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

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Abstract
We examine whether more transparent disclosure about goodwill impairment tests conveys useful information to sell-side analysts about the parameters used in the complex and often opaque impairment testing process. Drawing on a sample of European companies from 2006-2014, we construct a unique dataset on the transparency of goodwill impairment disclosure and develop two analyst disagreement measures by extracting analysts' opinions about firms' impairment decisions in brokers' reports. We show that the level of disclosure transparency is negatively associated with both disagreement among analysts, a proxy for information uncertainty, and disagreement between analysts and managers, a proxy for information asymmetry. Further, we find that discount-rate-related disclosure transparency is associated with both types of analyst disagreement, while cash-flow-related disclosure transparency is associated with disagreement between analysts and managers only. Our paper speaks to the usefulness of goodwill impairment test disclosures to analysts, while also highlighting that opportunistic and boilerplate disclosure by some firms hampers the ability to resolve information asymmetry and information uncertainty.

Keywords: Corporate Disclosure; Sell-side Analysts; Goodwill Impairment; Disagreement

JEL Classification: M40; M41

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1. Introduction

Corporate disclosure is crucial to the functioning of an efficient capital market (Healy and Palepu, 2001), given the need to mitigate information asymmetry and agency conflicts between firm managers and other stakeholders (Diamond and Verrecchia, 1991; Dye, 1985). Within the large body of literature examining firms' disclosure decisions, most studies have predominantly looked at the quantitative benefits of disclosure in capital markets, such as improved market liquidity and share price (Diamond and Verrecchia, 1991), a lower cost of capital (e.g., Botosan, 1997; Dhaliwal, Li, Tsang, and Yang, 2011), enhanced analysts' forecast accuracy (Horton, Serafeim, and Serafeim, 2013), reduced forecast dispersion, and increased analyst following (Lang and Lundholm, 1996). However, quantitative effects alone cannot entirely explain the behavior of capital markets (Tetlock, Saar-Tsechansky, and Macskassy, 2008). In this paper, we examine the effect of corporate disclosure transparency with respect to goodwill impairment on disagreement among analysts and between analysts and managers.[1] Our objective is to examine how the communication of a complex accounting decision—namely, goodwill impairment—affects analysts' interpretation of a firm's action through the text of their research reports.

Often referred to as one of the most complex accounting estimates subject to significant managerial discretion, goodwill impairment is gradually becoming a regular element of the financial reporting process.[2] Although impairment charges negatively affect net income, they do not have any cash flow implications. Yet it is not uncommon for financial analysts to discuss potential or actual goodwill impairments in their research reports. Considering the high level of information asymmetry and information uncertainty related to goodwill impairment, we posit that

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

[2] In 2018 alone, European nonfinancial companies covered by Thomson Reuters Eikon reported a total of €23.6 billion of goodwill impairment. This amount represents an increase of 6% over the amount recorded in 2017.

if disclosure transparency is related to analyst disagreement, this relationship should be more pronounced surrounding an accounting event such as goodwill impairment.

Both theory and prior empirical evidence suggest a negative association between disclosure transparency and disagreement among economic agents in capital markets in the case of goodwill impairment (e.g., Diamond, 1985; Botosan, 1997). A crucial input in goodwill impairment tests is the fair value estimates of goodwill allocated to cash-generating units (CGUs), which not only depend on the manager's conceptualization and implementation of the firm's strategy but also on their subjective discounted cash flow estimates (Ramanna and Watts, 2012). Any such estimates based on manager's private information cannot be fully verified by analysts unless managers disclose them. Consequently, the disclosure transparency relating to goodwill impairment tests enables managers to convey their private information to financial analysts about both the timing and amount of goodwill impairment, which gives analysts insight into the judgments and estimates made in the impairment recognition process. To the extent that goodwill impairment disclosure is informative, it can help analysts and managers reconcile differences in their opinions.

Nonetheless, if managers opportunistically use their discretion regarding the timing and/or amount of reported goodwill impairment, the resulting disclosure is unlikely to be informative, as they rely on inappropriate impairment inputs (Amiraslani et al., 2013).[3] As a result, more opportunistic goodwill impairment increases the noise of the information communicated through disclosure and consequently hampers its usefulness for analysts. If analysts have a varying ability to discern between truthful and opportunistic impairment disclosure, disclosure under this scenario may be associated with higher disagreement in analysts' opinions.

[3] Opportunistic use of goodwill impairment is evidenced by a stream of literature showing that the decision not to impair goodwill is associated with agency-theory-based motives (e.g., Li, Shroff, Venkataraman, and Zhang, 2011; Ramanna and Watts, 2012).

Our sample consists of listed European nonfinancial firms that report material goodwill impairments from 2006 through 2014.[4] As in Paugam and Ramond (2015) and Lobo et al. (2017), we construct a disclosure transparency index by manually coding 25 items relating to the technical valuation and descriptive elements of impairment tests in the goodwill-impairment-related notes to sample firms' financial statements. Given that prior literature does not offer a suitable proxy to measure the divergence of beliefs about specific firm decisions, we start our investigation by constructing two metrics of analyst disagreement using textual analysis on goodwill-impairment-related discussions in brokers' reports. We identify three types of opinions – agreement opinions, disagreement opinions, and non-directional opinions – and use the former two to construct a metric to measure the disagreement among analysts as well as a metric to measure the disagreement between analysts and managers regarding the reported goodwill impairment.

We find that when disclosure relating to goodwill impairment tests is more transparent, both disagreement among analysts and disagreement between analysts and managers are significantly lower. These results are consistent with analysts using information from goodwill impairment disclosure to structure their opinions, but different levels of disclosure transparency affect the degree of information asymmetry between analysts and managers and uncertainty among analysts. Our results are robust to including non-directional opinions in measuring analyst disagreement, excluding the financial crisis period from our sample, and including a control sample that did not impair goodwill. Further, we exploit the fact that goodwill impairment tests require both future cash flow projections and discount rates as inputs, but these two pieces of

[4] We consider goodwill impairment to be material if its amount exceeds €10 million or 1% of beginning total assets (Jarva, 2009; Knauer and Wöhrmann, 2016).

information differ in their complexity and external verifiability.[5] We find that discount-rate disclosure transparency is significantly and negatively associated with both forms of disagreements, but cash-flow disclosure transparency is negatively associated with disagreement between analysts and managers only. High disclosure transparency in discount rates, which are largely externally verifiable from other sources, signals managerial credibility, leading to less analyst disagreement in interpreting the firm's impairment decision. However, the complex and non-verifiable nature of cash flow inputs creates opportunities for managerial manipulation in arriving at the impairment decision, and the proprietary nature of the information may lead to boilerplate disclosure, thus diminishing its effectiveness in reducing analyst disagreement.

We conduct additional analyses to examine whether the association between disclosure transparency and analyst disagreement is context dependent. Dividing analysts' opinions into those that concern impairment timing and those that concern impairment amount, we show that disclosure transparency is negatively associated with both aspects of the impairment decision. Exploiting the rich institutional background behind our sample observations, we compare whether accounting and audit enforcement quality (Brown, Preiato, and Tarca, 2014) affects the association between disclosure transparency and analyst disagreement; our results do not support this conjecture.

To date, the existing literature focuses on analysts' forecast dispersion as a proxy for disagreement among analysts and analysts' forecast error as a proxy for disagreement between analysts and managers. Prior research shows that goodwill impairment is value relevant and that its related disclosure affects the properties of analysts' forecast dispersion and accuracy (André,

[5] Discount rates are a single piece of information that can be inferred from other internal and external disclosures, while cash flow projections have multiple components, such as near-term cash flows, mid-term cash flows, and terminal values, that are not externally verifiable.

Dionysiou, and Tsalavoutas, 2018; Paugam and Ramond, 2015). Different from these studies, we construct two disagreement proxies using analysts' discussions in the text of their research reports to capture the usefulness of goodwill impairment disclosure for analysts. In doing so, this paper recognizes the complementary role of textual information in brokers' reports to their earnings forecasts, especially in assessing analysts' opinions with respect to non-earnings items that are not forecasted on a frequent basis. It also answers calls by Ramnath, Rock, and Shane (2008), Bradshaw (2011), and Kothari, So, and Verdi (2016) to unlock the 'black box' of financial analysts' forecast activities.

The accounting treatment of goodwill subsequent to its initial measurement is currently subject to considerable debate by standard setters, practitioners, and academics. Amiraslani et al. (2013) show that while the overall compliance level to goodwill impairment disclosure requirements is over 80%, there is considerable variation across their sampled European firms. They also conclude that firms tend to engage in a box-ticking strategy to comply with the requirements of International Accounting Standards (IAS) 36. Put differently, their disclosure may not be meaningful even when they comply with the disclosure requirements. Our paper contributes to the goodwill impairment literature by showing that goodwill impairment disclosure is negatively associated with information asymmetry and uncertainty among economic agents. However, the inconsistent application of IAS 36 and the boilerplate nature of the associated disclosure result in varying degrees of disclosure quantity and quality that can lead to disagreement, thus creating concerns about the appropriateness of impairment, as opposed to amortization, on goodwill.

