSSLIST	0.000	-0.001	0.001	0.002
	(0.01)	(-0.57)	(0.62)	(0.53)
ΔCEO	0.006**	0.006**	0.007**	0.014***
	(2.55)	(2.50)	(2.32)	(2.90)
ΔAUDITOR	-0.001	-0.001	-0.001	-0.002
	(-0.77)	(-0.47)	(-0.91)	(-0.61)
BATH	0.009	0.012	0.002	-0.015
	(0.67)	(0.87)	(0.46)	(-1.43)
SMOOTH	0.015***	0.015***	0.017***	0.023***
	(6.18)	(6.25)	(5.41)	(4.96)
CONSTANT	-0.007	-0.009	0.002	0.020
	(-0.93)	(-1.25)	(0.18)	(1.02)
N	1451	1451	793	502
Adj. R^2	0.22	0.24	0.30	0.26
Max VIF	2.17	5.72	3.86	2.55

Notes: * p<0.10, ** p<0.05, *** p<0.01. *GITA* is the ratio of goodwill impairment losses to total assets. Independent variables include firm's low-performance indicator (*LOW.PERF*), EAR adoption (*POST in column 2*), auditor's disclosure of goodwill impairment as a risk item (*ADGI in column 3*), and extent of auditor disclosure (*ADIS in column 4*). Control variables include firm's tendency to record goodwill impairment (*L-IMP*), goodwill to total assets (*GW/TA*), stock return (*RETURN*), market-to-book value (*MV/BV*), return on assets (*ROA*), cash flow to total assets (*OCF*), sales to total assets (*SALES*), the total number of cash-generating units (*CGU*), total assets in millions (*SIZE*), total liabilities to total assets (*LEVERAGE*), the firm's risk (*BETA*), percentage of shares available to trade (*FREEFLOAT*), change in the industry ROA (*INDΔROA*), cross-listed companies (*CROSSLIST*), change in the CEO (*ΔCEO*), audit partner change (*ΔAUDITOR*), big bath (*BATH*), and income smoothing (*SMOOTH*). See Table 4-1 for the definition of each variable.

5.6 Summary

This chapter presented the empirical results of testing the association between EAR adoption and the recognition of goodwill impairment. Four research hypotheses are tested. Consistent with H1, companies' poor-performance shows a significant positive relationship with recognised goodwill impairment loss, supporting the use of firms' low-performance measure to capture the timeliness of goodwill impairment reporting.

Moving on to H2, findings show that the relationship between companies' poor performance and size of goodwill impairment is more pronounced post EAR implementation. These results indicate that goodwill impairment losses are better recognised, and less understated subsequent to the EAR adoption, supporting the notion that EAR adoption is associated with an improvement in the financial reporting quality.

Regarding H3, results show an improvement in the recognition and timeliness of goodwill impairment when auditors disclose goodwill impairment as a risk matter. These findings support the argument that auditors feel more accountable, and this triggers their professional scepticism towards disclosed risks, like goodwill impairments, putting more pressure on the management to adopt more acceptable estimates and judgment and recognise goodwill impairment when an economic impairment has incurred, and goodwill impairment needs to be booked.

Finally, H4 is not supported since the extent of auditor's disclosure was not found to affect the recognition of goodwill impairment losses, indicating that these disclosures might not properly capture the auditor's effort employed during the audit process. Auditors might only choose to disclose the material procedures they followed to comply with the auditing standard, and simultaneously avoid the extra costs from providing a large volume of disclosures.

Overall, consistent with the role auditors play in mitigating the agency problem, these findings imply that EAR adoption could be associated with (1) an increase in the audit quality that minimises management opportunistic behaviour and hence improve the recognition of goodwill impairment; and (2) a change to managers' reporting behaviour in a way that improves the recognition of goodwill impairment.

Chapter Six: Extended Audit Report and the Value Relevance of Goodwill Impairment: Empirical analysis and discussion

6.1 Introduction

Chapter five presented the empirical results associated with testing the recognition of goodwill impairment losses following the implementation of the EAR. Similarly, this chapter reports the empirical results of testing the research hypotheses related to the value relevance[60] of goodwill impairment before and after the EAR adoption in four main sections. Firstly, section 6.2 presents the descriptive statistics of the variables used in this study. Secondly, section 6.3 provides the correlation matrix that reports the correlation coefficients for the variables used in the main analysis. Section 6.4 presents the findings and the discussion of the main analysis. Then, section 6.5 presents the sensitivity analysis. Finally, section 6.6 provides a summary for the chapter.

6.2 Descriptive statistics and univariate analysis

This section presents the descriptive statistics and the univariate analysis for all the variables included in the value relevance model for the full sample over the period from 2010 to 2016. They are prepared without outliers and missing observations. Table 6-1 shows the descriptive statistics, where all the continuous variables in this model are deflated by the number of outstanding common shares.

[60] As explained in section 4.4.2, Value relevance studies examine how well the accounting amount(s) are reflected in companies' equity market values (Barth et al., 2001). Therefore, unlike fundamental analysis studies, value relevance studies do not attempt to estimate or explain firm value. Instead, they examine the value relevance of accounting amount(s) by assessing the extent to which they reflect information that is used by equity investors in valuing the firm's equity (Barth et al., 2001; Beaver, 2002; Beisland, 2009; Kothari, 2001; Lev and Ohlson, 1982).

The dependent variable – the market value of equity per share (*PR*) – has a mean value of £6.37 (median: £3.67). The book value of equity per share (*BVS*) has a mean value of £2.39 (median: £1.53), where the book value of equity excluding goodwill (*BV_GWS*) has significantly decreased to a mean value of £1.20 per share (median: £0.63 per share). This indicates the significant balance of recorded goodwill (*GWS*) with a mean value of £1.19 per share compared to the book value of equity. Furthermore, the substantial variation around the mean (S.D. = 2.36) as well as the minimum value of £-6.24 for *BV_GWS* reflect companies that have negative equity values after the deduction of significant goodwill balances. This is the case for 376 out of 1822 firm-year observations (20.14%). Earnings per share before goodwill impairment loss (*EPS_IMP*) shows a mean value of £0.51 (median: £0.31), and 167 out of 1822 firm-year observations (9.17%) have negative net income (*LOSS*). Goodwill impairment loss per share (*IMP*) has a mean value of 0.02 and a median of zero. This is supported by the fact that only 376 out of 1822 firm-year observations (20.64%) have recorded goodwill impairment losses[61].

With regards to auditor's disclosure-related variables, goodwill impairment is recognised by auditors as a risk of material misstatements (*ADGI*) in 610 out of 947 firm-year observations (64.4%)[62]. This supports the importance of goodwill and the extra attention directed by auditors while auditing this account. Looking at the extent of auditors' disclosures about goodwill impairment, a mean value of 317 words is used by auditors to describe the risk and to provide entity-specific information about the procedures they followed to investigate it (*ADIS*). A substantial variation around the mean (S.D. = 144), as well as a minimum of 39 words and a maximum of 915 words, suggest the existence of significant variances between auditors in the level of disclosure used to describe the goodwill impairment risk. Moreover, descriptive

[61] The average goodwill impairment losses per share increased to a mean value of 0.11 if cases with zero impairment losses are excluded.
[62] This percentage increased to 69.48% (592 out of 852 firm year observations) when goodwill is considered to be material (greater than 5% of the book value).

statistics are provided for the ADIS segregated into two sub-disclosures: descriptive (*DescDIS*) and entity-specific (*SpecDIS*) disclosures. DescDIS has a mean value of 133 words (median: 122 words), while SpecDIS has a mean value of 183 words (median: 161 words). They clearly show significant variations between the disclosure level used to describe the goodwill impairment risk and the one used to provide new information about the procedures followed by auditors to address and deal with that risk. This is also supported by the maximum level of disclosure provided in both of them, where a maximum of 385 words is used in the DescDIS compared to a maximum of 501 words used in the SpecDIS. For the sake of completeness, descriptive of statistics are also provided to the dummy variables derived for each one of the disclosure variables (ADIS_D1; DescDIS_D2; SpecDIS_D3) used in the regression analysis.

Table 6-1 Descriptive statistics for firm-year observations – The value relevance model

Variables	N	Mean	Median	Sd	Min	Max
Dependent variable						
PR	1822	6.37	3.67	6.64	0.05	43.11
Independent variables						
BVS	1822	2.39	1.53	2.70	0.00	29.67
BV_GWS	1822	1.20	0.63	2.36	-6.24	29.24
GWS	1822	1.19	0.65	1.67	0.00[63]	13.00
EPS_IMP	1822	0.51	0.31	0.74	-2.36	8.92
IMP	1822	0.02	0.00	0.12	0.00	3.28
LOSS	1822	0.09	0.00	0.29	0.00	1.00
Auditor's disclosure related variables						
ADGI	947	0.64	1.00	0.48	0.00	1.00
ADIS	607	316.48	291.00	144.43	39.00	915.00
DescDIS	607	132.86	122.00	71.92	8.00	385.00
SpecDIS	607	183.19	161.00	84.83	25.00	501.00
ADIS_D1	607	0.51	1.00	0.50	0.00	1.00
DescDIS_D2	607	0.52	1.00	0.50	0.00	1.00
SpecDIS_D3	607	0.51	1.00	0.50	0.00	1.00

Notes: t statistics in parentheses * p<0.10, ** p<0.05, *** p<0.01. *PR* is the market value of equity per share. Independent variables include goodwill impairment per share (*IMP*), auditor's disclosure of goodwill impairment as a risk item (*ADGI*), the extent of auditor disclosure (*ADIS*), descriptive auditor disclosure (*DesDIS*), and Entity specific auditor disclosure (*SpecDIS*). Control variables include the book value per share (*BVS*), book value excluding goodwill per share (*BV_GWS*), goodwill per share (*GWS*), earnings per share excluding impairment (*EPS_IMP*), and firm net loss (*LOSS*). See table 4-3 for the definition of each variable.

[63] The minimum goodwill per share (GWS) is .0007505, which is round to 0.00.

Table 6-2 reports the univariate analysis between different groups. Panel A shows the difference in means for the first two groups; the goodwill impairment sample against companies that have not recorded goodwill impairment losses. A statistically significant difference in mean exists between the two groups in BVS, GWS, LOSS, and all the variables that capture the auditor's disclosure. Companies with recorded goodwill impairment losses show higher book values of equity, goodwill balances, and more firm-year observations with negative net income. This is consistent with the notion that impairment loss is more associated with higher amounts of recorded goodwill, and with poor economic conditions that results in the reporting of negative net income in 24% of the impairment sample. Furthermore, Table 6-2 Panel A shows that 179 out of 221 firm-year observations with goodwill impairment losses (81%) are recognised by auditors as one of the RMMs, compared to 59% in the control sample. As expected, higher goodwill impairment related auditor disclosures are provided in all of the three variables (*ADIS; DescDIS; SpecDIS*) in the impairment sample (significant at 1%) compared to the control sample, supporting the argument that more audit disclosure is associated with recording goodwill impairment losses.

Table 6-2 Panel B shows the univariate analysis for the research sample before and after EAR adoption. The market value of equity per share is significantly higher (at 10%) in the period after the EAR. However, earnings per share before goodwill impairment losses (*EPS_IMP*) is significantly lower (at 1%), with around 12% of firm-year observations reporting negative net income in the period post the implementation of the EAR, compared to only 6% before EAR (significant at 1%).

