Step Zero: Determinants and Implications of Reliance on the Qualitative Goodwill Impairment Assessment

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Abstract

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the Qualitative Goodwill Impairment Assessment

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I examine the use of qualitative versus quantitative impairment testing methods and their differential implications for future impairments and goodwill valuation. Using hand-collected data, I find that the likelihood of reliance on a qualitative assessment is decreasing in both the complexity of goodwill and the risk of an underlying goodwill impairment. I also find that the likelihood of large future goodwill impairments is lower on average for firm-years in which the firm relies on a qualitative assessment. Finally, I investigate investor perceptions of this choice and find evidence that investors place a premium on goodwill when firms rely on a qualitative assessment versus a quantitative test. This finding suggests that investors perceive a firm's goodwill impairment testing method choice as reflective of management's private information. Overall, results suggest that managers are not using the discretion in ASU 2011-08 opportunistically, which was a concern in implementing this new standard.

1. Introduction

Goodwill is arguably one of the most nebulous concepts in accounting, but its economic significance is vast. Of the 652 firms that were constituents of the Standard and Poor's 500 between 2011 and 2017, over 90% (590 firms) had non-zero goodwill balances at some point during this period. From July 2011 through December 2017, the mean (median) value of goodwill for these firms was 18.5 (15.3) percent of total assets. The frequency of goodwill impairments among these firm-years is also non-trivial. For firm-years with non-zero goodwill balances, the frequency of recognized goodwill impairments in any given year is approximately 12% with an average impairment equal to nearly three percent of total assets (or $447 million). Given the economic significance of goodwill and the subjectivity inherent in impairment testing, it is important to understand managers' choices in accounting for goodwill and whether these choices are predictive of real outcomes. In this study, I use a recent standard change related to goodwill impairment testing to explore whether managers appear to be abusing the discretion provided by this standard and whether the use of this standard has implications for the valuation of goodwill.

In September of 2011, the FASB issued ASU 2011-08, an amendment to the codification related to goodwill accounting. This update amended ASC 350 and allows companies to perform a qualitative assessment of the existence of a goodwill impairment, the results of which determine whether or not the two-step goodwill impairment test established under SFAS 142 (now ASC 350) is required. Although ASU 2011-08 predates the official launch of the FASB's Simplification Initiative, its issuance aligns with the Initiative's goal of reducing the costs and complexities of financial reporting for preparers while maintaining the "decision-usefulness" of financial information.

However, in order for information to be "decision-useful," it must be "faithfully represented" — that is, to the extent possible, it should be "complete, neutral, and free from error" — and "relevant" — i.e., "capable of making a difference in the decisions made by users" (SFAC No. 8, September 2010). The impact of ASU 2011-08 on the decision-usefulness of goodwill is not obvious ex-ante. On one side of the debate, opponents argued that "a qualitative assessment cannot determine whether fair value is greater than or less than its carrying amount" and that "the qualitative approach…will likely delay the recognition of goodwill impairment losses" (Valuation Research Corporation's comment letter to FASB, 2011). This argument reveals concerns about managers using the discretion inherent in ASU 2011-08 opportunistically, which could reduce the decision-usefulness of goodwill on average. On the other side of the debate, supporters of this standard "strongly [advocated] the adoption of rules that allow for thoughtful judgments by preparers of financial statements over 'bright line' prescriptive tests" (FedEx Corporation's comment letter to FASB, 2011). I hope to shed light on this debate by examining the determinants and implications of relying on a qualitative goodwill impairment assessment.

In this study, I first identify firm characteristics that are associated with the decision to rely on a qualitative assessment of goodwill impairment. Determining the types of firms that elect to rely on a qualitative assessment is both interesting from a descriptive standpoint and important in order to control for potential sources of endogeneity in subsequent tests.[1] Further, identifying the determinants of this choice allows for inferences about whether or not firms are using the discretion in ASU 2011-08 opportunistically, on average. Next, I examine whether reliance on a qualitative assessment is predictive of future goodwill impairments. Finally, I use value-relevance tests to

[1] The primary source of potential endogeneity in this study is self-selection bias given that firms can choose which goodwill impairment testing method to rely on. It is plausible that determinants of this choice are correlated with the incidence of future goodwill impairment and/or the market's valuation of goodwill, which, if not addressed, would cause the results to be confounded by self-selection bias.

examine whether investors' perceptions of goodwill vary depending on whether the firm relies on a qualitative assessment or a quantitative goodwill impairment test.