2. Background and Hypotheses Development

2.1. International Accounting Standard 36 – Impairment of Assets

Beginning on January 1, 2005, the European Union (EU) required all listed companies in the EU to apply International Financial Reporting Standards (IFRS) when preparing their consolidated financial statements. IAS 36 abolishes the systematic amortization of goodwill acquired in business combinations and mandates that goodwill be tested for impairment at least annually or whenever there is an indication that goodwill might be impaired. The standard specifies the procedures needed to perform goodwill impairment tests. At the time of an acquisition, goodwill must be allocated to each of the acquirer's CGUs that are expected to benefit from the synergies of the business combination. In subsequent periods, firms must compare the carrying amount of goodwill with their recoverable amount for each CGU and report an impairment expense in the profit and loss statement if the carrying amount exceeds the recoverable amount.[6] IAS 36 prohibits the reversal of an impairment loss recognized for goodwill (IASB, 2004).[7]

The goodwill impairment regime brings a qualitative change in disclosure, as impairment test parameters, such as discount rates, cash flow inputs, and their components were not previously publicly available (Ramanna and Watts, 2012). Impairment information indicates the variation in managers' earnings forecasts over time attributable to acquired intangible assets, in addition to the impact on asset values due to changes in economic conditions. Irrespective of whether an impairment loss is recognized, firms carrying goodwill on their accounts are subject to exhaustive disclosure requirements, comprising information about the goodwill impairment test itself (e.g.,

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

[7] Although IAS 36 and the Statement of Financial Accounting Standards 142 are relatively similar, firms based in Europe and the United States (U.S.) exhibit different patterns of goodwill impairment recognition (André, Filip, and Paugam, 2016). Specifically, relative to U.S. firms, European firms book more untimely goodwill write-offs. Consequently, IFRS offers an interesting setting to measure the disclosure transparency of goodwill impairment tests.

the allocation of goodwill to CGUs and relevant information for the determination of the recoverable amount) and additional information if a material impairment loss is recognized during the period (e.g., events and circumstances that led to the impairment loss, disclosures of whether the recoverable amount is the value in use or the fair value less costs of disposal, disclosure of the impairment loss per segment, and a description of any changes to the aggregation of assets in the identification of CGUs). However, an inconsistent application of the requirements of IAS 36 or a box-ticking strategy by some firms may result in significant variations in the level of information disclosed to market participants.

2.2. The Economic Consequences of Disclosure

There is an extensive literature on how corporate disclosure impacts the amount and variation of information in the market. At the core of this link is the insight that corporate disclosure mitigates information asymmetry and agency conflicts between managers, investors, and intermediaries (Ross, 1977). This literature, in general, has examined the quantitative capital market benefits of disclosure. In particular, firms that provide more/better disclosure have improved market liquidity (Daske, Hail, Leuz, and Verdi, 2008; Heflin, Shaw, and Wild, 2005), a lower cost of capital (Core, Hail, and Verdi, 2015; Hughes, Liu, and Liu, 2007; Lambert, Leuz, and Verrecchia, 2007), and more useful analyst forecasts (Hope, 2003).

As an important capital market intermediary, financial analysts are major users of corporate disclosure. Lang and Lundholm (1996) and Hope (2003) show that firms with more informative disclosure policies have a larger analyst following, more accurate analyst earnings forecasts, less forecast dispersion, and lower volatility in forecast revisions. Going a step further, Byard and Shaw (2003) differentiate between information that is common across all analysts and information that

is uniquely private to individual analysts (e.g., acquired through their private communication with management); they show that higher-quality disclosure increases the precision of both types of information. In addition to the level of disclosure, the readability of annual reports also impacts analysts' earnings estimates. Bozanic and Thevenot (2015) find that the qualitative elements of disclosures contained in earnings press releases are informative, as they affect analysts' information environment. Lehavy, Li, and Merkley (2011) show that less readable 10-K narratives are associated with increased demand for analysts' services, greater analysts' forecast dispersion, and lower analysts' forecast accuracy.

Some studies have examined whether goodwill-related disclosure affects analysts' forecast properties. André et al. (2018) find that compliance with the disclosure requirements of IAS 36 and IAS 38 is negatively associated with analysts' forecast dispersion. Paugam and Ramond (2015) document that impairment-testing disclosure is negatively related to analysts' forecast errors. Our paper differs from theirs in two respects: we cover a larger sample of goodwill impairment disclosure spanning nine years and 19 countries, and we construct analyst disagreement measures using textual opinions expressed in brokers' reports.[8]

2.3 Hypotheses Development

Early studies on the importance of analyzing the text in analysts' research reports focus on analysts' discussion of earnings management and earnings quality (Bricker, Previts, Robinson, and Young, 1995; Previts, Bricker, Robinson, and Young, 1994). Several recent studies find that the text (Asquith, Mikhail, and Au, 2005; Huang, Zang, and Zheng, 2014) and tone (De Franco, Hope, Vyas, and Zhou, 2015; Twedt and Rees, 2012) of brokers' reports are incrementally informative

[8] The sample in André et al. (2018) covers only one year, whereas the sample in Paugam and Ramond (2015) is limited to a single country.

to analysts' summary outputs. We complement this research evidence by focusing on the information content of narratives related to goodwill impairment, which can influence opinion formation on earnings forecasts.

Goodwill impairment is an important component of the financial reporting process (Ayres, Campbell, Chyz, and Shipman, 2019). Prior research evidence supports the information content of goodwill impairment, as the market reacts negatively to the revelation of such losses (Bens, Heltzer, and Segal, 2011; Knauer and Wöhrmann, 2016; Li et al., 2011). Following an impairment loss announcement, firms also experience lower analysts' forecast accuracy and higher analysts' forecast dispersion (Chen, Krishnan, and Sami, 2014). Moreover, the presence of financial analysts compels managers to recognize goodwill impairment in a timelier manner (Ayres et al., 2019). The relevance of goodwill impairment is also supported by surveys of market participants which show that financial statement users, including analysts, use impairment-testing disclosure when making their investment or lending decisions (Ernst & Young, 2010; FRC, 2014; KPMG, 2014).

Goodwill impairment tests rely on managers' subjective estimates of the fair value of goodwill for the concerned CGUs (Ramanna and Watts, 2012). Since such private information is opaque (Riedl, 2004), disclosure of the assumptions used in goodwill impairment tests is critical for analysts to gain a subtler understanding of the judgments and estimates made in the impairment testing process and to make inferences about managers' private information. Additional or better impairment disclosure can also signal the reliability of the impairment test. Therefore, transparent and robust impairment disclosure helps analysts form their beliefs on the parameters used in the impairment test, resulting in lower analyst disagreement. Nonetheless, Amiraslani et al. (2013) find that firms tend to be box-ticking to comply with the requirements of IAS 36. In addition, managers may exploit the discretion offered by the goodwill impairment reporting process

(Ramanna, 2008; Ramanna and Watts, 2012) and manipulate the outcome of goodwill impairment tests (Hayn and Hughes, 2006; Ramanna and Watts, 2012). Under these conditions, the resulting disclosures associated with (manipulated) goodwill impairments are likely to be less informative, which in turn may lead to higher analyst disagreement. Following these arguments, we state our first two hypotheses in their null form:

H1: Disclosure transparency relating to goodwill impairment tests is not associated with disagreement among analysts.

H2: Disclosure transparency relating to goodwill impairment tests is not associated with disagreement between analysts and managers.

Goodwill impairment tests require managers to forecast future cash flows and estimate the appropriate discount rate for each concerned CGU. Either of these two estimates can materially impact the robustness and outcomes of the impairment assessments undertaken by the reporting entities. However, these parameters differ in terms of complexity and external verifiability, and are subject to various degrees of managerial discretion, which could be employed to avoid or manage the timing and/or amount of impairment losses.[9] On the one hand, discount rates are used in multiple firm activities, and their estimation relies on inputs that are largely publicly available. Therefore, the discount rate parameters used in goodwill impairment tests are, to a certain extent, externally verifiable or can be approximated using existing disclosures. The same cannot be said for cash flow projections related to goodwill impairment. Prior research finds that managers manipulate cash flows to avoid goodwill impairment (Filip, Jeanjean, and Paugam, 2015) and withhold cash flow forecasts in their disclosure (Amiraslani et al., 2013). On the other hand, the fair value of goodwill is most sensitive to the discount rate assumption. There is evidence showing

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

that managers choose discount rates strategically to manipulate the fair value estimates of complex accounting constructs (Carlin and Flinch, 2009; Trainer, 2018). Therefore, we state the next hypothesis on the usefulness of cash-flow vs. discount-rate disclosure transparency in its null form as follows:

H3a: The association between cash-flow disclosure transparency and disagreement among analysts is not significantly different from the association between discount-rate disclosure transparency and disagreement among analysts.

H3b: The association between cash-flow disclosure transparency and disagreement between analysts and managers is not significantly different from the association between discount-rate disclosure transparency and disagreement between analysts and managers.