Table 6-2 Panel C shows the univariate analysis between two groups; companies by which their auditors have considered goodwill impairment as a risk item against other companies where goodwill impairment was not one of the RMMs. BV_GWS, GWS, and IMP have a significant mean difference (at 1%) between the two groups. Consistent with the predictions, the decision

to consider goodwill impairment as a risk item (*ADGI*) is associated with large goodwill balance (mean: 1.484 per share) and a large amount of impairment recorded (mean: 0.039 per share).

Table 6-2 Univariate analysis – The value relevance model

Panel A – Impairment sample & control sample

	Impairment Sample		Control Sample		Diff. in	t-test
	N	Mean	N	Mean	means	
PR	376	6.423	1446	6.355	0.068	-0.17
BVS	376	2.902	1446	2.256	0.646**	-3.26
BV_GWS	376	1.287	1446	1.172	0.115	-0.64
GWS	376	1.616	1446	1.084	0.532***	-4.63
EPS_IMP	376	0.477	1446	0.524	-0.048	1.00
LOSS	376	0.239	1446	0.053	0.186***	-8.16
ADGI	221	0.810	726	0.594	0.216***	-6.73
ADIS	179	361.045	428	297.846	63.20***	-4.60
DescDIS	179	208.106	428	172.766	35.34***	-4.27
SpecDIS	179	152.939	428	125.079	27.86***	-4.05
ADIS_D1	179	0.654	428	0.452	0.201***	-4.68
DescDIS_D2	179	0.631	428	0.466	0.165***	-3.80
SpecDIS_D3	179	0.665	428	0.450	0.215***	-5.02

Panel B – Before and after the extended audit report

Extended Audit Report (POST)	Yes		No		Diff. in	
	N	Mean	N	Mean	means	t-test
PR	947	6.687	875	6.025	0.662*	-2.13
BVS	947	2.404	875	2.373	0.031	-0.25
BV_GWS	947	1.208	875	1.182	0.026	-0.23
GWS	947	1.196	875	1.191	0.005	-0.07
EPS_IMP	947	0.448	875	0.586	-0.138***	3.92
IMP	947	0.027	875	0.019	0.008	-1.33
LOSS	947	0.119	875	0.062	0.058***	-4.33

Panel C – Goodwill impairment is an RMM & control sample

Goodwill Impairment is a Risk Item	Yes		No		Diff. in	
(ADGI)	N	Mean	N	Mean	means	t-test
PR	610	6.671	337	6.717	-0.047	0.10
BVS	610	2.443	337	2.334	0.109	-0.56
BV_GWS	610	0.959	337	1.658	-0.699***	3.93
GWS	610	1.484	337	0.676	0.808***	-8.32
EPS_IMP	610	0.436	337	0.471	-0.035	0.69
IMP	610	0.039	337	0.005	0.035***	-6.52
LOSS	610	0.134	337	0.092	0.042*	-2.02

Notes: t statistics in parentheses * p<0.10, ** p<0.05, *** p<0.01. *PR* is the market value of equity per share. Independent variables include goodwill impairment per share (*IMP*), auditor's disclosure of

goodwill impairment as a risk item (*ADGI*), the extent of auditor disclosure (*ADIS*), descriptive auditor disclosure (*DesDIS*), and Entity specific auditor disclosure (*SpecDIS*). Control variables include the book value per share (*BVS*), book value excluding goodwill per share (*BV_GWS*), goodwill per share (*GWS*), earnings per share excluding impairment (*EPS_IMP*), and firm net loss (*LOSS*). See table 4-3 for the definition of each variable.

6.3 Correlation matrix

Table 6-3 presents Pearson and Spearman correlations between all the variables included in the value relevance model over the period 2010 – 2016. Looking at the Pearson correlation matrix, all the independent variables have the predicted correlations with the dependent variables (PR), except for goodwill impairment loss. The book value of equity excluding goodwill per share (*BV_GWS*), goodwill per share (*GWS*), and earnings per share before goodwill impairment (*EPS_IMP*) are found to be positively and significantly (at 1%) associated with the market value of equity per share (PR), where LOSS has a negative and significant correlation coefficient (at 1%). These results are consistent between Pearson and Spearman correlations.

On the other hand, goodwill impairment losses per share (IMP) has a positive and significant (at 5%) correlation coefficient. This correlation might not properly capture the intended relationship, as recording large amounts of goodwill impairment is positively associated with recording large amounts of goodwill. Companies with large goodwill balance are more likely to do large numbers of mergers and acquisitions (AbuGhazaleh et al., 2011), which in turn could be associated with a higher market value of equity that reflects the future cash flow expected from recording such goodwill. Hence, the simple correlation between PR and IMP could be driven by some econometrical problems. Spearman correlation test helps to mitigate this problem by converting values into ranks. As predicted, the Spearman correlation coefficient between PR and IMP in the upper part of the correlation matrix is negative (-0.015) but not significant. This will be further investigated in the multivariate analysis section, after controlling for all other control variables.

Regarding, the three auditors' disclosure variables (ADIS; DescDIS; SpecDIS), Pearson and Spearman correlation matrix show a positive but insignificant association with the stock prices (PR). In addition, all three variables have a positive relationship with the amount of goodwill impairment losses that are significant at 1%. This is consistent with the idea that more goodwill impairment related auditor disclosures are provided when large amounts of goodwill impairments are recognised. Finally, given that the correlation coefficients between the independent variables in the value relevance model do not exceed 0.80, this regression analysis will not be affected by the multicollinearity problem between independent variables (Gujarati, 2009).

Table 6-3 Pearson/Spearman correlation matrix – The value relevance model

	PR	BV_GWS	GWS	EPS_IMP	IMPAIR	LOSS	ADIS	DescDIS	SpecDIS
PR	**1**	0.421***	0.395***	0.805***	-0.015	-0.253***	0.038	0.005	0.005
BV_GWS	0.469***	**1**	-0.192***	0.383***	-0.060	-0.086***	-0.024	-0.039	-0.058
GWS	0.565***	-0.132***	**1**	0.364***	0.156***	-0.075**	0.052	0.056	0.028
EPS_IMP	0.847***	0.435***	0.460***	**1**	-0.047	-0.469***	0.017	-0.031	-0.035
IMP	0.0878**	0.082**	0.228***	0.168***	**1**	0.294***	0.183***	0.177***	0.159***
LOSS	-0.225***	-0.034	-0.073*	-0.294***	0.230***	**1**	0.049	0.057	0.065
ADIS	0.054	0.008	0.068	0.013	0.092	0.049	**1**	0.734***	0.698***
DescDIS	0.039	-0.012	0.065	-0.002	0.033	0.057	0.734***	**1**	0.472***
SpecDIS	0.024	0.008	0.045	-0.012	0.119	0.065	0.698***	0.472***	**1**

Notes: t statistics in parentheses * p<0.10, ** p<0.05, *** p<0.01. *PR* is the market value of equity per share. Independent variables include goodwill impairment per share (*IMP*), auditor's disclosure of goodwill impairment as a risk item (*ADGI*), the extent of auditor disclosure (*ADIS*), descriptive auditor disclosure (*DesDIS*), and Entity specific auditor disclosure (*SpecDIS*). Control variables include the book value per share (*BVS*), book value excluding goodwill per share (*BV_GWS*), goodwill per share (*GWS*), earnings per share excluding impairment (*EPS_IMP*), and firm net loss (*LOSS*). See table 4-3 for the definition of each variable.

6.4 Findings and discussion of the main analysis

This section reports the regression results related to the value relevance model for the fiscal years 2010 to 2016. The research sample investigated excludes missing observations for all the variables included in the model. It also excludes outlier observations that are identified as highly influential by having Cook's distance values greater than 4/n, where n is the total number of observations tested in the main regression (Baboukardos and Rimmel, 2014). Furthermore, all the following regression models control for industry and year fixed effect by adding various dummy variables for all the industries and years. This is to account for the systematic differences in the dependent variable (market value of equity per share) across industries and years. To lessen potential heteroscedasticity problems, which occur frequently in cross-sectional level-based designs, all the regression models are estimated on a per-share basis (Barth and Clinch, 2009) and White's t-statistic adjustments are used (White, 1980). Finally, the regression results are presented in chronological order according to the hypothesis being tested.

6.4.1 H5: Value relevance of the impairment-only approach

Table 6-4 presents the regression results from testing H5 over the period from 2010 to 2016. It shows the estimated coefficients of the OLS multiple regression analysis for the basic model in Equation 3. H5 predicts a negative association between goodwill impairment losses and the market value of equity. Accordingly, the dependent variable is the market value of equity per share (*PR*), while the main independent variable of interest is the recorded goodwill impairment loss per share (*IMP*). Moreover, the basic regression model controls for the following variables on a per-share basis: firm' book value of equity excluding goodwill (*BV_GWS*); recognised goodwill before impairment (*GWS*); earnings before goodwill impairment deductions (*EPS_IMP*); and whether the firm has recognised a net loss (*LOSS*). Table 6-4 presents the

regression results in three columns. Column (1) shows the regression results for the whole research sample (N=1822), where column (2) and column (3) show regression results for certain sub-samples. Column (2) considers only firm-year observations with material goodwill, where the ratio of goodwill to book value of equity is greater than 5% Mazzi et al., 2017), resulting in a research sample of 1645 firm-year observations. In column (3), results are presented only for companies that recognised non-zero goodwill impairment losses, resulting in a research sample of 376 firm-year observations.

The value relevance model is significant across the three regressions with p-value <0.000 and R^2 of 72%, 73%, and 74%, respectively. All the variables are significantly associated with the dependent variable (PR). Consistent with the predictions in hypothesis 5, goodwill impairment losses show a significant negative relationship with the market value of equity. Specifically, the regression coefficients are -5.58, -5.84, and -4.81 (all statistically significant at the 5% level) across the three regressions, respectively. This shows that goodwill impairment losses, on average, provide relevant information that conveys reductions in the economic value of goodwill. This also supports the argument that the use of fair value allows the management to use the impairment-only approach to signal information about the recoverable amount of the CGUs to which goodwill is allocated. Given that the regression coefficients are significantly lower than -1 in all the three regressions, it can be concluded that the average economic losses realised in companies' market value by market participants are larger than recorded goodwill impairment losses. A possible explanation is that recorded goodwill impairment losses are thoroughly understated. Evidence has been provided in the literature suggesting that the recording of goodwill impairment losses could be opportunistically misused by managers, either delayed or understated, to enhance their earnings and overstate their assets. If this is the case and given that the UK benefits from a semi-strong efficient market, it is most likely that market participants will not be misled and will recognise larger economic losses in the market

values that reflect the economic rather than the understated recognised goodwill impairment losses. In other words, if the capital market perceives that the reporting of goodwill impairment is not timely and usually delayed, they might overreact to the reported goodwill impairment losses knowing that the actual economic impairment losses were supposed to be bigger. Looking at the three regression coefficients in the three samples, it can be concluded that the value relevance of goodwill impairment losses is slightly higher (coefficient = -5.84) for material goodwill balance compared to the whole research sample coefficient = -5.58). In contrast, the coefficient (-4.807) for the sample, excluding cases with zero impairment (376 firm-year observations) in column 3 is lower in absolute value compared to the whole sample. This is consistent with the previous argument.