Using a sample of S&P 500 firms with material goodwill balances, I hand-collect 10-K disclosure data from July 2011 through December 2017 to determine whether the firm relied on a quantitative test or qualitative assessment for its goodwill impairment testing in a given year.[2] In approximately 34% of sample firm-years, the firm relied on a qualitative assessment for at least one reporting unit. I estimate a logistic regression to determine whether certain firm characteristics are associated with the choice to rely on a qualitative assessment. I predict that, absent managerial opportunism, it is less costly to rely on a qualitative assessment rather than a quantitative test when goodwill is less complex and when the ex-ante probability of impairment is low. Consistent with these predictions, I find evidence that, on average, firms with less complex and less risky goodwill are more likely to rely on a qualitative assessment. These findings suggest that managers are not opportunistically electing to rely on a qualitative assessment rather than a quantitative test, on average.

Next, I examine whether the likelihood of future goodwill impairments differs depending on whether the firm relies upon a qualitative assessment or a quantitative test. If managers use the qualitative assessment as a way to either cut corners or intentionally obfuscate information reflective of an underlying impairment, I expect that the choice to rely on a qualitative assessment over a quantitative test is associated with a higher likelihood of future goodwill impairments on average. However, if managers choose to rely on the qualitative assessment because they believe

[2] As discussed further in Section 2, it is possible that some firms perform the qualitative assessment, deem it necessary to perform step 1 of the quantitative test, and only disclose having performed the quantitative test. In this case, I would describe the firm as having "relied on" the quantitative test in that year. Furthermore, firms can perform the qualitative assessment for some reporting units but bypass this assessment for others. In my primary analyses, I restrict the sample to observations for which the firm relied on a qualitative assessment for either all or none of its reporting units.

the likelihood of impairment is low, I expect this choice to be associated with fewer future goodwill impairments. I find that, on average, the likelihood of recording a large goodwill impairment over the subsequent one, two, three, or four years is lower when a firm relies on a qualitative assessment.[3] This relation holds even after controlling for the ex-ante existence of a "cushion" between market value and book value and other leading indicators of goodwill impairment. However, among the subset of firms with a high ex-ante probability of impairment, there is some evidence that this relation is actually *reversed* – i.e., reliance on the qualitative assessment is either *not* associated or *positively* associated with the incidence of future impairments when firms appear to be using this assessment opportunistically. In conjunction with results of the determinants test, this finding suggests that managers are not using the qualitative assessment to obfuscate information or delay the recognition of goodwill impairments on average. Instead, these results suggest that managers' private information about future firm performance is reflected in the choice of impairment testing method.

Next, I conduct value-relevance tests to address the question of whether investors perceive a firm's choice of goodwill impairment testing method to have information content. It is possible that investors perceive goodwill to be less reliable when a firm performs a qualitative assessment rather than a quantitative impairment test. In this case, I would expect goodwill to be *less* value-relevant on average when a firm relies on a qualitative assessment. However, if investors interpret reliance on a qualitative assessment as reflective of managers' private information about future firm performance and this private information is not already reflected in other publicly observable signals, I would expect goodwill to be *more* value-relevant under a qualitative assessment. Finally,

[3] I define a "large" goodwill impairment as one that comprises at least 10% of the beginning goodwill balance. Results are robust but slightly weaker when using a 5% threshold. When I remove the impairment materiality threshold, the association between qualitative assessment reliance and future impairments becomes insignificant but remains negative.

it is plausible that investors do not perceive reliance on a qualitative assessment to be incrementally informative about how to value goodwill beyond other publicly available information. In this case, I expect no difference in the average value-relevance of goodwill between firm-years in which the firm relies on a qualitative assessment versus a quantitative test. Results of the value-relevance tests reveal that, on average, there is a goodwill premium for firms that rely on a qualitative assessment. This finding suggests that, contrary to some stakeholders' initial concerns, investors do not perceive goodwill to be less "decision-useful" on average when a firm relies on a qualitative assessment rather than a quantitative impairment test and in fact may perceive this choice as reflective of managers' private information about future firm performance. Given the endogeneity of this choice, I utilize my logistic determinants model to construct a propensity score matched sample. Results are inferentially similar when utilizing this sub-sample for the value-relevance tests.