3. Sample and Research Design

3.1. Sample Description

Our initial sample comprises publicly listed nonfinancial firms in European countries that mandated the adoption of IFRS in 2005 and that have non-zero goodwill impairments on Thomson Reuters Eikon in any year(s) from 2006 to 2014.[10] Although all our sample firms must apply IAS 36 from 2005 onwards, we eliminate 2005 from the sample period to address potential concerns regarding implementation issues of IFRS adoption. We do not include financial firms due to the requirements for these firms to follow industry-specific impairment rules and disclosures (Lobo et al., 2017). We focus on the intersection of this sample with I/B/E/S because we require firms to be covered by analysts. This results in 1,991 observations to begin with. Since we measure

[10] We examine non-zero goodwill firms with no impairments as a control group as part of the robustness tests in Section 6.

transparency using disclosures from annual financial statements, we also eliminate 210 observations with non-zero impairments during interim periods so that our sample impairs goodwill only at the end of the fiscal year. In subsequent steps, we disregard 1,173 observations with goodwill or goodwill impairment amounts greater than total assets (likely to be data errors) or with negative and immaterial goodwill impairments, as well as unavailable annual reports and analysts' reports. We further lose 338 observations because some analysts discuss goodwill but do not provide directional opinions about goodwill impairment. We then construct the sample for tests relating to disagreement among analysts by eliminating observations with fewer than two opinions by different analysts regarding the reported goodwill impairment, and missing values for the control variables, resulting in a final sample of 154 unique goodwill impairments. To construct the sample for tests relating to disagreement between analysts and managers, we retain observations with only one opinion and delete 239 observations with missing values for the control variables, resulting in a sample of 330 analysts' opinions.[11] Panel A of Table 1 reports the impairment sample construction procedures. We download firms' annual reports from multiple online sources, such as firms' corporate websites and Morningstar's website.[12]

[Insert Table 1 here]

Panel B reports the distribution of the goodwill impairment sample by year. Except for the first two years, the sample is relatively uniformly distributed over time, with 2008 having the highest level of representation (19.48%). This is not surprising, given that this period largely coincides with the worldwide economic recession. Panel C presents the distribution of the goodwill impairment sample by country. The sample companies come from 19 European countries, with the

[11] Analysts' reports are retrieved from Thomson Reuters InvesText, analyst data from I/B/E/S, goodwill impairment data, and all other firm and market data from Thomson Reuters Eikon.
[12] Morningstar, Inc. is an investment research firm that compiles and analyzes funds and stocks.

largest sample representation pertaining to the largest European capital markets: the United Kingdom (26.62% of the sample), Germany (19.48%), and France (10.39%). All other countries represent less than 10% of the sample individually.

3.2. Measurement of Variables

Disclosure Transparency

We use the methodology developed by Lobo et al. (2017) and Paugam and Ramond (2015) to operationalize the disclosure transparency measure relating to goodwill impairment tests. This measure incorporates items disclosed in the notes to the financial statements that cover technical valuation and descriptive elements of impairment tests, such as the information related to the carrying amount of goodwill allocated to a unit (group of units), the basis on which the unit's (group of units') recoverable amount has been determined (i.e., value in use or fair value less costs of disposal), and the discount rate(s) applied to the cash flow projections. The scheme is exemplified in Appendix A. We manually code the annual reports and attribute one point to the disclosure transparency index if a particular item belonging to the measure is disclosed and zero otherwise. We calculate the overall disclosure transparency index for a given firm *i* in year *t* using *k* items as follows:[13]

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

Next, we divide the information included in the index into two types: (1) cash-flow-related disclosure, which explains how future cash flow and terminal value are forecasted; and (2) discount-rate-related disclosure, which explains the selection of discount rate(s). The cash-flow

[13] Dividing the disclosure index by the number of items implies that all items are considered equally important.

sub-score ($TRANSPARENCY\_CF$) consists of nine items with the following four categories: (1) number of CGUs, (2) cash flow extrapolation, (3) terminal value, and (4) sensitivity of impairment tests regarding the cash flow. The discount-rate sub-score ($TRANSPARENCY\_DR$) consists of 16 items with the following five categories: (1) details on the discount rate, (2) number of discount rates, (3) discount rate components, (4) sensitivity of impairment tests regarding the discount rate, and (5) explanations of the variations of the discount rate between consecutive years. We sum the points for each type of disclosure and scale the total by 25 to construct $TRANSPARENCY\_CF$ and $TRANSPARENCY\_DR$, the sum of which equals $TRANSPARENCY$.

Analyst Disagreement

To construct the disagreement measures, we retrieve from Thomson Reuters InvesText firms' analysts' reports that 1) were issued within three months after the earnings announcement date for the fiscal year during which the firm impaired its goodwill, 2) are written in English and issued by brokerage houses, and 3) contain 'goodwill' or 'intangible' in the text.[14]

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

[14] Given that it is difficult to identify the exact date on which goodwill impairment is announced for all observations in our sample, we choose to focus on analysts' reports issued within a period after the annual earnings announcement date for fiscal years in which goodwill is impaired. To ascertain that earnings announcement dates are likely the first dates when goodwill impairment news is made public, for a subset of firms with non-zero goodwill impairments during our sample period, we manually downloaded their goodwill impairment announcements on Factiva for a 12-month period from three months after the last fiscal year end to three months after the current fiscal year end. Out of the 61 firm-years in the search, we find that 23% had related announcements during interim reporting periods. We did not find any observations announcing goodwill impairment other than during quarterly or annual earnings announcements. We excluded observations that have non-zero goodwill impairments on Thomson Reuters Eikon during interim reporting periods from our sample.

Second, we examine the paragraphs to identify agreement opinions, instances in which analysts had anticipated both the timing and amount of goodwill impairments; disagreement opinions, instances in which analysts had not anticipated the timing and/or amount of goodwill impairments; and non-directional opinions, instances in which analysts mentioned goodwill or goodwill impairments but had not discussed their expectations.[15] Appendix C details the coding procedure. When there are multiple paragraphs in the same research report in which analysts express their opinions about goodwill impairment, we aggregate all opinions into one.[16]

We construct a measure of disagreement among analysts at the firm-impairment level that mimics the typical forecast dispersion measure, using agreement opinions and disagreement opinions as follows:

$$DISAGREEMENT\_AA_{it} = \sqrt{\left(\frac{1}{n-1}\right)\sum_{j=1}^{n}\left(Opinion_{ijt} - \overline{Opinion_{it}}\right)^2}$$

where *i*, *j*, *t*, are firm, analyst, and time subscripts respectively, and *n* represents the number of analyst opinions per impairment included in the calculation. $Opinion$ takes the value of one if it is a disagreement opinion and zero if it is an agreement opinion.[17] $DISAGREEMENT\_AA$ takes the largest value when half of the analysts agree with the managers and the other half do not. We further construct an analyst-impairment level variable, $DISAGREEMENT\_AM$, that takes the value of one for disagreement opinions and zero for agreement opinions. [18]

[15] Appendix B provides examples of analysts' discussions of goodwill impairment losses in their research reports.
[16] In most instances, all opinions expressed in the same research report are either in agreement or disagreement with the managers. If the Python coding process determines that analysts have expressed divergent opinions in the same report, we read the corresponding report to determine the direction of the opinions expressed.
[17] We do not include non-directional opinions. In Section 5, we incorporate non-directional opinions into the measure as a robustness test.
[18] Our measure of disagreement among analysts is positively correlated with analysts' earnings forecast dispersion (Pearson correlation coefficient=0.166; p-value=0.048), and our measure of disagreement between analysts and managers is positively correlated with analysts' earnings forecast error (Pearson correlation coefficient=0.127, p-value=0.094), thus providing some comfort that the two measures are valid proxies for analyst disagreements.

3.3 Regression Models

To test H1, we model disagreement among analysts ($DISAGREEMENT\_AA$) as a function of disclosure transparency relating to goodwill impairment ($TRANSPARENCY$) and a vector of controls, as specified in equation (1):

$$\begin{aligned} DISAGREEMENT\_AA &= \alpha_1 TRANSPARENCY + \alpha_2 SIZE + \alpha_3 MTB + \alpha_4 LEVERAGE + \alpha_5 ROA \\ &+ \alpha_6 LOSS + \alpha_7 VOLATILITY + \alpha_8 BIG4 + \alpha_9 COVERAGE + \alpha_{10} CROSSLIST \\ &+ \alpha_{11} IMPAIRMENT + Industry\ FE + Year\ FE + \varepsilon \end{aligned} \quad (1)$$

$DISAGREEMENT\_AA$ and $TRANSPARENCY$ are defined in Section 3.2. In this specification, the coefficient α_1 represents the relation between disclosure transparency relating to goodwill impairment tests and disagreement among analysts regarding the impairment timing/amount.[19] [20]

We control for several factors that have been documented by prior literature to affect analysts' outputs, particularly their forecast errors and forecast dispersion. Empirical evidence indicates that forecast dispersion is higher for firms that are smaller (e.g., Kothari, Li, and Short, 2009), more leveraged (e.g., Hope, 2003), loss-making (e.g., Horton et al., 2013), and have lower market-to-book ratio (e.g., Kothari et. al., 2009). It also positively relates to return on assets, stock return volatility (e.g., Thomas, 2002), analyst coverage (e.g., Horton et al., 2013), and goodwill impairment amount, but negatively relates to audit quality (e.g., Behn, Choi, and Kang, 2008) and a cross-listing in the United States (e.g., Lang, Lins, and Miller, 2003). Therefore, we control for

[19] Since *DISAGREEMENT _AA* is bounded between zero and 0.707, we also take the natural logarithm of the variable and re-estimate all regressions. The results remain qualitatively unchanged.