Consistent with prior studies (e.g., AbuGhazaleh et al., 2012; Aharony et al., 2010; Amel-Zadeh et al., 2013; Baboukardos and Rimmel, 2014; Laghi et al., 2013; Lapointe-Antunes et al., 2009), the book value of equity excluding goodwill per share (BV_GWS), goodwill per share (GWS), and earnings per share before goodwill impairment deduction (EPS_IMP) show a highly positive relationship with companies' market value (PR) throughout the three regressions. Specifically, although goodwill being found to represent on average a significant portion of companies' net assets (as highlighted earlier in section 6.2), the book value of equity excluding goodwill (BV_GWS) is highly significant at the 1% level across the three regressions with regression coefficients of 0.729, 0.868, and 0.848, respectively. This is supported by the notion that the book value of equity captures information about the economic value of net assets, resulting in a positive association between the firm's book value and its market value. Regarding goodwill per share (GWS), the regression coefficients are 1.126, 1.105, 1.445, and strongly significant at 1% in the three regressions. This suggests that goodwill captures information about the expected future synergies from certain acquisitions, and endorses the idea that goodwill is a non-wasting asset that should be capitalised on the statement of financial

position (e.g., Bugeja and Gallery, 2006; Chalmers et al., 2008; Dahmash et al., 2009; Al Jifri and Citron, 2009; McCarthy and Schneider, 1995; Ritter and Wells, 2006). With reference to earnings per share (EPS), the regression coefficients are 5.124, 5.232, and 3.577 (significant at the 1% level) in all the three samples, implying that higher pre-impairment earnings are associated with higher market values.

Furthermore, loss marking companies (LOSS) show a slightly significant positive market value (at the 10% level) in one of the regressions. This supports the valuation differences of those companies in the research sample, and reinforce the evidence provided by prior studies (e.g., Amel-Zadeh et al., 2013; Baboukardos and Rimmel, 2014; Givoly and Hayn, 2000; Hayn, 1995; Joos and Plesko, 2005; Oliveira et al., 2010; Xu et al., 2011) that the price-earnings relation is not homogeneous across loss and profit firm.

Table 6-4 Value relevance of the impairment-only approach – Main test

$PR_i = \alpha_0 + \alpha_1$ BV_GWS$+ \alpha_2$ GWS$+ \alpha_3$ EPS_IMP $+ \alpha_4$ IMP $+ \alpha_5$ LOSS $+ \alpha_6$ Industry fixed effect $+ \alpha_7$ Year fixed effect $+ u_i$

OLS Regression Analysis	(1)	(2)	(3)
BV_GWS	0.729***	0.868***	0.848***
	(9.12)	(9.64)	(5.86)
GWS	1.126***	1.105***	1.445***
	(10.37)	(9.94)	(7.88)
EPS_IMP	5.124***	5.232***	3.577***
	(12.77)	(11.74)	(4.79)
IMP	-5.588**	-5.841**	-4.807**
	(-2.18)	(-2.13)	(-2.51)
LOSS	0.624*	0.599	0.304
	(1.68)	(1.49)	(0.55)
CONSTANT	0.052	-0.019	0.435
	(0.12)	(-0.04)	(0.46)
Year FE	Included	Included	Included
Industry FE	Included	Included	Included
N	1822	1645	376
F-value	76.24***	78***	27.85***
Adj. R^2	0.72	0.73	0.74
Max VIF	2.21	2.26	2.63

Notes: t statistics in parentheses * p<0.10, ** p<0.05, *** p<0.01. *PR* is the market value of equity per share. Independent variables include goodwill impairment per share (*IMP*). Control variables include the book value per share (*BVS*), book value excluding goodwill per share (*BV_GWS*), goodwill per share (*GWS*), earnings per share excluding impairment (*EPS_IMP*), and firm net loss (*LOSS*). See table 4-3 for the definition of each variable.

6.4.2 H6: Value relevance of goodwill impairment loss: The impact of the EAR

Table 6-5 presents the regression results from testing H6 over the period from 2010 to 2016. It shows the estimated coefficients of the OLS multiple regression analysis for Equation 4a. H6 expects EAR to affect the association between goodwill impairment losses and the market value of equity. Hence, in addition to the variables included in Equation 3, extended audit report (*POST*) and its interaction with goodwill impairment losses (*IMP*POST*) are investigated in Equation 4a. This interaction term (α6) captures the incremental impact of the EAR on the association between goodwill impairment losses and the market value of equity. Table 6-5 shows the regression results for Equation 4a in five columns. Column (1) provides findings for the period before the EAR (875 firm-year observations), while column (2) provides findings for the period after the EAR (947 firm-year observations). Column (3) shows the results for the whole sample (1822 firm-year observations), with the interaction term utilised to get more insights on the moderating effect of EAR on the goodwill impairment losses – market value nexus. Similar to H5, column (4) considers only firm-year observations with material goodwill, where column (5) provides results for companies that only recognised goodwill impairment losses.

Findings show the value relevance model (Equation 4a) is significant across all the regressions. The regression results for the sample before the EAR in column (1) have R^2 that equals 70%, compared to 77% for the research sample after the EAR in column (2). This initially supports H6 and suggests that EAR adoption has increased the value relevance of the model. Specifically, the regression coefficients for the book value of net assets excluding goodwill (BV_GWS), the purchased goodwill (GWS), earnings before goodwill impairment deductions (EPS_IMP), and loss-making companies (LOSS) have increased. This implies that enhancement in the auditors' disclosure resulting from the EAR could have reduced the

information asymmetry and improved audit quality, resulting in improvements in the value perceived by market participants. On the other hand, the regression coefficient for goodwill impairment losses has decreased in absolute value, suggesting that EAR could have lessened their negative impact on market participants. There are at least two possible explanations that can be provided in view of the agency theory. First, if the audit quality has improved in the wake of the EAR (as predicted in hypothesis 1-4 and tested in chapter 5), more accurate goodwill impairment losses would have been recorded to the level that reflects and matches the economic impairment impact on the market price. Second, auditors' disclosure of the procedures they followed in dealing with RMMs (including goodwill impairment) could have reduced uncertainties surrounding the goodwill impairment risk and provided market participants with a higher level of assurance[64].

Consistent with the predictions in hypothesis 6, the interaction term (IMP*POST) in column 3 supports the previous argument and indicates that the adoption of EAR decreases the negative association between goodwill impairment losses and the market value of equity, by showing a strong positive regression coefficient of 7.639 (significant at the 1% level). The combined regression coefficient for the relationship between the goodwill impairment losses and the market value of equity for the EAR sample is close to -0.1 (-8.507+7.639). This means that the average economic impairment losses realised in companies' market value are close to recorded goodwill impairment losses, subsequent to the implementation of the EAR. This suggests that goodwill impairment losses are better recognised, and less understated subsequent to the EAR and/or market participants are not over-reacting to recorded goodwill impairment losses. Column (4) and (5) report similar results, confirming that the relationship still holds for the

[64] This will be tested in H7, by looking at the extent of auditors' disclosures following the EAR.

sub-sample that consists of firm-year observations with material goodwill balance and the second one with firm-year observations with non-zero goodwill impairment losses.

Table 6-5 Value relevance of goodwill impairment loss: The impact of EAR – Main test

$PR_i = \alpha_0 + \alpha_1$ BV_GWS+ α_2 GWS+ α_3 EPS_IMP + α_4 IMP + α_5 POST + α_6 IMP*POST + α_7 LOSS + α_6 Industry fixed effect + α_7 Year fixed effect + u_i

OLS Regression Analysis	(1)	(2)	(3)	(4)	(5)
BV_GWS	0.540***	0.773***	0.717***	0.853***	0.824***
	(4.39)	(6.84)	(8.90)	(9.24)	(5.95)
GWS	0.640***	1.435***	1.083***	1.055***	1.355***
	(4.38)	(12.33)	(10.61)	(10.38)	(7.64)
EPS_IMP	5.168***	5.908***	5.244***	5.379***	3.906***
	(10.42)	(12.22)	(13.19)	(12.26)	(5.12)
IMP	-6.744***	-2.811**	-8.507***	-8.878***	-7.240***
	(-2.98)	(-2.05)	(-3.76)	(-3.48)	(-3.52)
*IMP*POST*			7.639***	7.941***	6.270***
			(3.02)	(2.89)	(2.60)
LOSS	0.326	1.134***	0.539	0.507	0.356
	(0.63)	(3.00)	(1.59)	(1.38)	(0.63)
CONSTANT	1.392**	0.838	0.001	-0.078	0.420
	(2.22)	(1.54)	(0.00)	(-0.18)	(0.44)
Year FE	Included	Included	Included	Included	Included
Industry FE	Included	Included	Included	Included	Included
N	875	947	1822	1645	376
F-value	32.84***	73.94***	70.29***	72.02***	28.41***
Adj. R^2	0.70	0.77	0.72	0.73	0.74
Max VIF	2.83	1.96	6.01	5.93	7.45

Notes: t statistics in parentheses * p<0.10, ** p<0.05, *** p<0.01. *PR* is the market value of equity per share. Independent variables include goodwill impairment per share (*IMP*) and EAR adoption (*POST*). Control variables include the book value per share (*BVS*), book value excluding goodwill per share (*BV_GWS*), goodwill per share (*GWS*), earnings per share excluding impairment (*EPS_IMP*), and firm net loss (*LOSS*). See table 4-3 for the definition of each variable.

6.4.3 H7: Value relevance of goodwill impairment loss: The impact of auditor-related disclosure

H7 predicts that the extent of auditors' disclosures regarding goodwill impairment and the volume of details provided would affect the value relevance of goodwill impairment losses. Before testing H7, it is important to explore whether the association between goodwill impairment losses and companies' market value differs between cases where goodwill

impairment was disclosed as one of the RMMs, compared to cases where it was not. This is to investigate whether the auditor's disclosure of goodwill impairment as a risk matter matches the market perception of economic goodwill impairment losses. As such, column (1) in Table 6-6 Panel A shows the regression results for cases where auditors did not consider goodwill impairment as a risk item (337 firm-year observations), while column (2) provides findings for cases where goodwill impairment risk was one of the RMMs (610 firm-year observations).

Findings presented in the two columns are quite similar to the findings presented earlier for all variables except goodwill impairment losses. Specifically, the regression coefficients for the book value of net assets excluding goodwill (BV_GWS), the purchased goodwill (GWS), earnings before goodwill impairment deductions (EPS_IMP), and loss-making companies (LOSS) across the two columns are significant (at the same level) and in the same direction as reported earlier. In contrast, column (2) shows goodwill impairment losses (IMP) to be negatively associated with companies' market value of equity (significant at the 5% level) when the auditor discloses goodwill impairment as a risk matter, compared to column (1) that shows an insignificant association between them. This supports the value relevance of goodwill impairment losses (recognition of economic impairment losses in the market price) to market participants only when auditors recognise goodwill impairment as a risky matter. This means that by the time auditors have considered goodwill impairment as a risky matter, market participants retrieved negative information from the recognition of goodwill impairment losses and reacted negatively. This could also imply that goodwill impairment losses recorded in cases where auditors did not disclose goodwill impairment as a risk item (42 out of 221 firm-year observations with recorded goodwill impairment losses greater than zero, around 19%) are not material and do not convey negative information about the goodwill balance, and hence the market participants did not negatively reflect them in the company's price.