I seek to contribute to the existing goodwill literature by shedding light on the determinants and implications of relying on a qualitative goodwill impairment analysis rather than the traditional quantitative impairment test. Further, given some stakeholders' initial concerns about the discretion allowed by ASU 2011-08, I provide evidence on whether this standard has had a negative impact on the "decision-usefulness" of goodwill for investors and whether managers have used this new discretion opportunistically on average. Overall, I find that better performing firms are more likely to rely on a qualitative assessment and that reliance on a qualitative assessment is negatively associated with large future goodwill impairments over the subsequent four years. This result differs from two concurrent studies that find some evidence of a *positive* association between the incidence of goodwill impairments and usage of the qualitative assessment (Black, Krupa, and Minutti-Meza 2019; Giedt, Moon, and Wang 2018) which I discuss in detail in Appendix E. I also

find that goodwill is *more* value-relevant on average for firms that rely on a qualitative assessment versus a quantitative test. These findings suggest that, on average, managers are *not* using the discretion inherent in ASU 2011-08 opportunistically. Instead, it appears that ASU 2011-08 has allowed companies to choose a less costly goodwill impairment testing method without eroding either 1) investor confidence in reported goodwill or 2) the reliability of reported goodwill. These findings speak to the concerns expressed by some parties during ASU 2011-08's exposure draft period. Finally, given that goodwill is economically important but often highly opaque, I provide some evidence on one element of goodwill disclosure, how investors perceive it, and how it can be used to predict future goodwill impairments.

2. Background

U.S. GAAP related to goodwill accounting and reporting has evolved over the last several decades as standard-setters attempt to improve the usefulness of reported goodwill for various groups of financial statement users. The first goodwill-related accounting standards promulgated in the U.S. were APB 16 and APB 17 which became effective in October of 1970. APB 16 established two methods of accounting for business combinations: the purchase method and the pooling method.[4] APB 17 mandated that any goodwill recorded in a business combination be amortized over its useful life (a maximum of 40 years) and regularly reviewed for impairment. In response to criticism of these standards in the late 1990s, the FASB issued SFAS 141 and SFAS 142 in 2001. SFAS 141 eliminated the pooling method, requiring that all business combinations be accounted for using the purchase method. In the exposure draft released prior to the issuance of

[4] Under the pooling method "the recorded assets and liabilities of the constituents [involved in the business combination] are carried forward to the combined corporation at their recorded amounts" (APB 16) and thus no goodwill is recorded. Only business combinations meeting 12 criteria were eligible for pooling method accounting. Under the purchase method, business combinations are accounted for as acquisitions, and goodwill is recorded as the difference between the purchase price and the "sum of the fair values of tangible and identifiable intangible assets less liabilities" (APB 16).

SFAS 142, the FASB "suggested that goodwill [is] a 'non-wasting asset' [and] should not be amortized" (Boennen and Glaum 2014). Consequently, after the issuance of SFAS 142, companies are no longer permitted to amortize goodwill; instead, companies are required to perform an annual test for goodwill impairment at the reporting unit level. Until the issuance of ASU 2011-08, this impairment test was required to be quantitative in nature. ASC 350-20-35-4 describes this two-step procedure as follows:

> The first step of the goodwill impairment test, used to identify potential impairment, compares the fair value of a reporting unit with its carrying amount, including goodwill….If [a reporting unit's] fair value exceeds its carrying amount, goodwill of the reporting unit is considered not impaired; thus, the second step of the impairment test is unnecessary…If the carrying amount of a reporting unit exceeds its fair value, the second step of the goodwill impairment test shall be performed to measure the amount of impairment loss, if any.

This quantitative impairment test was required for all U.S. public companies with material goodwill balances until 2011. In September of 2011, the FASB issued Accounting Standards Update 2011-08 ("ASU 2011-08") in response to concerns from private and public financial statement preparers, auditors, and others about the cost and complexity of performing step one of the two-step (quantitative) goodwill impairment test. ASU 2011-08 amends ASC 350-40 (formerly SFAS 142) and allows companies to perform a qualitative assessment of goodwill impairment before determining whether step one of the two-step impairment test is necessary. If, after assessing the "events and circumstances" that would be expected to affect reported goodwill, management determines it is "more likely than not" that the carrying value of a reporting unit exceeds its fair value, the company must proceed to step one of the two-step test. Otherwise, no two-step test is necessary.[5] See Figure 1 for the impairment testing method flowchart from ASC 350.