[20] This regression specification implicitly assumes that analysts' ex-ante beliefs are held constant. We attempted to determine analysts' ex-ante beliefs by analyzing their research reports issued within three months before the annual earnings announcement dates for all sample firms. We found that only a very small number of reports explicitly express directional opinions on goodwill impairment, and the sample size would be reduced to 38 observations if we required directional opinions both before and after earnings announcement dates. We deem it not meaningful to conduct analyses using this small sample.

firm size ($SIZE$), measured as the natural logarithm of total assets; market-to-book ratio (MTB), measured as market value to book value of equity; leverage ($LEVERAGE$), measured as the ratio of total debt to total assets; return on assets *(ROA)*, measured as the ratio of net income to total assets; whether a firm reports a loss ($LOSS$), an indicator that takes the value of one if a firm reports negative net income and zero otherwise; return volatility *(VOLATILITY)*, measured as the standard deviation of daily stock returns; audit quality ($BIG4$), an indicator that takes the value of one if a firm is audited by a Big 4 auditor and zero otherwise; analyst coverage ($COVERAGE$), measured as the natural logarithm of the number of analysts covering a firm; cross-listing (*CROSSLIST*), an indicator variable that takes the value of one if a firm is traded as American Depository Receipts, and zero otherwise; and the magnitude of goodwill impairment ($IMPAIRMENT$), measured as goodwill impairment amount scaled by beginning total assets.[21] Unless otherwise stated, we measure all firm characteristics at the fiscal year end in which goodwill impairment has been reported. Finally, we include industry (two-digit SIC) and year fixed effects to control for differences in analyst disagreement across industries and in different years. Details of the variable definitions are outlined in Appendix D. If applicable, we convert values denominated in currencies other than euros into euros.

To test H2, we replace the dependent variable of equation (1) with $DISAGREEMENT\_AM$ and add three variables to control for analysts' characteristics, since each observation represents a specific analyst opinion on a particular impairment. We expect that disagreement between analysts and managers is higher if analysts work for a brokerage house of a higher status, follow a smaller portfolio of companies, and are more experienced, because these analysts are likely to have more

[21] Following Kothari et al. (2009), we also use the natural logarithm of market value of equity as a measure for *SIZE* in all analyses. Our results remain qualitatively similar.

resources and are more able to analyze the details of impairment (Clement, Koonce, and Lopez, 2007). Therefore, we control for brokerage firm status ($BROKER$), an indicator variable that takes the value of one if an analyst is employed by a brokerage firm included in the Extel rankings of the corresponding year and zero otherwise; analysts' portfolio size, measured as the number of firms followed by an analyst ($PORTFOLIO$) during the financial year; and analysts' experience ($EXPERIENCE$), measured as the number of years for which an analyst provides annual forecasts for a particular firm. Analysts' forecast data are obtained from I/B/E/S.

We test H3a and H3b by re-estimating both regressions with the main independent variable of interest, $TRANSPARENCY$, replaced by its components $TRANSPARENCY\_CF$ and $TRANSPARENCY\_DR$. All other aspects of the model specifications remain unchanged.

4. Empirical Results

4.1. Univariate Results

Table 2 reports the descriptive statistics of the variables used in the regressions. The two measures of disagreement, $DISAGREEMENT\_AA$ and $DISAGREEMENT\_AM$, have a mean of 0.338 and 0.557 (a median of 0.500 and 1.000), respectively. The disclosure transparency index ($TRANSPARENCY$) has a mean of 0.326 with a standard deviation of 0.090, consistent with the values reported in Paugam and Ramond (2015). With regard to the control variables, our sample firms are relatively large, as expected for acquirers with analyst coverage, with average total assets over €5.1 billion. These firms also have low financial leverage (mean $LEVERAGE$ = 24.9%), are majority audited by Big 4 auditors (mean $BIG4$ = 68.2%), and are followed by over 15 analysts, on average. Most interestingly, the percentage of loss firms in our sample is close to 42%. This reflects the fact that material goodwill impairments, ranging from €1.47 million to €4.98 billion in

our sample, have a substantial negative impact on net income. Turning to the analysts' characteristics, analysts following our sample firms have, on average, 1.67 years of research experience and cover approximately 12 firms in their portfolio.

[Insert Table 2 here]

Untabulated Pearson correlation coefficients show that both disagreement measures are negatively associated with the disclosure transparency index. The correlation coefficients also indicate that disagreement among analysts is significantly higher, at the 5 percent level, for firms that cross-list in the United States, while disagreement between analysts and managers is higher for larger firms and firms covered by more analysts.

4.2. Multivariate Results

Table 3 reports the results of testing the association between disclosure transparency and analyst disagreement. In column (1), we test H1 by estimating equation (1) using ordinary least squares with $DISAGREEMENT\_AA$ as the dependent variable. The coefficient on $TRANSPARENCY$ is negative and statistically significant at the 1 percent level (coefficient = -0.907). The result is also economically large. An increase of one standard deviation in a firm's disclosure transparency score would lead to a 25 percent (= 0.907×0.090/0.326) decrease from the mean in disagreement among analysts. Turning to the control variables, the results indicate that, on average, disagreement among analysts is higher for smaller and lower market-to-book firms, consistent with evidence in the prior literature discussed in Section 3.3.

[Insert Table 3 here]

We test H2, in column (2), by replacing the dependent variable with a dichotomous variable, $DISAGREEMENT\_AM$, and include further controls for analysts' characteristics, as

discussed in Section 3.3. Estimated by a logistic regression model, the coefficient on $TRANSPARENCY$ is negative and highly significant at the 1 percent level, indicating that higher disclosure transparency on goodwill impairment tests is associated with a lower probability of analysts disagreeing with managers' goodwill impairment decisions.[22] Regarding the control variables, disagreement between analysts and managers is higher for firms with higher return volatility and analyst coverage, but we do not find that analysts' characteristics explain the disagreement. Higher return volatility proxies for higher uncertainty, and prior literature shows that these firms have higher forecasts errors (Thomas, 2002). The significant coefficient on analyst coverage is inconsistent with prior research evidence. Since it is highly correlated with firm size (Pearson correlation coefficient = 0.836), multicollinearity may be behind the inconsistent sign.

Overall, we show that disclosure transparency is associated with lower disagreement among analysts and lower disagreement between analysts and managers in the context of goodwill impairment.[23] Owing to the small sample size, most of the control variables are not statistically significant; nevertheless, their signs are mostly consistent with expectations.

In the next step, we test H3a and H3b by examining whether the negative association between disclosure transparency and analyst disagreement differs between the types of information disclosed—that is, whether it is driven by cash-flow-related or discount-rate-related disclosures. We first separate disclosure transparency into $TRANSPARENCY\_CF$ and $TRANSPARENCY\_DR$. In column (3) with disagreement among analysts as the focus, the coefficient on

[22] Our primary results remain qualitatively unchanged when we cluster the standard errors at the firm or analyst levels in both estimations. We choose not to cluster the standard errors because many clusters contain only one observation.
[23] An alternative explanation to the negative association is that if managers intentionally disclose a substantial amount of misleading information about the impairment testing process and parameters, in the extreme case, analysts may all disagree with the firm, resulting in lower disagreement among analysts. While this is a possible explanation, past literature generally uses disclosure quantity as a proxy for disclosure quality (e.g., Francis, Nanda, and Olsson, 2008; Hail, 2002), and there is some evidence that the two constructs are positively correlated (André, Filip, and Moldovan, 2016). We thank an anonymous reviewer for highlighting this alternative explanation to us.

$TRANSPARENCY\_DR$ is negative and significant at the 5 percent level, but the coefficient on $TRANSPARENCY\_CF$ is statistically insignificant. Focusing on disagreement between analysts and managers in column (4), we find a significantly negative relation with both cash-flow disclosure transparency ($TRANSPARENCY\_CF$) and discount-rate disclosure transparency ($TRANSPARENCY\_DR$).

Taken together, cash-flow disclosure transparency and discount-rate disclosure transparency relating to goodwill impairment tests play different roles in how they shape analyst disagreement. To the extent that analysts following the same firm can verify the disclosed discount rate(s) with external information or other information disclosed by the firm, managers are less likely to opportunistically manipulate the discount rate(s).[24] As a result, more transparent discount-rate disclosure, which often means the disclosure of the exact rate(s) used and the underlying parameters, signals managerial credibility, leading to lower analyst disagreement. Cash-flow disclosures, on the contrary, are inherently complex.[25] The lack of verifiability of cash flow information may incentivize managers to opportunistically manipulate impairment testing inputs to support a non-economically justifiable outcome. In addition, as shown in Amiraslani et al. (2013), European firms appear to be box-ticking their way through the requirements of IAS 36. Hence, cash-flow disclosures do not necessarily convey useful information to analysts. Combining the heterogeneity in the usefulness of the disclosures with the high variation in how each analyst following the same firm interprets the disclosures, the relationship between cash-flow disclosure transparency and analyst disagreement is ambiguous.

[24] It is not always possible to verify all information about discount rates because firms have multiple CGUs, whose discount rate parameters are only observable to a certain extent.
[25] By complexity, we refer to multiple layers of information, such as the cash flow stream and the terminal value, and the lack of verifiability of the information.

5. Additional Analyses

To shed further light on the role of disclosure transparency on analyst disagreement, we exploit extra information gathered from the data and construct two additional analyses. First, when analysts express disagreement opinions about a firm's goodwill impairment, they may disagree with the timing and/or the amount. By default, when analysts disagree with the impairment timing, they consider a zero impairment more appropriate for the period; therefore, they implicitly also disagree with the impairment amount. However, there are instances when analysts agree with the impairment timing but purely dispute the impairment amount. We, therefore, separate the sample into two subsamples: the first subsample consists of analysts' disagreement opinions about the goodwill impairment timing and all agreement opinions, and the second subsample consists of analysts' disagreement opinions about the goodwill impairment amount (which consists of all disagreement opinions) and all agreement opinions. If we cannot discern whether a disagreement opinion discusses the timing or amount aspect of the impairment, we assume the opinion concerns both the impairment timing and amount, and this opinion is assigned to both subsamples. We then construct the disagreement metrics for both subsamples. We do not have any *a priori* prediction as to whether firms' disclosure transparency is associated with analyst disagreement on the timing of goodwill impairment only, the amount of goodwill impairment only, or both.