Column 3, 4, and 5 in Table 6-6 Panel A show the regression results from testing H7 focusing only on the research sub-sample where EAR is adopted. Hence, the estimated coefficients of the OLS multiple regression analysis for Equation 4b are examined using 610 firm-year observations over the period from 2013 to 2016. In addition to the variables included in the basic model, the length of auditor's disclosure about goodwill impairment losses (*ADIS*) and its interaction with the amount of goodwill impairment losses (*IMP*ADIS*) are initially investigated in model 3, and regression results are reported in column (3). The interaction term captures the moderating effect of the extent of auditors' disclosure on the goodwill impairment losses – market value nexus. Then, ADIS is segregated into two parts: (1) Descriptive auditor disclosure (*DescDIS*); (2) entity-specific auditor disclosure (*SpecDIS*). Results for the two types of disclosures are presented in column (4) and (5), respectively.

Consistent with the predictions in hypothesis 7, the interaction term (IMP*ADIS) in column 3 indicates that the volume of details disclosed by auditors about the procedures they followed to address the goodwill impairment risk decreases the negative impact of goodwill impairment losses on companies' market value, by showing a slightly significant positive regression coefficient of 3.525 (significant at the 10% level). The combined regression coefficient for the relationship between the goodwill impairment losses and the market value for lengthy auditors' disclosures is -1.809 (-5.334+3.525). This means that the average economic impairment losses realised in companies' market value are less for firm-year observations where auditors have provided lengthy goodwill impairment disclosures that are greater than the median of the distribution. Consistent with the auditor's role in mitigating agency theory cost and reducing information asymmetries, higher auditors' disclosure might have reduced uncertainties surrounding reported goodwill impairment losses and hence, provided market participants with a higher level of assurance. Furthermore, with more information disclosed by the auditor, investors are less likely to over-react to recorded goodwill impairment losses. Hence, the

interaction term is slightly reducing the negative impact of goodwill impairment losses on the market value. The regression coefficients for the other variables included in Equation 4b– column 3 are significant and quite similar to the findings presented earlier.

Consistent with the predictions in hypothesis 7a, the interaction term (IMP*DescDIS) in column 4 has an insignificant positive coefficient (2.847) indicating that descriptive auditors' disclosure has no impact on the value relevance goodwill impairment losses. This implies that auditors' disclosures about the definition of goodwill impairment risk and the description of the reasons behind considering it as a risk matter are typical across all the audit reports and do not contain new information that would help market participants in assessing the value relevance of goodwill impairment losses, hence do not contain relevant information.

Consistent with the predictions in hypothesis 7b, the interaction term (IMP*SpecDIS) in column 5 has a positive coefficient (4.212) that is significant at the 5% level, indicating that entity-specific auditors' informative disclosure has a significant impact on the value relevance goodwill impairment losses. The combined regression coefficient for the relationship between the goodwill impairment losses and the market value for lengthy informative auditors' disclosures is close to -1 (-5.146+4.212). This means that the average economic impairment losses realised in companies' market value are less for firm-year observations where auditors have provided lengthy informative disclosures about goodwill impairment tests that are greater than the median of the distribution. This suggests that the extent of details provided by auditors about the procedures they followed and the degree to which they are confident about reviewing the assumptions behind the goodwill impairment tests provide relevant information that may reduce uncertainties and provide a higher level of assurance that moderates the negative impact of goodwill impairment losses on companies' market value. The regression coefficients for the other variables included in the model in column (4) and (5) are significant and quite similar to the level that confirms the findings presented in previous models.

Finally, Table 6-6 Panel B presents the same regression results for the research sub-sample that consists of material goodwill balances (592 firm-year observations), while Panel C presents the regression results for the research sub-sample that reported non-zero goodwill impairment losses (179 firm-year observations). Results in column (1) for the two sub-samples in Panel A and B show the interaction term (IMP*ADIS) is positive but not significant, suggesting that the volume of goodwill impairment related auditors' disclosure does not provide value-relevant information to market participants about goodwill impairment losses. However, the interaction term (IMP*SpecDIS) that captures the entity-specific auditors' disclosures about goodwill impairments shows a significant positive regression coefficient (significant at the 10% level) in columns (3) for the two sub-samples in Panel A and B. This suggests that the significance of the regression coefficient for the interaction term (IMP*ADIS) in column (1) is distorted by the inclusion of the insignificant, typical and descriptive portion of auditors' disclosures, given that its interaction term (IMP*DescDIS) is not significantly different from zero. This implies that only entity-specific goodwill impairment related audit disclosures convey useful information (e.g., how auditors challenged the management in the assumptions used in the impairment test) to investors potentially affecting information risk, compared to descriptive disclosures that are generally standardised disclosures provided just to comply with the standard requirement without revealing critical information to market participants. These findings add to the literature that examines the consequences of EAR adoption by differentiating between descriptive versus entity-specific auditor's disclosures and highlighting differences in their value relevance. The empirical findings for the remaining variables included in the model remain qualitatively the same across all the regressions.

Table 6-6 Value relevance of goodwill impairment loss: The impact of auditors' disclosures – Main test

$PR_i = \alpha_0 + \alpha_1$ BV_GWS+ α_2 GWS+ α_3 EPS_IMP + α_4 IMP + α_5 ADIS + α_6 IMP*ADIS + α_7 LOSS + α_6 Industry fixed effect + α_7 Year fixed effect + u_i

Panel A – Whole Sample

OLS Regression Analysis	(1)	(2)	(3)	(4)	(5)
BV_GWS	0.744***	0.662***	0.648***	0.655***	0.650***
	(5.40)	(4.52)	(4.37)	(4.43)	(4.36)
GWS	1.343***	1.312***	1.284***	1.289***	1.298***
	(5.05)	(10.02)	(9.69)	(9.73)	(9.82)
EPS_IMP	5.162***	7.506***	7.586***	7.568***	7.541***
	(9.89)	(12.32)	(12.26)	(12.19)	(12.22)
IMP	4.660	-2.900**	-5.334***	-5.072**	-5.146***
	(0.33)	(-2.02)	(-3.26)	(-2.50)	(-3.57)
*IMP*ADIS*			3.525*		
			(1.65)		
*IMP*DescDIS*				2.847	
				(1.14)	
*IMP*SpecDIS*					4.212**
					(2.00)
LOSS	2.676***	1.140***	1.145***	1.127***	1.076***
	(3.48)	(2.84)	(2.88)	(2.84)	(2.72)
CONSTANT	0.698	0.604	0.571	0.507	0.648
	(0.83)	(0.80)	(0.76)	(0.66)	(0.86)
Year FE	Included	Included	Included	Included	Included
Industry FE	Included	Included	Included	Included	Included
N	337	610	610	610	610
F-value	31.82***	85.10***	74.96***	76.55***	76.34***
Adj. R^2	0.74	0.81	0.81	0.81	0.81
Max VIF	1.89	2.58	3.33	4.51	2.59

Panel B – Material Goodwill

OLS Regression Analysis	(1)	(2)	(3)
BV_GWS	0.770***	0.781***	0.765***
	(6.14)	(6.25)	(6.11)
GWS	1.168***	1.173***	1.178***
	(8.82)	(8.90)	(8.95)
EPS_IMP	8.421***	8.404***	8.387***
	(14.12)	(14.10)	(14.16)
IMP	-5.578***	-5.417***	-5.265***
	(-3.41)	(-2.65)	(-3.36)
*IMP*ADIS*	3.471		
	(1.62)		
*IMP*DescDIS*		2.875	
		(1.14)	
*IMP*SpecDIS*			3.989*
			(1.84)
LOSS	1.355***	1.334***	1.277***
	(3.72)	(3.66)	(3.52)
CONSTANT	0.651	0.506	0.732
	(0.83)	(0.64)	(0.93)
Year FE	Included	Included	Included
Industry FE	Included	Included	Included
N	592	592	592
F-value	109.41***	111.60***	112.15***

Adj. R^2	0.83	0.83	0.83
Max VIF	3.34	4.53	2.53
Panel C – Impairment Sample			
OLS Regression Analysis	(1)	(2)	(3)
BV_GWS	0.987***	1.002***	0.991***
	(7.68)	(7.85)	(7.70)
GWS	1.233***	1.222***	1.279***
	(5.94)	(5.78)	(6.19)
EPS_IMP	7.192***	7.155***	7.018***
	(6.76)	(6.70)	(6.56)
IMP	-6.012***	-6.006**	-5.634***
	(-2.91)	(-2.56)	(-2.83)
*IMP*ADIS*	4.130		
	(1.65)		
*IMP*DescDIS*		3.956	
		(1.28)	
*IMP*SpecDIS*			4.391*
			(1.72)
LOSS	0.855	0.789	0.701
	(1.54)	(1.42)	(1.25)
CONSTANT	1.956	1.571	1.931
	(1.24)	(0.99)	(1.20)
Year FE	Included	Included	Included
Industry FE	Included	Included	Included
N	179	179	179
F-value	42.37***	42.49***	46.99***
Adj. R^2	0.86	0.86	0.86
Max VIF	3.88	5.46	3.19

Notes: t statistics in parentheses * p<0.10, ** p<0.05, *** p<0.01. *PR* is the market value of equity per share. Independent variables include goodwill impairment per share (*IMP*), the extent of auditor disclosure (*ADIS*), descriptive auditor disclosure (*DesDIS*), and Entity specific auditor disclosure (*SpecDIS*). Control variables include the book value per share (*BVS*), book value excluding goodwill per share (*BV_GWS*), goodwill per share (*GWS*), earnings per share excluding impairment (*EPS_IMP*), and firm net loss (*LOSS*). See table 4-3 for the definition of each variable.

6.5 Sensitivity Analysis

This section presents the additional tests prepared to examine whether the results of the study are sensitive to alternative modelling specifications and variable definitions.

6.5.1 Different model specifications

To check the sensitivity of the analysis, different measures are used to capture the market value of equity. Following prior studies (e.g., Baboukardos and Rimmel, 2014; Chalmers et al., 2008; Sahut et al., 2011), two alternative measures are used for the dependent variables: the market value of equity 4 months and 6 months after the year-end. This is to ensure that the tested

relationships are not biased toward a selected market value measure. Table 6-7 presents the results for the basic model (Equation 3) to test hypothesis 5. Column (1) demonstrates the regression results where the market value of equity is 4 months after the year-end is the dependent variable, where column (2) demonstrates the regression results where the market value of equity is 6 months after the year-end is used. Results show a significant negative association between goodwill impairment losses and companies' market value (significant at the 5% level across the two columns), supporting the main regression results presented in Table 6.4. Thus, it can be concluded with sufficient certainty that hypothesis 5 is confirmed and that goodwill impairment losses, on average, provide relevant information that conveys reductions in the economic value of goodwill. Regarding the remaining variables included in the basic model (Equation 3), results remain qualitatively similar to the main regression results across the two columns.

Table 6-7 Value relevance of the impairment-only approach – Different market value measures

$PR_i = \alpha_0 + \alpha_1$ BV_GWS+ α_2 GWS+ α_3 EPS_IMP + α_4 IMP + α_5 LOSS + α_6 Industry fixed effect + α_7 Year fixed effect + u_i

OLS Regression Analysis	(1)	(2)
BV_GWS	0.730***	0.731***
	(9.19)	(9.13)
GWS	1.084***	1.126***
	(10.06)	(10.37)
EPS_IMP	5.237***	5.116***
	(13.07)	(12.76)
IMP	-4.850**	-5.583**
	(-2.16)	(-2.18)
LOSS	0.566	0.615*
	(1.59)	(1.66)
CONSTANT	0.101	0.049
	(0.24)	(0.12)
Year FE	Included	Included
Industry FE	Included	Included
N	1822	1822
F-value	74.01***	78***
Adj. R^2	0.73	0.72

Notes: t statistics in parentheses * p<0.10, ** p<0.05, *** p<0.01. *PR* is the market value of equity per share. Independent variables include goodwill impairment per share (*IMP*). Control variables include the book value per share (*BVS*), book value excluding goodwill per share (*BV_GWS*), goodwill per share (*GWS*), earnings per share excluding impairment (*EPS_IMP*), and firm net loss (*LOSS*). See table 4-3 for the definition of each variable.

Table 6-8 presents the results for the value relevance model (Equation 4a) to test hypothesis 6. Similarly, column (1) summaries the regression results where the market value of equity is 4 months after the year-end is the dependent variable, where column (2) summaries the regression results where the market value of equity is 6 months after the year-end is used. Given that the interaction term (IMP*POST) is the main variable of interest to test hypothesis 6, results of the two columns show a significant positive regression coefficient that moderates the negative association between goodwill impairment losses and the market value of equity (significant at the 1% level), supporting the main regression results presented in Table 6-5. The combined coefficients of the interaction term and goodwill impairment losses in the two columns are very close to -1, similar to the combined coefficients in Table 6-5. Thus, it can be concluded with sufficient certainty that hypothesis 6 is confirmed and that market participants consider EAR to be value relevant. Regarding the remaining variables included in value relevance model (Equation 4a), results remain qualitatively similar to the main regression results across the two columns.

Table 6-8 Value relevance of goodwill impairment loss: The impact of EAR – Different market value measures

$PR_i = \alpha_0 + \alpha_1$ BV_GWS$+ \alpha_2$ GWS$+ \alpha_3$ EPS_IMP $+ \alpha_4$ IMP $+ \alpha_5$ POST $+ \alpha_6$ IMP*POST $+ \alpha_7$ LOSS $+ \alpha_6$ Industry fixed effect $+ \alpha_7$ Year fixed effect $+ u_i$

OLS Regression Analysis	(1)	(2)
BV_GWS	0.720***	0.718***
	(8.98)	(8.90)
GWS	1.045***	1.083***
	(10.04)	(10.61)
EPS_IMP	5.348***	5.236***
	(13.30)	(13.18)
IMP	-7.431***	-8.496***
	(-3.80)	(-3.76)
*IMP*POST*	6.529***	7.643***
	(2.80)	(3.02)
LOSS	0.494	0.529
	(1.47)	(1.56)
CONSTANT	0.057	-0.002
	(0.13)	(-0.01)
Year FE	Included	Included
Industry FE	Included	Included
N	1822	1822
Adj. R^2	0.73	0.72

Notes: t statistics in parentheses * p<0.10, ** p<0.05, *** p<0.01. *PR* is the market value of equity per share. Independent variables include goodwill impairment per share (*IMP)* and EAR adoption (POST). Control variables include the book value per share (*BVS*), book value excluding goodwill per share (*BV_GWS*), goodwill per share (*GWS*), earnings per share excluding impairment (*EPS_IMP*), and firm net loss (*LOSS*). See table 4-3 for the definition of each variable.

Table 6-9 shows the results for the value relevance model (Equation 4b) to test hypothesis 7, showing the market value of 4 months after the year-end as the dependent variable in Panel A and the market value of 6 months after the year-end as the dependent variable in Panel B, respectively. Given that the interaction term (IMP*ADIS) is the main variable of interest to test hypothesis 7, results of the Panel A – column (1) show a positive but insignificant regression coefficient for the whole auditor disclosure about goodwill impairment. Likewise, the interaction term (IMP*DescDIS) in column (2) that captures descriptive auditors' disclosures about goodwill impairments to test hypothesis 7a shows a positive but insignificant regression coefficient. On the other hand, the interaction term (IMP*SpecDIS) in column (3) that captures the entity-specific auditors' disclosures about goodwill impairments to test hypothesis 7b shows a significant positive regression coefficient (significant at the 10% level),

supporting the main regression results presented in Table 6-6. Therefore, it can be argued that only detailed entity-specific goodwill impairment related auditors' disclosures help to reduce the information asymmetry, provide more assurance, and deliver the message that the goodwill impairment matter has been sufficiently audited, and the risk reduced, resulting in a lower negative impact of goodwill impairment losses on companies' market value. In a similar vein, Table 6-9 Panel B provides similar results and hence, it can be concluded with sufficient certainty that the hypothesis 7 is confirmed and that market participants consider entity-specific auditors' disclosures about goodwill impairments to be value relevant. The results for the remaining variables included in model 3 are considered to be qualitatively similar to the main regression results across the two panels.

Table 6-9 Value relevance of goodwill impairment loss: The impact of auditor-related disclosure – Different market value measures

$PR_i = \alpha_0 + \alpha_1$ BV_GWS+ α_2 GWS+ α_3 EPS_IMP + α_4 IMP + α_5 ADIS + α_6 IMP*ADIS + α_7 LOSS + α_6 Industry fixed effect + α_7 Year fixed effect + u_i

Panel A – Using the Market Value 4 Months After Year-End			
OLS Regression Analysis	(1)	(2)	(3)
BV_GWS	0.660***	0.667***	0.662***
	(4.53)	(4.59)	(4.51)
GWS	1.310***	1.316***	1.323***
	(9.85)	(9.87)	(9.97)
EPS_IMP	7.434***	7.413***	7.393***
	(11.87)	(11.79)	(11.83)
IMP	-5.154***	-4.972**	-5.043***
	(-3.11)	(-2.45)	(-3.51)
*IMP*ADIS*	3.292		
	(1.52)		
*IMP*DescDIS*		2.790	
		(1.12)	
*IMP*SpecDIS*			4.090*
			(1.95)
LOSS	1.079***	1.065***	1.010**
	(2.69)	(2.67)	(2.53)
CONSTANT	0.543	0.531	0.623
	(0.73)	(0.70)	(0.84)
Year FE	Included	Included	Included
Industry FE	Included	Included	Included
N	610	610	610
Adj. R^2	0.80	0.80	0.80

Panel B – Using the Market Value 6 Months After Year-End			
OLS Regression Analysis	(1)	(2)	(3)
BV_GWS	0.649***	0.656***	0.651***
	(4.37)	(4.42)	(4.35)
GWS	1.284***	1.288***	1.297***
	(9.67)	(9.70)	(9.80)
EPS_IMP	7.569***	7.551***	7.524***
	(12.20)	(12.14)	(12.16)
IMP	-5.308***	-5.052**	-5.123***
	(-3.24)	(-2.49)	(-3.55)
*IMP*ADIS*	3.536*		
	(1.65)		
*IMP*DescDIS*		2.864	
		(1.15)	
*IMP*SpecDIS*			4.234**
			(2.01)
LOSS	1.124***	1.107***	1.055***
	(2.82)	(2.78)	(2.66)
CONSTANT	0.568	0.504	0.646
	(0.75)	(0.66)	(0.86)
Year FE	Included	Included	Included
Industry FE	Included	Included	Included
N	610	610	610
Adj. R^2	0.81	0.81	0.81

Notes: t statistics in parentheses * p<0.10, ** p<0.05, *** p<0.01. *PR* is the market value of equity per share. Independent variables include goodwill impairment per share (*IMP*), the extent of auditor disclosure (*ADIS*), descriptive auditor disclosure (*DesDIS*), and Entity specific auditor disclosure (*SpecDIS*). Control variables include the book value per share (*BVS*), book value excluding goodwill per share (*BV_GWS*), goodwill per share (*GWS*), earnings per share excluding impairment (*EPS_IMP*), and firm net loss (*LOSS*). See table 4-3 for the definition of each variable.

Additionally, to further check the sensitivity of the results reported for H7 to the selected auditor's disclosure variables, a new variable is created. It takes the value of 1 for firm-year observations where the length of goodwill impairment related auditor's disclosure lies in the upper third of the distribution and takes the value of 0 for firm-year observations where the length of goodwill impairment related auditor's disclosure lies in the lower third of the distribution. This is to examine the value relevance of goodwill impairment related auditor's disclosure for a new sub-sample that consists of detailed versus summarised auditors' disclosures. This resulted in a research sub-sample that consists of 412 firm-year observations.

Results for this analysis are reported in Table 6-10 and supports the main regression results presented in Table 6-6, and hypothesis 7.

Table 6-10 Value relevance of goodwill impairment loss: The impact of auditor-related disclosure – Different auditor's disclosure proxies

$PR_i = \alpha_0 + \alpha_1$ BV_GWS+ α_2 GWS+ α_3 EPS_IMP + α_4 IMP + α_5 ADIS + α_6 IMP*ADIS + α_7 LOSS + α_6 Industry fixed effect + α_7 Year fixed effect + u_i

OLS Regression Analysis	(1)	(2)	(3)
BV_GWS	0.466***	0.669***	0.577***
	(2.60)	(3.84)	(2.90)
GWS	1.363***	1.412***	1.349***
	(8.89)	(9.08)	(8.34)
EPS_IMP	7.841***	7.232***	7.597***
	(11.23)	(9.97)	(9.85)
IMP	-6.244***	-6.243***	-6.891***
	(-3.01)	(-3.53)	(-5.73)
*IMP*ADIS*	5.069*		
	(1.89)		
*IMP*DescDIS*		3.001	
		(1.17)	
*IMP*SpecDIS*			4.112**
			(2.19)
LOSS	1.008**	0.752*	1.048**
	(2.10)	(1.66)	(2.30)
CONSTANT	1.257	1.424	0.898
	(1.43)	(1.61)	(1.03)
Year FE	Included	Included	Included
Industry FE	Included	Included	Included
N	412	412	412
Adj. R^2	0.81	0.81	0.81

Notes: t statistics in parentheses * p<0.10, ** p<0.05, *** p<0.01. *PR* is the market value of equity per share. Independent variables include goodwill impairment per share (*IMP*), the extent of auditor disclosure (*ADIS*), descriptive auditor disclosure (*DesDIS*), and Entity specific auditor disclosure (*SpecDIS*). Control variables include the book value per share (*BVS*), book value excluding goodwill per share (*BV_GWS*), goodwill per share (*GWS*), earnings per share excluding impairment (*EPS_IMP*), and firm net loss (*LOSS*). See table 4-3 for the definition of each variable.

6.5.2 Different methodologies

Using the same balanced sample[65] employed in chapter 5 (Table 5-14) to help in isolating the effect of the EAR and testing its value relevance, Table 6-11 provides additional analysis for

[65] As previously explained in chapter 5, the balanced sample only considers companies in which auditors have considered goodwill impairment as a risk item across the whole period since the standard was adopted.

hypothesis 6 using a sub-sample that consists of 806 firm-year observations. The main variable of interest is the interaction term (IMP*ADGI) that captures the incremental impact of ADGI on the association between goodwill impairment losses and the market value of equity. Findings of Table 6.11 show a significant positive coefficient of 8.501 (at the 1% level) that moderates the negative impact of goodwill impairment losses on the companies' market value, supporting the main and the additional regression results presented in Table 6-5 and Table 6-8, respectively. Thus, it can be concluded that when EAR is introduced and goodwill impairment is considered as a risk item, goodwill impairment-related auditor's disclosure provided market participants with information about the impairment test, compared to the period before the implementation of the EAR. Market participants also got the message that the goodwill impairment matter has been sufficiently audited, and the risk reduced, resulting in a lower negative impact of goodwill impairment losses on companies' market value.