Table 4 shows the regression results using the two subsamples. Columns (1) and (3) concern analyst disagreement on the impairment timing, while columns (2) and (4) concern analyst disagreement on the impairment amount. The negative coefficients on $TRANSPARENCY$ in all four regressions are significant at conventional levels, but most of the control variables have insignificant coefficients, likely due to the even smaller sample sizes. Taken together, these results

indicate that disclosure transparency is relevant for how analysts form their opinions on both the timing and amount of goodwill impairments.

[Insert Table 4 here]

We next exploit the rich institutional background behind our sample, which is drawn from 19 European countries that have different levels of legal, accounting, and auditing enforcement quality. Recent literature, such as Glaum, Landsman, and Wyrwa (2018), shows that the level of enforcement is positively associated with the timeliness of goodwill impairment. Provided that the timeliness of impairment affects analysts' opinions regarding firms' goodwill impairment decisions, it is reasonable to expect that the association between disclosure transparency and analyst disagreement differs between impairments by firms located in high enforcement regimes and impairments by firms located in low enforcement regimes. We follow Brown et al. (2014) to partition the sample into low and high accounting and audit enforcement regimes.[26] We modify equation (1) to incorporate two additional variables: $ENFORCEMENT$ and $TRANSPARENCY \times ENFORCEMENT$. $ENFORCEMENT$ takes the value of one if the firm is from a country with a high enforcement regime and zero otherwise. If the level of enforcement affects how analysts form their opinions with respect to firms' disclosure transparency, we expect the coefficient on the interaction term to be significantly different from zero. We do not offer a directional prediction due to complementarity and substitution effects between disclosure and enforcement. On the one hand, the negative association may be more pronounced in high-enforcement countries because disclosure is more credible; on the other hand, the negative association may be stronger in low-

[26] Countries classified as having a low enforcement regime are Austria, Belgium, the Czech Republic, Finland, Germany, Hungary, Ireland, Netherlands, Poland, Spain, and Sweden; countries classified as having a high enforcement regime are Denmark, France, Italy, Norway, Switzerland, and the United Kingdom. We use the 2005 total enforcement score to partition 2006-2008 sample observations, and the 2008 total enforcement score to partition observations from 2009 onwards.

enforcement countries because disclosure transparency plays an important role in these countries, where the overall information environment is likely to be poor.

We lose three (seven) observations in the regression with $DISAGREEMENT\_AA$ ($DISAGREEMENT\_AM$) as the dependent variable because the Brown et al. (2014) index does not cover all countries included in our sample. The results in Table 5 show that the association between disclosure transparency and analyst disagreement is weaker (i.e., less negative) in the high enforcement regime, consistent with the latter argument that disclosure transparency is more important for analysts operating in weak institutions. However, the coefficients are statistically insignificant in both regressions.[27] We cannot rule out the possibility that the regressions lack sufficient power due to the relatively small number of observations in our sample.

[Insert Table 5 here]

6. Robustness Analyses

To further validate our findings, we conduct additional robustness tests. First, our sample period spans from 2006 to 2014. A relatively large number of goodwill impairments took place during the 2008 financial crisis. To the extent that managers are more likely to opportunistically charge goodwill impairments during the crisis period, our results may be driven by the inclusion of impairments in 2008. Second, in constructing the sample, we have eliminated a large number of observations in which analysts do not explicitly express directional opinions about firms' impairment decisions in their research reports. Therefore, we redefine the metric on disagreement among analysts to take into account non-directional opinions by assuming that these analysts

[27] We also partition the sample into high and low enforcement quality by common vs. civil law countries as in Knauer and Wöhrmann (2016) and three clusters of countries as in Leuz, Nanda, and Wysocki (2003). The coefficients on the interaction term(s) remain statistically insignificant in both specifications.

implicitly agree with the firms' impairment decisions.[28] Third, our primary sample consists of firms that have chosen to impair goodwill. If analysts behave differently toward firms that choose to impair or not to impair goodwill, our main results may not be generalizable. Hence, we introduce a control sample of firms that have goodwill on their account but have chosen not to impair goodwill to gauge the robustness of the main findings.

6.1. Excluding 2008

Our sample encompasses a financial crisis period that results in a significant deterioration in the macroeconomic risk environment. As shown in Table 1, a large proportion of goodwill impairments took place in 2008. It is plausible that managers opportunistically use goodwill impairments during the financial crisis to take a big bath, thus resulting in less informative goodwill impairment disclosures. In addition, during the financial crisis, economic impairments in the equity market may trigger the recognition of more accounting impairments. To the extent that these goodwill impairments are fundamentally different from those in other years, our main findings could be driven by the inclusion of the financial crisis period. Therefore, we eliminate observations falling in 2008, leading to a loss of 30 (19.5%) and 101 (30.6%) observations in the $DISAGREEMENT\_AA$ and $DISAGREEMENT\_AM$ regressions, respectively. Untabulated results show that the coefficients on $TRANSPARENCY$ remain negative and significant at the 5 percent level in both regressions, thus providing more confidence that our main findings are not driven by goodwill impairments during the financial crisis period.

6.2. Incorporating Non-Directional Opinions

[28] It is not feasible to include non-directional opinions in the metric on disagreement between analysts and managers. We provide an explanation in the discussion of Table 6.

In our primary tests, we measure disagreement without taking into account situations when analysts mention goodwill but do not explicitly provide their opinions on firms' impairment decisions (i.e., non-directional opinions). Presumably, when analysts do not consider a major accounting decision containing any unexpected elements, they may find it unnecessary to give an explicit opinion in their research reports. Therefore, we argue that instances in which analysts did not mention any information about their expectations can be viewed as situations in which analysts anticipated both the timing and amount of the goodwill impairments. We re-estimate equation (1) after incorporating non-directional opinions in the existing sample of 154 impairments as agreement opinions. Column (1) of Table 6 shows that the coefficient on $TRANSPARENCY$ remains negative and significant at the 5 percent level, indicating that our main finding is not driven by a specific type of analyst who chooses to discuss a major accounting decision explicitly.

[Insert Table 6 here]

We do not conduct a similar analysis on the regression of $DISAGREEMENT\_AM$ because this model is estimated at the analyst-impairment level. Including the sheer number of non-directional opinions as agreement opinions would render disagreement opinions a very small percentage of all opinions, making it not a meaningful analysis.

6.3. Incorporating a Control Sample

IAS 36 requires all firms carrying non-zero goodwill on their balance sheet to conduct an annual impairment test on goodwill and to disclose the estimates used in measuring the recoverable amounts of their CGUs regardless of whether goodwill is impaired. So far, all our analyses have been conducted on firms that have chosen to impair goodwill. Given that goodwill impairment is a non-random firm decision, drawing our sample based on the realized outcome may not produce

representative results for all firms. Therefore, we include a control sample consisting of firms that chose not to impair goodwill to gauge the robustness of our main results.

To construct the control sample, we first divide the sample countries into high and low enforcement groups using the index developed by Brown et al. (2014), as in Section 5. We then follow the impairment prediction model in Glaum et al. (2018) to propensity-score match, without replacement and using a caliper of 0.2, each of the 154 impairment observations with a control observation in the same enforcement group of countries that have goodwill on their balance sheet but do not impair goodwill throughout the sample period.[29] Following the same procedures for the construction of the impairment sample, we eliminate observations with missing annual reports, fewer than two analysts' opinions issued within three months after the annual earnings announcement dates for the corresponding fiscal year, and missing values for the control variables. Since analysts mostly do not express explicitly their opinions when a firm does not impair goodwill, especially when they agree with managers, we include non-directional opinions in the construction of our disagreement metrics so as to preserve the sample at a reasonable size. Our final sample consists of 76 pairs (152 observations) of impairment and control observations.[30]

The control sample has a similar level of disclosure transparency as the impairment sample. We re-estimate equation (1) by placing the control observations alongside the impairment

[29] The covariates in the model include stock return, lagged stock return, an income-smoothing indicator, a big-bath indicator, financial leverage, a Big 4 indicator, free-float percentage, institutional ownership, analyst coverage, goodwill amount, number of segments, number of consecutive years with goodwill impairment losses before the current year, return on assets, size, market-to-book ratio, and monthly stock return volatility. We do not include CEO compensation and CEO turnover in the model because we do not have access to the data. To maximize the number of matches, we do not include country, industry, and year as matching criteria.

[30] According to Shipman, Swanquist, and Whited (2017), the caliper distances range from 0.00005 to 0.23 in 29 out of 86 accounting research studies that employ propensity score matching in their methodology and report the information on caliper distance. Although we use a large caliper distance of 0.2 in the propensity matching process, only 120 observations out of the starting 154 impairments could be matched with observations in the no impairment group. The matched sample is further reduced to 76 pairs after eliminating observations with fewer than two opinions issued by different analysts and non-missing values for the control variables.

observations. The results shown in column (2) of Table 6 indicate that the coefficient on $TRANSPARENCY$ is still negative and significant.