Table 6-11 Value relevance of goodwill impairment loss: The impact of EAR – Balanced sample

$PR_i = \alpha_0 + \alpha_1$ BV_GWS+ α_2 GWS+ α_3 EPS_IMP + α_4 IMP + α_5 EAR + α_6 IMP*POST + α_7 LOSS + α_6 Industry fixed effect + α_7 Year fixed effect + u_i

OLS Regression Analysis	Balanced Sample
BV_GWS	0.576***
	(4.81)
GWS	1.192***
	(7.67)
EPS_IMP	5.994***
	(6.16)
IMP	-10.259***
	(-3.99)
EAR	1.757***
	(4.28)
*IMP*POST*	8.501***
	(2.99)
LOSS	0.517
	(0.82)
CONSTANT	0.548
	(0.83)
Year FE	Included
Industry FE	Included
N	806

Adj. R^2	0.76

Notes: t statistics in parentheses * p<0.10, ** p<0.05, *** p<0.01. *PR* is the market value of equity per share. Independent variables include goodwill impairment per share (*IMP*) and EAR adoption (*POST*). Control variables include the book value per share (*BVS*), book value excluding goodwill per share (*BV_GWS*), goodwill per share (*GWS*), earnings per share excluding impairment (*EPS_IMP*), and firm net loss (*LOSS*). See table 4-3 for the definition of each variable.

Furthermore, to lessen potential heteroscedasticity problems, which frequently occur in cross-sectional level-based designs, clustered standard errors at the firm level are employed in all the regression models in Table 6-12 as recommended by Petersen (2009) in panel data to mitigate the problem of standard errors being biased if the residuals are not independent and correlated across companies (known as residual dependence created by the firm effect). The overall results are unchanged and still support the three research hypotheses under investigation.

Table 6-12 Value relevance of goodwill impairment loss – Clustered standard error

Clustered SE	(1)	(2)	(3)	(4)	(5)
BV_GWS	0.729***	0.717***	0.648***	0.655***	0.650***
	(7.31)	(7.06)	(5.70)	(5.75)	(5.82)
GWS	1.126***	1.083***	1.284***	1.289***	1.298***
	(6.60)	(6.61)	(7.70)	(7.72)	(7.93)
EPS_IMP	5.124***	5.244***	7.586***	7.568***	7.541***
	(8.03)	(8.60)	(9.56)	(9.46)	(9.50)
IMP	-5.588**	-8.507***	-5.334***	-5.072**	-5.146***
	(-2.58)	(-4.39)	(-3.08)	(-2.46)	(-3.98)
IMP*POST		7.639***			
		(3.08)			
IMP*ADIS			3.525		
			(1.53)		
IMP*DescDIS				2.847	
				(1.12)	
IMP*SpecDIS					4.212**
					(2.11)
LOSS	0.624	0.539	1.145**	1.127**	1.076**
	(1.50)	(1.26)	(2.51)	(2.48)	(2.39)
Year FE	Included	Included	Included	Included	Included
Industry FE	Included	Included	Included	Included	Included
N	1822	1822	610	610	610
Adj. R^2	0.72	0.72	0.81	0.81	0.81

Notes: t statistics in parentheses * p<0.10, ** p<0.05, *** p<0.01. *PR* is the market value of equity per share. Independent variables include goodwill impairment per share (*IMP*), the extent of auditor disclosure (*ADIS*), descriptive auditor disclosure (*DesDIS*), and Entity specific auditor disclosure (*SpecDIS*). Control variables include the book value per share (*BVS*), book value excluding goodwill per share (*BV_GWS*), goodwill per share (*GWS*), earnings per share excluding impairment (*EPS_IMP*), and firm net loss (*LOSS*). See table 4-3 for the definition of each variable.

Additionally, although all the regression models are estimated on a per-share basis (Barth and Clinch, 2009) and White's t-statistic adjustments are used (White, 1980) to mitigate potential heteroskedasticity problems, Easton and Sommers (2003) call for different treatments than deflating to mitigate scale effects. One solution is to mitigate the impact of firm size on the reported results. This can be done by first regressing stock prices on firm size. Then, unstandardized residuals are calculated from that regression and used as the new dependent variable against various accounting numbers per share (Barth et al., 2008). This technique controls strongly for potential scale effects since the unstandardized residuals and firm size are orthogonalized. The dependent variable is now the unstandardized residuals from the regression of stock prices on size. The overall results are unchanged.

Table 6-13 Value relevance of goodwill impairment loss – Controlling for the firm size effect

	(1)	(2)	(3)	(4)	(5)
BV_GWS	0.552***	0.540***	0.603***	0.611***	0.606***
	(5.13)	(4.92)	(4.11)	(4.17)	(4.16)
GWS	0.624***	0.582***	0.876***	0.874***	0.894***
	(3.58)	(3.46)	(4.65)	(4.59)	(4.87)
EPS_IMP	5.129***	5.248***	7.347***	7.330***	7.287***
	(8.04)	(8.56)	(8.79)	(8.74)	(8.82)
IMP	-5.338**	-8.253***	-5.834***	-6.037**	-5.314***
	(-2.43)	(-4.22)	(-2.85)	(-2.48)	(-3.38)
IMP*POST		7.646***			
		(3.01)			
IMP*ADIS			4.708*		
			(1.77)		
IMP*DescDIS				4.635	
				(1.55)	
IMP*SpecDIS					4.897**
					(2.12)
LOSS	0.453	0.365	1.049**	1.024**	0.971**
	(1.04)	(0.81)	(2.14)	(2.09)	(2.00)
Year FE	Included	Included	Included	Included	Included
Industry FE	Included	Included	Included	Included	Included
N	1822	1822	610	610	610
Adj. R^2	0.62	0.63	0.74	0.74	0.74

Notes: t statistics in parentheses * p<0.10, ** p<0.05, *** p<0.01. *PR* is the market value of equity per share. Independent variables include goodwill impairment per share (*IMP*), the extent of auditor disclosure (*ADIS*), descriptive auditor disclosure (*DesDIS*), and Entity specific auditor disclosure (*SpecDIS*). Control variables include the book value per share (*BVS*), book value excluding goodwill per share (*BV_GWS*), goodwill per share (*GWS*), earnings per share excluding impairment (*EPS_IMP*), and firm net loss (*LOSS*). See table 4-3 for the definition of each variable.

6.6 Summary

This chapter presented the empirical results of testing the value relevance of goodwill impairment before and after the EAR adoption. Three research hypotheses are tested. Consistent with H1, results show goodwill impairment losses are value relevance and convey negative information to market participants about the future cash flow. However, the regression

coefficients indicate that the average economic losses realised in companies' market value are larger than recorded goodwill impairment losses, suggesting that recorded goodwill impairment losses are thoroughly understated and opportunistically misused by managers, either delayed or understated, to enhance their earnings and overstate their assets.

Regarding H2, results show the EAR adoption is associated with a lower negative impact of reported goodwill impairment losses on companies' market value. This supports the findings of the previous study and suggests that EAR adoption encouraged auditors to deliver higher audit quality, reduce information asymmetry, convey more assurance to market participants about reported goodwill impairment losses. This delivered the message that goodwill impairment matter has been sufficiently audited, and risk reduced.

Finally, the findings of H4 show that the volume of details disclosed by auditors about the procedures they followed to address the goodwill impairment risk decreases the negative impact of goodwill impairment losses on companies' market value, especially when the information disclosed by auditors about goodwill impairment is entity-specific. These results suggest that descriptive disclosures about the risks disclosed are generally standardised across all the audit reports and reveal critical information that would help investors in assessing the value relevance of goodwill impairment losses.

Overall, consistent with the role auditors play in mitigating agency theory cost and reducing information asymmetries, extended auditor's disclosure may help to reduce uncertainties surrounding reported goodwill impairment losses and provide market participants with a higher level of assurance. Furthermore, with more entity-specific auditor's disclosure, market participants are more likely to retrieve value relevant information that helps them to properly assess reported risks.

Chapter Seven: Conclusion, Limitations, and Future Research

7.1 Introduction

This study set out to establish whether the change in the audit reporting regime has affected the recognition of goodwill impairment and its subsequent market valuation. The chapter starts with a brief description of the research problem, followed by a review of the two main research objectives and the four related research questions developed to meet those objectives (see section 1.4). This is shadowed by a discussion of the research hypotheses and the main study findings. Furthermore, the research contributions will be presented through highlighting the theoretical, empirical and methodological contributions. Finally, this chapter describes the research limitations and offers recommendations for future research.

In line with the implementation of IFRSs across Europe, all publicly listed companies on the London Stock Exchange (LSE) main market were required to adopt IAS 36 (revised, 2004) "Impairment of Asset" for annual periods beginning on or after 31 March 2004. This standard requires goodwill purchased during acquisitions to be tested for impairment annually or whenever there are economic indications that cause the carrying amount of the cash-generating units (CGUs) to which goodwill is allocated to be lower than their recoverable amounts. The standard setter's intention was to improve the reporting of assets in general and goodwill in particular through allowing managers the chance to signal private information about the economic value of goodwill and companies' performance. Opponents of the impairment-only approach from practitioners and academics raised the concern that identifying the CGUs and allocating goodwill to them allow managers a high level of discretion. Additionally, estimating the recoverable amount of these CGUs is a process that requires a high level of judgment in the estimation of future cash flow and the choice of proper growth and discount rate. Therefore, managers could be selective with regards to the underlying decisions they make, allowing them

the ability to overstate, understate, or not to recognise goodwill impairment losses. A large number of studies on goodwill impairment examined the timeliness of recorded goodwill impairment losses. The vast majority of them (e.g., Filip et al., 2015; Hayn and Hughes, 2006; Li and Sloan, 2017; Ramanna and Watts, 2012) find goodwill impairment lags deteriorating operating performance and stock returns. This supports the argument that recognised goodwill impairment losses are relatively less timely and emphasises the presence of earnings management after the implementation of the impairment approach. Different management incentives are found to substantially affect the reporting of goodwill impairment, such as big bath, income smoothing, management change (tenure), leverage (debt covenant restrictions), and earnings-based compensation plans. Hence, it can be concluded that the goodwill impairment treatment can be considered as an element that increases the agency cost between managers and users.

Existing research recognises the critical role played by auditors in mitigating earnings management and improving financial reporting quality (DeAngelo, 1981), hence, reducing the agency cost problem. A number of authors have investigated the role played by auditors in reviewing goodwill impairment losses. Few studies (e.g., Carcello et al., 2020; Chen et al., 2015; Ghosh and Wang, 2016; Lobo et al., 2017) suggest that audit-related characteristics, such as audit firm size (Big 4 & non-Big 4), auditor industry specialisation, auditor tenure, auditor independence and joint auditing, are found to improve the timeliness of reporting goodwill impairment losses.

Given the change in the UK audit reporting regime and similar initiatives undertaken by the U.S. and international regulators, this thesis generally aims to assess the extent to which the EAR adoption in the UK has satisfied the purpose behind its implementation. This includes investigating the potential contribution of this regulatory change towards the quality of the

audit service, management behaviour, and information perceived by market participants. Specifically, the thesis has sought to whether the implementation of the EAR has affected the recognition of goodwill impairment and its subsequent market valuation. Therefore, two research objectives are set. The first one is to explore the association between EAR and the recognition of goodwill impairment losses, while the second one is to explore the association between EAR and the value relevance of goodwill impairment losses.

This chapter progresses as follows: Section 7.2 provides a review of the research hypotheses and whether they are supported or rejected by the research findings. Section 7.3 reveals the contributions of this thesis, and finally, section 7.4 identifies its limitation and offers suggestions for future research.