7. Conclusion

This paper examines the association between disclosure transparency and disagreement in opinions among economic agents in capital markets in the context of goodwill impairment. Drawing on a sample of European companies that impaired goodwill from 2006-2014, we constructed a unique dataset on the transparency of goodwill impairment disclosure and developed two metrics to measure disagreement among analysts and disagreement between analysts and managers based on the information extracted from the text in brokers' reports. We show that disclosure transparency is negatively associated with both types of analyst disagreement. In addition, cash-flow-related and discount-rate-related disclosure transparency play different roles in explaining the two types of analyst disagreement. To buttress these findings, we show that disclosure transparency relating to the impairment timing and impairment amount are both useful in shaping analysts' opinions. Taken together, these findings suggest that the information on goodwill impairment tests disclosed by managers is useful to analysts but that the application of the current goodwill impairment rules results in different levels and quality of disclosure that can induce disagreement in the capital market.

We acknowledge two limitations relating to the present study. Our results establish an association, but not a causal relationship, between disclosure transparency and two forms of disagreement relating to analysts. The lack of directional opinions issued by analysts prior to the release of impairment parameters is the main constraint that prevents us from establishing how analyst disagreement changes upon impairment disclosure. Further, our research design does not

allow us to separate larger-than-expected from smaller-than-expected impairments, which have very different earnings implications. We note, however, that analysts are more likely to explicitly express a disagreement opinion about an impairment decision when they expect a larger-than-expected impairment.

Mazzi, André, Dionysiou, and Tsalavoutas (2017) document a lower cost of equity capital as a compliance benefit of the mandatory disclosure requirements relating to goodwill impairments. We provide complementary evidence that a higher level of disclosure transparency is beneficial to the information environment surrounding analysts but that the same financial reporting rule can lead to variations in disclosure transparency, which then affects the level of information asymmetry and uncertainty surrounding the firms. Our study also complements the literature on textual analysis of brokers' reports (e.g., Asquith et al., 2005; Huang et al., 2014; De Franco et al., 2015) by quantifying qualitative information and constructing measures of disagreement among economic agents that are useful for understanding complex accounting estimates. Future research can use these text-based measures to assess analyst disagreement with respect to other non-earnings measures that are not forecasted on a regular basis.

Our results are particularly relevant to standard setters, as goodwill and goodwill impairment accounting continue to receive significant scrutiny from regulators and academics.[31] Some have called on the International Accounting Standards Board to abolish goodwill impairment tests and revert to the scheduled amortization of goodwill (EFRAG, 2014). In light of these debates, our paper shows that goodwill impairment disclosure is relevant for market participants but that inconsistent application of the current rules or a box-ticking strategy by some firms could create high uncertainty among economic agents in capital markets. We encourage

[31] The International Accounting Standards Board has a project on its agenda related to the accounting for goodwill and goodwill impairment. See http://www.ifrs.org/projects/work-plan/goodwill-and-impairment/.

future research to shed light on the relevance of the current impairment regime vs. the previous amortization regime by contrasting analysts' discussion of goodwill in their research reports.

References

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

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

André, P., Filip, A., & Moldovan, R. (2016). Segment disclosure quantity and quality under IFRS 8: determinants and the effect on financial analysts' forecast earnings errors. *The International Journal of Accounting*, 51(4), 443-461.

André, P., Filip, A., & Paugam, L. (2016). Examining the patterns of goodwill impairments in Europe and the US. *Accounting in Europe* 13(3), 329–52.

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

Ayres, D.R., Campbell, J.L., Chyz, J., & Shipman, J.E. (2019). Do financial analysts compel firms to make accounting decisions? Evidence from goodwill impairments. *Review of Accounting Studies, Forthcoming*.

Behn, B.K, Choi, J.H., & Kang, T. (2008). Audit quality and properties of analyst earnings forecasts. *The Accounting Review* 83(2), 327–49.

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

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

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

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

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

Brown, P., Preiato, J., & Tarca, A. (2014). Measuring country differences in enforcement of accounting standards: an audit and enforcement proxy. *Journal of Business Finance & Accounting* 41(1-2), 1-52.

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

Carlin, T.M., & Finch, N. (2009). Discount rates in disarray: evidence on flawed goodwill impairment testing. *Australian Accounting Review*, 19(4), 326-336.

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

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

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

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

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

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

Diamond, D.W. (1985). Optimal release of information by firms. *The Journal of Finance*, 40(4), 1071-1094.

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

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

EFRAG. (2014). Should goodwill still not be amortised? Accounting and disclosure for goodwill. *Available at http://old.efrag.org/files/Goodwill%20Impairment%20and%20Amortisation/140725_Should_goodwill_still_not_be_amortised_Research_Group_paper.pdf.*

Ernst & Young (EY). (2010). Meeting today's financial challenges – Impairment reporting: improving stakeholder confidence. *Ernst & Young publication.*

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

Financial Reporting Council (2014). FRC ARP staff research report: Investor views on intangible assets and their amortisation. Available at https://www.frc.org.uk/Our-Work/Publications/Accounting-and-Reporting-Policy/Research-Report-Investor-Views-on-Intangible-Asset.pdf

Francis, J., Nanda, D., & Olsson, P. (2008). Voluntary disclosure, earnings quality, and cost of capital. *Journal of Accounting Research*, 46(1), 53–99.

Glaum, M., Landsman, W.R., & Wyrwa, S. (2018). Goodwill impairment: the effects of public enforcement and monitoring by institutional investors. *The Accounting Review*, 93(6), 149-180.

Hail, L. (2002). The impact of voluntary corporate disclosures on the ex-ante cost of capital for Swiss firms. *European Accounting Review*, 11(4), 741-773.

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

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

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

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

Horton, J., Serafeim, G., & Serafeim, I. (2013). Does mandatory IFRS adoption improve the information environment? *Contemporary Accounting Research* 30(1), 388–423.

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

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

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

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

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

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

Kothari, S., So, E., & Verdi, R. (2016). Analysts' forecasts and asset pricing: a survey. *Annual Review of Financial Economics*, 8(1), 197-219.

KPMG (2014). Who Cares about goodwill impairment? A collection of stakeholder views. Available at http://www.kpmg.com/CN/en/IssuesAndInsights/ArticlesPublications/Documents/Who-cares-aboutgoodwill-impairment-O-201404.pdf.

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

Lang, M.H., Lins, K.V., & Miller, D.P. (2003). ADRs, analysts, and accuracy: does cross-listing in the US improve a firm's information environment and increase market value? *Journal of Accounting Research*, 41(2), 317-345

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

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

Leuz, C., Nanda, D., & Wysocki, P. D. (2003). Earnings management and investor protection: an international comparison. *Journal of Financial Economics*, 69(3), 505-527.

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

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

Mazzi, F., André, P., Dionysiou, D., & Tsalavoutas, I. (2017). Compliance with goodwill-related mandatory disclosure requirements and the cost of equity capital. *Accounting and Business Research*, 47(3), 268-312.

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

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

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

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

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

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

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

Ross, S.A. (1977). The determination of financial structure: the incentive-signalling. *The Bell Journal of Economics*, 8(1), 23-40.

Shipman, J. E., Swanquist, Q. T., & Whited, R. L. (2016). Propensity score matching in accounting research. *The Accounting Review*, 92(1), 213-244.

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

Thomas, S. (2002). Firm diversification and asymmetric information: evidence from analysts' forecasts and earnings announcements. *Journal of Financial Economics*, 64(3), 373-396.

Trainer, D. (2018). How companies use discount rates to produce misleading earnings. *Forbes*. Available at https://www.forbes.com/sites/greatspeculations/2018/06/26/how-companies-use-discount-rates-to-produce-misleading-earnings/#739b7578426c

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

Appendix A: Items composing the impairment test disclosure transparency score

Categories	Items
(1) Number of cash-generating units	Does the report include the number of CGUs?
(2) Details on the discount rate	Does the report mention the alternative between WACC and other approaches for determining the discount rate? Does the report mention the use of another model to estimate the cost of capital? Does the report mention the tax effect on the discount rate? Does the report give detail on the computation of the discount rate (e.g., risk premium, risk-free rate)?
(3) Number of discount rates	Does the firm adjust the firm-wide discount rate for specific CGUs? Does the report explain the use of different discount rates per CGU? Does the report explain the adjustments/different discount rates used?
(4) Discount rate components	Does the report disclose the base rate of the discount rate? Does the report disclose the risk-free rate chosen? Does the report mention the beta coefficient chosen? Does the report mention the risk premium chosen? Does the report mention management's target leverage ratio? Does the report mention the specific stock beta of the company? Does the report mention the stock beta of peer firms?
(5) Sensitivity of impairment tests	Does the report mention sensitivity tests performed on the discount rate? Does the report mention sensitivity tests performed on projected cash flows or other parameters?
(6) Explanations of the variations of the discount rate	Does the report explain the variations of discount rates from the previous year?
(7) Extrapolation	Does the report mention the extrapolation period between the end of the business plan and terminal value? Does the report mention the maximum number of periods for business plans? Does the report mention the extrapolation period after the business plan?

(8) Terminal value	Does the report mention whether the terminal value is computed with a multiple? Does the report mention whether the terminal value is computed with an infinite projection period? Does the report mention the level of the multiple applied? Does the report mention the terminal growth assumption?