7.2 Review of research hypotheses and findings

To achieve the objectives of this research, four research questions are established, and two empirical studies are conducted. Research objective one is fulfilled by asking two research questions: (Q1) Is reported goodwill impairment loss associated with firms' low-performance measures?, and (Q2) Is the EAR adoption associated with an improvement in recognition of goodwill impairment? To answer these research questions, the first empirical study (see chapter 5) used an econometric model known as "the determinants model". Hence, it is named as "the determinants of goodwill impairment study".

The second research objective is satisfied by adding two more research questions: (Q3) Is reported goodwill impairment loss value relevant to market participants?, and (Q4) Is the EAR adoption associated with an improvement in the value relevance of goodwill impairment? To answer these research questions, the second empirical study (see chapter 6) used an econometric model known as "the value relevance model". Thus, it is named as "the value relevance of goodwill impairment study". The next two sub-sections (7.2.1 & 7.2.2) describe

the research hypotheses and the study findings consistent with the two research objectives and related empirical studies.

7.2.1 Research objective 1: The determinants of goodwill impairment study

To answer the first research question, the first research hypothesis (H1) predicts a positive association between firms' low-performance indicators and the amount of recorded goodwill impairment loss. To empirically examine this hypothesis, the study used a research sample that consists of 1451 firm-year observations for non-financial companies listed on the London Stock Exchange (LSE) FTSE ALL SHARES. It employed a pooled Tobit regression analysis with year and industry fixed effect.

In favour of H1, the result reveals a significant positive relationship between firms' low-performance indicators and the magnitude of goodwill impairment losses for the whole sample, supporting the appropriateness of using the market value indication to capture poorly performing companies. Hence, a sign for the need to recognise goodwill impairment losses in line with the guidelines of IFRS 3/ IAS 36 (revised). This is also consistent with prior studies that considered current poor performance as an economic indicator of impairment and expected an economic impairment to be booked when a firm show indications of low performance (e.g., André et al., 2016; Beatty and Weber, 2006; EFRAG, 2016; Hayn and Hughes, 2006; Lapointe-Antunes et al., 2009; Li and Sloan, 2017; Li et al., 2011; Lobo et al., 2017; Ramanna and Watts, 2012; Verriest and Gaeremynck, 2009).

To answer the second research question and define whether EAR adoption is associated with an improvement in recognition of goodwill impairment loss, three research hypotheses (H2 to H4) are developed and tested. The second hypothesis of this study predicts a positive association between goodwill impairment and EAR adoption when economic conditions suggest the need to record an impairment loss. To empirically examine this hypothesis, the

research sample is divided into two sub-samples. The first one consists of 658 firm-year observations before the EAR adoption; the second consists of 793 firm-year observations following the EAR adoption. The same pooled Tobit regression analysis is employed.

As predicted in H2, the relationship between firms' low-performance indicators and the size of the goodwill impairment loss is significantly positive and more pronounced after the EAR adoption. This result suggests an improvement in the timeliness of goodwill impairment post the implementation of the EAR. Previous studies and professional bodies reports highlight some possible explanations (e.g., ACCA, 2018; Christensen et al., 2014; DeFond and Zhang, 2014; IAASB, 2015; ICAEW, 2017; Jermakowicz et al., 2018). First, the implementation of EAR may have improved the auditor's attention and indirectly increased their professional scepticism in a way that enhances audit quality. The extended report may have placed auditors and managers under more scrutiny, especially when it comes to risk disclosures. Second, EAR could have more public oversight through improving users' understanding of the audit process. Finally, the new disclosures requirements could have increased auditors and audit committee' perceptions of litigation risk; thus, motivating them to perform additional tests and documentation tasks, resulting in better corporate governance and improved the financial reporting quality. This result is consistent with Reid et al.' (2019) findings who reported an improvement in the financial reporting quality; captured by the tendency to meet analyst forecasts, improvements in earnings' response coefficients, and decreases in the discretionary accruals.

The third hypothesis of this study predicts that goodwill impairment is positively associated with the auditor's disclosure of goodwill impairment as a risk item (ADGI) when economic conditions suggest the need to record an impairment loss. To investigate this hypothesis empirically, the analysis is based on the 793 firm-year observations after the EAR adoption,

and a new variable is introduced (ADGI). It takes the value of 1 if the auditor considered goodwill impairment as a risk item, 0 otherwise.

As predicted in H3, the association between firms' low-performance measure and the amount of goodwill impairment is more pronounced when the auditor discloses goodwill impairment as a risk item, suggesting a further improvement in the timeliness of goodwill impairment. This result can be explained in two possible ways. First, extended auditor's disclosures provide confirmative information to investors that may introduce some pressure on the management to record goodwill impairment, especially when economic conditions suggest the need to record an impairment loss. Furthermore, as pointed by Reid et al. (2019), the management might adopt more acceptable goodwill impairment estimates and judgment and recognise more goodwill impairment, if they are afraid of the "threat of disclosure"; that the auditor may comment in a potentially negative way. Second, auditors could feel more accountable, and this triggers their professional scepticism towards areas of risks, like goodwill impairments estimates, putting more pressure on the management either to recognise goodwill impairment or to provide justifications for not doing that.

The fourth hypothesis of this study suggests that goodwill impairment is positively associated with the extent of related auditor disclosure when economic conditions indicate the need to record an impairment loss. The research sample used to test this hypothesis is derived from the period following EAR adoption (793 firm-year observations). A new variable is introduced (ADIS) that takes the value of 1 if goodwill impairment-related auditor's disclosure is higher than the median level of the industry distribution, 0 otherwise. However, findings show no significant association between the extent of auditor's disclosure and goodwill impairment recognition. Hence, H4 is not supported. One possible explanation is that the extent of auditors' disclosures might not properly capture the effort exerted by auditors while testing goodwill

impairments. A potential explanation could be that auditors might only choose to disclose the material procedures they followed to comply with the auditing standard, and simultaneously avoid the extra costs from providing a large volume of disclosures. This is supported by Gutierrez et al. (2018) and Reid et al. (2019) who reported no impact of EAR on the audit cost. Furthermore, if extended auditor's disclosures are associated with an increase in their legal liability (Gimbar et al., 2016; Kadous and Mercer, 2016), auditors could be reluctant to provide lengthy disclosures to minimise their litigation risk. Hence, the extent of auditor's disclosure might not capture the effort exerted by auditors while testing goodwill impairments.

Several sensitivity analyses have been used to test the robustness of the study's results. Firstly, the use of different proxies to identify low performing companies as suggested by the literature (e.g., André et al., 2016; Li and Sloan, 2017; Lobo et al., 2017; Ramanna and Watts, 2012). Secondly, the use of balanced sample and lagged independent variable to mitigate the concerns of firm-level correlated omitted variables, time-invariant firm-specific characteristics and reverse causality (Doyle and Magilke, 2013; Reid et al. 2019). Thirdly, the use of Logit regression analysis to examine the likelihood of recording goodwill impairment losses. Fourthly, the use of winsorised continuous variables (at the 1st and 99th percentiles) to mitigate the effect of outliers. Fifthly, the use of clustered standard error to mitigate potential heteroskedasticity problem. Finally, the use of OLS regression analysis. Findings of the different sensitivity used to support the main regression results and indicate that the U.K.'s new audit reporting regime is associated with an improvement in the financial reporting quality in general and the key area of risks disclosed by auditors, in particular. It also provides a significant contribution to the role auditors play in mitigating the agency costs.

7.2.2 Research objective 2: The value relevance of goodwill impairment study

To answer the third research question, the fifth research hypothesis (H5) states that goodwill impairment losses are associated with companies' market value of equity. To empirically examine this hypothesis, this study used a research sample that consists of 1,822 firm-year observations for non-financial companies listed on the London Stock Exchange (LSE) FTSE ALL shares and employed an OLS regression analysis with year and industry fixed effect.

Consistent with the predictions in hypothesis 5, goodwill impairment losses show a significant negative relationship with the market value of equity. This shows that goodwill impairment losses, on average, provide relevant information that conveys reductions in the economic value of goodwill. This also supports the argument that the use of fair value allows the management to use the impairment-only approach to signal information about the recoverable amount of the CGUs to which goodwill is allocated. However, results indicate that the average economic losses realised in companies' market value by market participants are larger than recorded goodwill impairment losses. A possible explanation is that recorded goodwill impairment losses are thoroughly understated, suggesting the possibility that goodwill impairment losses could have been misused by managers to enhance their earnings and overstate their assets.

To answer the fourth research question and identify whether EAR is associated with an improvement in the value relevance of goodwill impairment losses, two research hypotheses (H6 to H7) are established and examined. In respect of H6, it is expected EAR provides value-relevant information that moderates the negative relationship between goodwill impairment losses and companies' market value. To empirically test this hypothesis, the research sample is divided into two sub-samples: one that consists of 875 firm-year observations before the EAR adoption, and the other one consists of 947 firm-year observations after the EAR adoption. The same OLS regression analysis is used.

Consistent with H6, the regression results for the sample after the EAR have R^2 that equals 77%, compared to 70% for the research sample before the EAR adoption. This initially suggests that EAR adoption has improved the value relevance of the model. Furthermore, regression results indicate that EAR moderates the negative association between goodwill impairment losses and the market value of equity, implying that goodwill impairment losses are better recognised, and less understated subsequent to the EAR and/or market participants are not over-reacting to recorded goodwill impairment losses. Two possible explanation can be provided. First, since audit quality has found to be improved in the wake of the EAR (as discussed earlier in hypothesis 1-4), more accurate goodwill impairment losses would have been recorded to the level that reflects and matches the economic impairment impact on the market price. Second, auditors' disclosure of the procedures they followed in dealing with RMMs (including goodwill impairment) could have reduced levels of uncertainty surrounding the goodwill impairment risk and provided market participants with a higher level of assurance. Accordingly, it can be concluded that enhancement in the auditors' disclosure resulting from the EAR could have reduced the information asymmetry and improved audit quality, resulting in improvements in the value perceived by market participants.

Regarding H7, it is predicted that the extent of auditors' disclosures regarding goodwill impairment and the volume of details provided would affect the value relevance of goodwill impairment losses. To empirically test this hypothesis, the regression analysis is performed using only the research sub-sample when the EAR is adopted (610 firm-year observations), and a new variable is employed. This variable takes the value of 1 if the auditor's disclosure of goodwill impairment is higher than the median level of the industry distribution, 0 otherwise. Consistent with the predictions in hypothesis 7, results indicate that the volume of details disclosed by auditors about the procedures they followed to address the goodwill impairment risk decreases the negative impact of goodwill impairment losses on companies' market value,

by showing a slightly significant positive regression coefficient. Consistent with the role of the auditor in mitigating agency cost and reducing information asymmetries, higher auditors' disclosure might have reduced uncertainties surrounding reported goodwill impairment losses and hence, provided market participants with a higher level of assurance.

Furthermore, H7 is divided into two sub-hypotheses (H7a & H7b) to explore the potential differences in the value relevance of auditor's disclosure between descriptive and entity-specific goodwill impairment related disclosures. H7a expected that descriptive auditors' disclosures about goodwill impairments would not provide value-relevant information about recorded goodwill impairment losses, while H7b expected entity-specific auditors' disclosures to provide value-relevant information about recorded goodwill impairment losses.