Appendix B: Examples of analysts' interpretation of goodwill impairment losses

Goodwill impairment reports coded as agreement opinions

Date: 2012

Research Target: Rio Tinto

Analyst: RBC Capital Markets

Quote:

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

Date: 2012

Research Target: Telecom Italia SPA

Analyst: Deutsche Bank

Quote:

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

Goodwill impairment reports coded as disagreement opinions

Date: 2011

Research Target: RIO Tinto PLC

Analyst: Deutcshe Bank

Quote:

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

Date: 2012

Research Target: Arcelor Mital

Analyst: Morgan Stanley

Quote:

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

Date: 2011

Research Target: Deutsche Telekom

Analyst: Warburg Research

Quote:

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

Goodwill impairment report coded as a non-direction opinion

Date: 2012

Research Target: Arcelor Mital

Analyst: Unicredit

Quote:

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

Appendix C: Procedures in coding disagreement metrics

1. Cleaning

We remove tables from analysts' reports.

2. Paragraphs identification

We extract goodwill-impairment-related paragraphs from analysts' reports.

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

Group 1: 'goodwill'

Group 2: 'impair*,' 'one-off,' 'one off,' 'write-down*,' 'writedown*,' 'write* down,' 'wrote-down*,' 'wrotedown*,' 'wrote down,' 'write-off*,' 'writeoff*,' 'write* off,' 'wrote-off*,' 'wroteoff*,' 'wrote off'

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

3. Coding

We split the goodwill-impairment-related paragraphs into agreement, disagreement, and non-directional opinions.

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

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

A goodwill-impairment-related paragraph is coded as a non-directional opinion if it is neither agreement opinion nor disagreement opinion.

Group 4: 'expect*,' 'indicat*,' 'anticipat*,' 'announc*,' 'match*,' 'in line,' 'in-line,' 'align*,' 'estimat*,' 'warn*,' 'publish*,' 'schedule*'

Group 5: 'over,' 'overdue,' 'below,' 'above,' 'higher,' 'larger,' 'bigger,' 'lower,' 'smaller,' 'less,' 'missing,' 'fall* short,' 'fell short,' 'unexpect*,' 'not expect*,' 'unanticipat*,' 'not anticipat*,' 'surpris*,' 'delay*,' 'timing,' 'ahead,' 'deviat*,' 'unpublish*,' 'not publish*,' 'unschedul*,' 'not schedul*,' 'discrepancy'

Appendix D: Variable definition

VARIABLE	DEFINITION
DISAGREEMENT_AA	Disagreement among analysts regarding the timing and/or amount of the reported goodwill impairment, constructed as follows: $$DISAGREEMENT\_AA_{it} = \sqrt{\left(\frac{1}{n-1}\right)\sum_{j=1}^{n}\left(Opinion_{ijt} - \overline{Opinion_{it}}\right)^2}$$ where *i*, *j*, *t*, are firm, analyst, and time subscripts respectively, and *n* represents the number of analyst opinions per firm-year included in the calculation. $Opinion$ takes the value of one if it is a disagreement opinion and zero if it is an agreement opinion.
DISAGREEMENT_AM	Disagreement between analysts and managers regarding the timing and/or amount of the reported goodwill impairment, constructed as an indicator variable that takes the value of one if a particular analyst has a different opinion regarding the timing and/or amount of the reported goodwill impairment from the firm's manager and zero otherwise.
DISAGREEMENT_AA TIMING	Disagreement among analysts regarding the timing of the reported goodwill impairment.
DISAGREEMENT_AA AMOUNT	Disagreement among analysts regarding the amount of the reported goodwill impairment.
DISAGREEMENT_AM TIMING	Disagreement between analysts and managers regarding the timing of the reported goodwill impairment.
DISAGREEMENT_AM AMOUNT	Disagreement between analysts and managers regarding the amount of the reported goodwill impairment.
TRANSPARENCY	Disclosure transparency relating to goodwill impairment, which captures the information included in a firm's financial statement footnotes about the firm's goodwill impairment tests.
TRANSPARENCY_CF	Disclosure transparency relating to cash flow projections, which captures the information included in a firm's financial statement footnotes about the firm's projected cash flow used in the goodwill impairment tests.
TRANSPARENCY_DR	Disclosure transparency relating to the discount rate selection, which captures the information included in a firm's financial statement footnotes about the firm's estimated discount rate used in the goodwill impairment tests.

SIZE	Natural logarithm of total assets.
MTB	Market value of equity divided by book value of equity.
LEVERAGE	Total debt divided by total assets.
ROA	Net income divided by total assets.
LOSS	An indicator variable that takes the value of one if a company reports negative net income and zero otherwise.
VOLATILITY	Total stock return volatility, defined as the natural logarithm of the standard deviation of a stock's daily return over a 12-month period before the fiscal year end.
BIG4	An indicator variable that takes the value of one if a company is audited by a Big 4 auditor and zero otherwise.
COVERAGE	Natural logarithm of the number of analysts covering the company.
CROSSLIST	An indicator variable that takes the value of one if the company is cross listed in the United States and zero otherwise.
IMPAIRMENT	Goodwill impairment amount divided by lagged total assets.
BROKER	An indicator variable that takes the value of one if the brokerage firm is included in the Extel rankings of the corresponding year and zero otherwise.
PORTFOLIO	Analysts' portfolio size, defined as the number of firms followed by an analyst during the financial year.
EXPERIENCE	An analyst's forecasting experience, defined as the number of years for which an analyst provides annual forecasts for a particular firm.
ENFORCEMENT	Accounting and auditing enforcement level, constructed as an indicator variable that takes the value of one if the firm is from a country with a high enforcement regime and zero otherwise. High enforcement countries are those with a Brown et al. (2014) accounting and audit enforcement index above the median for all countries in the sample.

Table 1: Goodwill impairment sample

This table reports the procedures to construct the goodwill impairment sample and its composition. The sample includes European firms that adopted IFRS for consolidated financial statements over the period 2006-2014. The data for goodwill impairments are obtained from Thomson Reuters Eikon. Panel A describes the procedures to construct the samples; Panel B describes the distribution of impairments in the sample by year; Panel C describes the distribution of impairments in the sample by country.

Panel A: Sample construction

Nonfinancial firm-year observations with non-zero goodwill in the intersection between Thomson Reuters Eikon and I/B/E/S databases	1,991
(-) Non-zero impairments in Q1, Q2 or Q3	210
(-) Impairments or goodwill amounts higher than total assets, or negative impairments	254
(-) Impairment amounts less than 10 million or 1% of lagged total assets	842
(-) Without available or readable annual reports	30
(-) Missing analysts' reports	47
(-) Impairments with only non-directional opinions in analysts' reports	338
Total number of impairments	270
Total number of opinions	569
Sample for tests of disagreement among analysts	
Total number of impairments	270
(-) Fewer than two opinions by different analysts on goodwill impairment	112
(-) Missing values for control variables	4
Number of impairments	154
Number of unique firms	126
Sample for tests of disagreement between analysts and managers	
Total number of opinions	569
(-) Missing values for control variables	239
Number of opinions	330
Number of unique firms	149
Number of unique analysts	240

Panel B: Distribution of sample impairments by year

Year	Frequency	Percent
2006	3	1.95
2007	8	5.19
2008	30	19.48
2009	21	13.64
2010	15	9.74
2011	21	13.64
2012	19	12.34
2013	17	11.04
2014	20	12.99
Total	154	100

Panel C: Distribution of sample impairments by country

Country	Frequency	Percent
Austria	12	7.79
Belgium	1	0.65
Cyprus	2	1.30
Czech Republic	3	1.95
Denmark	3	1.95
Finland	5	3.25
France	16	10.39
Germany	30	19.48
Hungary	2	1.30
Ireland	1	0.65
Italy	4	2.60
Luxembourg	1	0.65
Netherlands	10	6.49
Norway	3	1.95
Poland	1	0.65
Spain	2	1.30
Sweden	4	2.60
Switzerland	13	8.44
United Kingdom	41	26.62
Total	154	100

Table 2: Descriptive statistics

This table reports summary statistics for variables included in the main analyses. All continuous variables are winsorized at the 5th and 95th percentiles (*TRANSPARENCY*, *TRANSPARENCY_CF*, *TRANSPARENCY_DR*, and *DISAGREEMENT_AA* are not winsorized). Detailed variable definitions are outlined in Appendix D.

	(1) N	(2) Mean	(3) Q1	(4) Median	(5) Q3	(6) Stdev.
DISAGREEMENT_AA	154	0.338	0.000	0.500	0.707	0.316
DISAGREEMENT_AM	330	0.557	0.000	1.000	1.000	0.497
TRANSPARENCY	154	0.326	0.280	0.320	0.360	0.090
TRANSPARENCY_CF	154	0.171	0.160	0.160	0.200	0.048
TRANSPARENCY_DR	154	0.154	0.120	0.160	0.200	0.062
SIZE	154	15.446	14.266	15.340	16.889	1.861
MTB	154	4.015	1.180	1.725	2.710	29.255
LEVERAGE	154	0.249	0.150	0.232	0.340	0.142
ROA	154	-0.013	-0.037	0.012	0.045	0.093
LOSS	154	0.416	0.000	0.000	1.000	0.494
VOLATILITY	154	0.101	0.062	0.086	0.128	0.050
BIG4	154	0.682	0.000	1.000	1.000	0.467
COVERAGE	154	2.744	2.398	2.890	3.258	0.685
CROSSLIST	154	0.409	0.000	0.000	1.000	0.493
IMPAIRMENT	154	0.032	0.006	0.017	0.040	0.039
BROKER	330	0.154	0.000	0.000	0.000	0.362
PORTFOLIO	330	11.943	6.000	10.000	17.000	7.719
EXPERIENCE	330	1.663	0.000	0.000	3.000	2.439

Table 3: Disclosure transparency and analyst disagreement

This table presents the relation between disclosure transparency on goodwill impairment and analyst disagreement. Columns (1) and (3) (columns (2) and (4)) report OLS (logistic) regression results with disagreement among analysts (disagreement between analysts and managers) as the dependent variable. All continuous variables, except *TRANSPARENCY*, *TRANSPARENCY_CF*, *TRANSPARENCY_DR*, and *DISAGREEMENT_AA*, are winsorized at the 5th and 95th percentiles. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively, in two-tailed tests. We report t-/z-statistics based on robust standard errors in parentheses. Detailed variable definitions are outlined in Appendix D.

	(1) *DISAGREEMENT _AA*	(2) *DISAGREEMENT _ AM*	(3) *DISAGREEMENT _AA*	(4) *DISAGREEMENT _AM*
TRANSPARENCY	**-0.907*** **	**-5.604*** **		
	(-2.628)	**(-3.227)**		
TRANSPARENCY_CF			**-0.636**	**-7.955** **
			(-0.952)	**(-2.195)**
TRANSPARENCY_DR			**-1.063** **	**-4.339***
			(-2.228)	**(-1.892)**
SIZE	-0.059*	-0.128	-0.060*	-0.133
	(-1.758)	(-0.698)	(-1.759)	(-0.722)
MTB	-0.015*	0.028	-0.015*	0.026
	(-1.892)	(0.186)	(-1.884)	(0.170)
LEVERAGE	0.073	-1.065	0.077	-1.136
	(0.254)	(-0.844)	(0.266)	(-0.892)
ROA	0.244	-3.097	0.215	-3.201
	(0.307)	(-0.838)	(0.268)	(-0.863)
LOSS	0.029	-0.201	0.028	-0.218
	(0.289)	(-0.396)	(0.271)	(-0.427)
VOLATILITY	-0.070	12.138***	-0.082	11.955***
	(-0.065)	(2.669)	(-0.075)	(2.619)
BIG4	0.059	-0.315	0.054	-0.266
	(0.768)	(-0.851)	(0.680)	(-0.698)
COVERAGE	0.091	0.964**	0.092	0.993**
	(0.950)	(2.171)	(0.946)	(2.219)
CROSSLIST	0.101	0.621	0.102	0.610
	(1.257)	(1.334)	(1.266)	(1.304)
IMPAIRMENT	-0.310	-1.379	-0.419	-0.430
	(-0.186)	(-0.232)	(-0.247)	(-0.070)
BROKER		0.032		-0.019
		(0.086)		(-0.048)
PORTFOLIO		0.001		0.001
		(0.042)		(0.048)
EXPERIENCE		-0.042		-0.039
		(-0.680)		(-0.619)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Observations	154	330	154	330
Adj./Pseudo R-squared	0.130	0.163	0.123	0.164

Table 4: Disclosure transparency and disagreement on impairment timing / impairment amount

This table presents the results examining the relation between disclosure transparency on goodwill impairment and analyst disagreement on impairment timing and impairment amount. Columns (1) and (2) present OLS regressions with the two variants of disagreement among analysts as the dependent variables, whereas columns (3) and (4) present logistic regressions with the two variants of disagreement between analysts and managers as the dependent variables. All continuous variables, except *TRANSPARENCY* and *DISAGREEMENT_AA*, are winsorized at the 5th and 95th percentiles. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively, in two-tailed tests. We report t-/z-statistics based on robust standard errors in parentheses. Detailed variable definitions are outlined in Appendix D.

	(1) *DISAGREEMENT_AA TIMING*	(2) *DISAGREEMENT_AA AMOUNT*	(3) *DISAGREEMENT_AM TIMING*	(4) *DISAGREEMENT_AM AMOUNT*
TRANSPARENCY	**-1.766*** **	**-0.907*** **	**-5.035***	**-5.604*** **
	(-4.580)	**(-2.628)**	**(-1.832)**	**(-3.227)**
SIZE	-0.111**	-0.059*	-0.326	-0.128
	(-2.090)	(-1.758)	(-1.027)	(-0.698)
MTB	0.004	-0.015*	-0.101	0.028
	(0.316)	(-1.892)	(-0.378)	(0.186)
LEVERAGE	-0.659	0.073	0.841	-1.065
	(-1.385)	(0.254)	(0.416)	(-0.844)
ROA	0.861	0.244	-2.942	-3.097
	(0.792)	(0.307)	(-0.387)	(-0.838)
LOSS	-0.000	0.029	-0.826	-0.201
	(-0.000)	(0.289)	(-0.811)	(-0.396)
VOLATILITY	2.272	-0.070	10.902	12.138***
	(1.134)	(-0.065)	(1.460)	(2.669)
BIG4	0.040	0.059	0.182	-0.315
	(0.348)	(0.768)	(0.285)	(-0.851)
COVERAGE	0.179	0.091	0.116	0.964**
	(1.533)	(0.950)	(0.151)	(2.171)
CROSSLIST	0.221	0.101	-0.453	0.621
	(1.587)	(1.257)	(-0.661)	(1.334)
IMPAIRMENT	0.193	-0.310	-9.632	-1.379
	(0.127)	(-0.186)	(-1.176)	(-0.232)
BROKER			0.297	0.032
			(0.402)	(0.086)
PORTFOLIO			0.113***	0.001
			(3.059)	(0.042)
EXPERIENCE			0.044	-0.042
			(0.509)	(-0.680)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Observations	73	154	211	330
Adj./Pseudo R-squared	0.192	0.130	0.185	0.163

Table 5: The role of accounting and auditing enforcement

This table examines the role of accounting and auditing enforcement on the relation between disclosure transparency on goodwill impairment and analyst disagreement. Column (1) presents OLS regression results with disagreement among analysts as the dependent variable, whereas column (2) presents logistic regression results with disagreement between analysts and managers as the dependent variable. All continuous variables, except *TRANSPARENCY* and *DISAGREEMENT_AA*, are winsorized at the 5th and 95th percentiles. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively, in two-tailed tests. We report t-/z-statistics based on robust standard errors in parentheses. Detailed variable definitions are outlined in Appendix D.

	(1) *DISAGREEMENT_AA*	(2) *DISAGREEMENT_AM*
TRANSPARENCY	**-1.227*** **	**-7.883*** **
	(-2.795)	**(-2.730)**
ENFORCEMENT	-0.222	-1.556
	(-0.985)	(-1.223)
TRANSPARENCY × ENFORCEMENT	**0.829**	**3.743**
	(1.247)	**(0.988)**
SIZE	-0.059	-0.165
	(-1.639)	(-0.838)
MTB	-0.013*	0.045
	(-1.761)	(0.286)
LEVERAGE	0.155	-1.538
	(0.536)	(-1.131)
ROA	0.310	-3.499
	(0.394)	(-0.890)
LOSS	0.058	-0.213
	(0.581)	(-0.394)
VOLATILITY	0.116	10.446**
	(0.103)	(2.257)
BIG4	0.057	-0.312
	(0.774)	(-0.829)
COVERAGE	0.080	1.026**
	(0.771)	(2.151)
CROSSLIST	0.073	0.520
	(0.921)	(1.071)
IMPAIRMENT	-0.748	-1.929
	(-0.455)	(-0.311)
BROKER		-0.044
		(-0.115)
PORTFOLIO		0.006
		(0.321)
EXPERIENCE		-0.024
		(-0.372)
Year fixed effects	Yes	Yes
Industry fixed effects	Yes	Yes
Observations	151	323
Adj./Pseudo R-squared	0.155	0.171

Table 6: Robustness tests

This table presents OLS regression results examining the relation between disclosure transparency on goodwill impairment and disagreement among analysts, after including non-directional opinions as agreement opinions in column (1), and including a control sample that did not impair goodwill in column (2). All continuous variables, except *TRANSPARENCY* and *DISAGREEMENT_AA*, are winsorized at the 5th and 95th percentiles. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively, in two-tailed tests. We report t-statistics based on robust standard errors in parentheses. Detailed variable definitions are outlined in Appendix D.

	(1) *DISAGREEMENT_AA*	(2) *DISAGREEMENT_AA*
TRANSPARENCY	**-0.472****	**-0.245***
	(-2.427)	**(-1.825)**
SIZE	-0.024	-0.018
	(-1.309)	(-1.067)
MTB	-0.007*	-0.004
	(-1.726)	(-0.297)
LEVERAGE	-0.103	0.063
	(-0.672)	(0.617)
ROA	0.076	0.353
	(0.184)	(0.992)
LOSS	0.004	0.042
	(0.072)	(0.921)
VOLATILITY	0.085	-0.882**
	(0.156)	(-2.284)
BIG4	-0.005	-0.030
	(-0.131)	(-0.986)
COVERAGE	-0.018	0.016
	(-0.308)	(0.323)
CROSSLIST	0.081**	0.025
	(2.044)	(0.935)
IMPAIRMENT	0.208	1.487*
	(0.253)	(1.908)
Year fixed effects	Yes	Yes
Industry fixed effects	Yes	Yes
Observations	154	152
Adj. R-squared	0.182	0.265