Consistent with the predictions in H7a and H7b, descriptive auditors' disclosure was not found to have an impact on the value relevance goodwill impairment losses, while entity-specific auditors' informative disclosure was found to significantly reduce the negative association between goodwill impairment losses and companies' market value. This implies that auditors' disclosures about the definition of goodwill impairment risk and the description of the reasons behind considering it as a risk matter are typical across all the audit reports and do not contain useful information that would help market participants in assessing the value relevance of goodwill impairment losses, and hence do not contain relevant information. On the other hand, the larger amount of details provided by auditors about the procedures they followed and the degree to which they are confident about reviewing the assumptions behind the goodwill impairment tests provide relevant information that may reduce uncertainties and provide a higher level of assurance that moderates the negative impact of goodwill impairment losses on companies' market value. Moreover, the findings of all the discussed hypotheses in the value

relevance study (H5 to H7) are still supported when the analysis is done using firm-year observations with material goodwill or non-zero goodwill impairment losses.

Several sensitivity analyses have been used to test the robustness of the study's results. These included: (1) the use of different proxies to capture the market value of equity; (2) the use of different auditor's disclosure proxies; (3) the use of balanced sample; (4) the use of clustered standard error; (5) controlling for firm size effect. Findings of these sensitivity analyses support the main regression results and indicate that the U.K.'s new audit reporting regime is associated with an improvement in the market valuation of goodwill impairment losses.

Furthermore, an additional analysis shows up goodwill impairment losses (IMP) to be negatively associated with companies' market value of equity only when auditors disclose goodwill impairment as a risk matter. A possible explanation would be that by the time auditors have considered goodwill impairment as a risky matter, market participants retrieved negative information from the recognition of goodwill impairment losses and reacted negatively. This could also imply that goodwill impairment losses recorded in cases where auditors did not disclose goodwill impairment as a risk item (42 out of 221 firm-year observations with recorded goodwill impairment losses greater than zero, around 19%) are not material and do not convey negative information about the goodwill balance, and hence the market participants did not negatively reflect them in the company's price.

To conclude, findings show that goodwill impairment losses are value relevance and convey negative information to market participants about the future cash flow. Furthermore, EAR was found to put more oversight on auditors to deliver higher audit quality, reduce information asymmetry, convey more assurance to market participants about reported goodwill impairment losses. This helped to deliver the message that the goodwill impairment matter has been sufficiently audited, and risk reduced, resulting in a lower negative impact of goodwill

impairment losses on companies' market value. Moreover, the extent of auditor's disclosure was found to affect the value relevance of recorded goodwill impairment losses, especially when the information disclosed by auditors about goodwill impairment is entity-specific. Descriptive disclosures are generally typical boilerplate and are not found to reveal critical information to market participants.

7.3 Research contributions

This thesis contributes to the financial reporting and auditing literature in several aspects: makes several important contributions. This section presents the contributions of this study into three parts: theoretical, empirical, and methodological. Section 7.3.1 starts with the theoretical contribution. Then, section 7.3.2 presents empirical contributions. Finally, section 7.3.3 presents the methodological contribution.

7.3.1 The theoretical contribution

This thesis offers a theoretical contribution through increasing the understanding of the role of external auditors in mitigating the agency problem. The study suggests an improvement in the timeliness and value relevance of goodwill impairment post the implementation of the EAR, particularly when disclosing goodwill impairment as a risky matter.

The study argues that the change in the audit reporting regime is associated with an improvement in the financial reporting quality through enhancing auditors' attention and indirectly increasing their professional scepticism, growing up competition among auditors, increasing investors' oversight, placing auditors under more scrutiny and increasing their perceptions of litigation risk. (ACCA, 2018; Christensen et al., 2014; DeFond and Zhang, 2014; IAASB, 2015; ICAEW, 2017; Jermakowicz et al., 2018). These unintentionally motivate

auditors to perform additional tests and documentation tasks, and better challenge the management in areas with great judgement and highly unverifiable estimates.

The EAR reduces both the entity and the audit information gap. Thus, the disclosure of the procedures auditors have followed in dealing with specific risks (e.g., goodwill impairment) helps to provide users of the financial statements with a higher level of assurance, reduce uncertainties surrounding the identified risks, and place managers under more scrutiny to adopt more acceptable estimates and judgment. Accordingly, EAR adoption plays a vital role in reducing information asymmetry and the agency cost between managers and shareholders.

7.3.2 The empirical contribution

This study draws on the unique institutional environment in the UK, where the FRC required auditors in 2013 to provide extended audit reports, to study the indirect implications of extended auditors' disclosures on auditors' performance, managers' discretionary behaviour and investors. With regards to the first research objective, the 'determinants' study contributes to the emerging stream of archival research examining the effect of the new audit report on management behaviour regarding accounting choices as well as auditors' performance. It also contributes to the literature that examines the role of auditing as one of the main determinants of goodwill impairment reporting. Therefore, the contributions of the 'determinants' study can be expressed as follows:

First, results show EAR adoption is associated with an improvement in the timeliness of goodwill impairment recognition. This provides new empirical evidence on the important role played by auditors in minimising managers' opportunistic behaviour with regards to goodwill impairment reporting.

Second, very little research has been carried out on auditor's disclosures regarding a specific type of risk. Most of the research conducted on certain risks is experimental and provide mixed results. Therefore, this study is one of the first few studies to look at the impact of EAR adoption on the accounting treatment of one of the RMMs (goodwill impairment) disclosed by auditors, rather than looking at the quality of the accounting numbers in general and provides quantitative evidence. Hence, this study puts an effort to resolve conflicting findings in recent papers examining the impact of the United Kingdom's EAR on the financial reporting quality (e.g., Bédard et al., 2019; Gutierrez et al., 2018; Reid et al., 2019) through focusing on an individual account over which managers have considerable discretion, and the auditor's role would be more pronounced.

Third, this study is also one of the first few studies to investigate whether auditors' disclosures about risky matters have improved companies' recognition of such matters, resulting in a modest improvement in research design that might potentially offer sharper and more powerful tests of the effect of extended auditor's disclosures on auditors' and managers' behaviour.

With regards to the second research objective, the 'value relevance' study contributes to the emerging stream of archival research examining the value relevance of the new audit report and its impact on investors. It also contributes to the strand of the literature that examines the role of auditors in enhancing the value relevance of accounting numbers. Hence, the contributions of the 'value relevance' study can be expressed as follows:

First, it concludes that extended auditor's disclosures provide value relevant information that reduces information asymmetry, conveys more assurance to investors about risk items and delivers the message that those risks have been sufficiently audited and reduced. These findings add an empirical contribution to this thesis through providing new evidence to recent studies

that examine the impact of the United Kingdom's EAR on investors' decision (e.g., Bédard et al., 2019; c, 2018; Gutierrez et al., 2018; Lennox et al., 2019; Reid et al., 2019; Smith, 2019).

Second, it is one of the first few studies to examine the value relevance of different types of auditor's disclosures through distinguishing between descriptive and entity-specific auditor's disclosures, highlighting the difference in their value relevance to investors.

Overall, the findings of this study should inform many other policy-makers and standard setters of the effects of these regulatory changes in the UK and aid comparisons not only with circumstances prior to UK implementation but also with similar circumstances in the U.S. and other jurisdictions. Furthermore, they can help companies and investors who are interested in whether EAR adoption is associated with superior financial reporting quality.

7.3.3 The methodological contribution

This study extends the use of the price-level model to examine the value relevance of extended auditor's disclosures since it better assesses the usefulness of the new audit report based on its ability to capture information that is contemporaneously impeded in the market price. The majority of prior studies that examine the consequences of EAR adoption on investors have examined investors reactions using the information content approach (e.g., Bédard et al., 2019; Gutierrez et al., 2018; Lennox et al., 2019; Reid et al., 2019). However, for this approach to yield significant results, extended auditor's disclosures must provide unpredictable news that change market prices or trading volume. It is more likely that auditors' disclosures have been priced prior to the annual report release through other mediums such as annual reports, earnings announcement, and conference calls. This is advocated by Lennox et al. (2019) who highlight that if investors knew about these risks from other sources, they might not consider auditors' risk disclosures informative. Therefore, prior studies that used the information content

approach provided mix results, with most of them reporting insignificant investors' reaction to the EAR.

7.4 Limitations and suggestion for future research

The findings in this study are subject to at least four limitations. First, a general limitation that applied to all the studies that examine the determinants of goodwill impairment includes the use of economic-related variables on a firm-level basis. As instructed by IAS 36 (revised, 2004), goodwill should be tested for impairment annually or whenever there are economic indications that cause the carrying amount of the cash-generating units (CGUs) to which goodwill is allocated to be lower than their recoverable amounts. Therefore, ideal economic impairment factors should capture the performance of the CGUs to which goodwill is allocated. However, since no financial information is publicly available at the CGUs level, the current study follows prior studies and used firm-wide empirical proxies to capture the economic impairment of goodwill. Accordingly, a potential measurement error could arise in the proxies used to capture the economic impairment of goodwill, despite the careful consideration employed while defining these variables. Furthermore, another potential measurement error could arise with regards to the firm's leverage that is used as one of the managements incentive-related variables included in the determinants model. Because the details of actual debt covenants are either not available to the researcher or costly to collect, the use of the firm's debt ratio might not properly capture the degree to which it is close to violating its debt contracts, and hence a measurement error might occur and bias the study results.

A second limitation of this study relates to the problem of the omitted variables. Despite that the determinants model controls for most of the variables that were found in the literature to affect the amount of goodwill impairment losses, they are not comprehensive and restricted to the availability of data. If these omitted variables are correlated with the variables included in

the research model, results of the study could be biased. Furthermore, although other econometric concerns (such as the heteroscedasticity problem that usually arises when using the price-level regression to investigate the value relevance of accounting metrics) have been carefully examined and handled, findings could still be biased if they still exist.

Third, this study is conducted on the FTSE ALL SHARES non-financial companies starting from 2010 to 2016. Since EAR started to be implemented only by premium listing companies, the study results are based on large UK companies, hence introducing a potential size bias. Larger companies usually undertake large numbers of mergers and acquisitions. They hence are expected to have more considerable amounts of goodwill subject to impairment testing, compared to smaller companies that are less profitable. Therefore, small companies more sensitive to changes in the assumptions used to test goodwill for impairment, resulting in having more goodwill impaired within their asset structure. Furthermore, financial companies have been excluded in the current study because they have different financial structure and additional regulations that control their practices. Therefore, future studies could benefit from considering small and medium-size companies listed in the AIM market when their auditors start to provide EAR, as well as financial ones to improve the generalization of the results.

Finally, this study did not attempt to investigate the impact of EAR on managers' discretionary behaviour controlling for the firm's corporate governance mechanisms. Therefore, future research could investigate the association between different corporate governance mechanisms and extended auditor's disclosures and their impact on financial reporting quality.

Future research can also investigate the impact of extended auditor's disclosures on the extent of firms' disclosure related to the risks identified by the auditor. Moreover, since this study considers four years following the EAR adoption (2013-2016), future research could examine the long term effects of EAR on the financial reporting quality and market participants to investigate whether the conclusions of this study hold over time. This will also help to explore

whether the new audit report will turn to be standardized in the long term, or audit firms will find their ways to keep it innovative and informative. Finally, since the IAASB and the U.S.' PCAOB have adopted new standards that require auditors to disclose KAMs in ISA 701 and CAMs in the AS 3101, future research could extend this study to other European countries and the U.S. This will improve the understandability of the extended auditor's disclosures and their impact across different countries.

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