[5] In January of 2017, the FASB issued ASU 2017-04, which eliminates Step 2 from the quantitative goodwill impairment test. Instead of recognizing impairments as the difference between the carrying value and implied fair

3. Prior literature and hypothesis development

3.1 Managers' use of discretion: private information vs. agency theory

A significant body of prior literature has examined whether managers use accounting discretion opportunistically or to provide better information to financial statement users. Several of these studies relate specifically to goodwill impairment testing after the issuance of SFAS 142 (Beatty and Weber 2006; Ramanna and Watts 2012; Li and Sloan 2017). In their 2012 study on the implications of SFAS 142 for the timeliness of goodwill impairments, Ramanna and Watts posit two competing theories to explain managers' use of the discretion inherent in SFAS 142: the "private information" theory whereby managers use fair value estimates to convey private information about future cash flows; and agency theory whereby managers use this discretion opportunistically. The authors find evidence to support agency theory in their setting.[6] Similarly, Li and Sloan (2017) find that SFAS 142 has resulted in "inflated goodwill balances and untimely impairments," consistent with managers' opportunistic use of the discretion provided by this standard.

If SFAS 142 opened the door for opportunistic goodwill accounting, it is possible that managers also use the discretion afforded by ASU 2011-08 opportunistically. This was a primary concern among stakeholders regarding the issuance of this standard and is the subject of two

value of goodwill, the amount of goodwill impairment will now be the difference between the carrying and fair values of the reporting unit. This standard is effective for impairment tests beginning after December 15, 2019. Firms will still have the option to perform a qualitative assessment before determining whether a quantitative test is necessary.

[6] In order to test their hypotheses, the authors collect a sample of firms with indicators of impairment (i.e., two consecutive years of book-to-market ratios greater than one). They examine whether the frequency of goodwill write-offs among these firms varies according to proxies for managers' private information (positive share-repurchase activity and insider buying) and/or agency motives (including concerns related to compensation and debt covenant violations). Using chi-square tests, they do not find support for the private information hypothesis but find that goodwill *non-impairments* are disproportionately concentrated among firms with accounting-based debt covenants and firms with accounting-based CEO bonus plans. These findings suggest that managers' private incentives drive them to delay recognizing goodwill impairments, consistent with the agency explanation.

contemporaneous studies (Giedt et al. 2018; Black et al. 2019).[7] However, the discretion provided by ASU 2011-08 is likely much more limited than the discretion inherent in SFAS 142; thus, it is unclear ex-ante whether, on average, managers use the qualitative assessment consistent with the private information theory or agency theory. In this study, I gather several pieces of evidence to address this question. First, I examine the types of firms electing to rely on the qualitative assessment. In the absence of managerial opportunism, I expect the choice of goodwill impairment testing method to be driven by the relative costs of performing and justifying a firm's impairment testing under each method (i.e., qualitative versus quantitative). Second, I test whether reliance on a qualitative assessment is associated with future goodwill impairments. A higher incidence of future impairments for firms relying on a qualitative assessment would suggest that, on average, managers use this assessment opportunistically. Finally, I test whether the market values goodwill differently depending on a firm's choice of impairment testing method. This test provides evidence about whether investors perceive reliance on a qualitative assessment to be reflective of managers' private information or driven by opportunistic motives.

3.1.1 Determinants of reliance on qualitative assessment

I first investigate the types of firms choosing to rely on a qualitative assessment rather than a quantitative test. In this setting, managers have two distinct decisions. Their first decision is whether to rely on a qualitative assessment or a quantitative test for their goodwill impairment

[7] Giedt et al. (2018) conduct a pre-post analysis of ASU 2011-08 and conclude from their findings that the discretion inherent in this standard has allowed managers to "avoid and minimize goodwill impairments." However, this study does not identify firm-specific choices to rely on a qualitative versus a quantitative test. Black et al. (2019) find evidence suggesting that "firms performing a qualitative assessment have an incrementally higher likelihood of goodwill impairments compared to firms silent about the qualitative assessment in the post-adoption period." Their measurement of key variables, including the classification of "performing" firms, differs substantially from mine. See Appendix E for further details.

testing. Given that firms are not required to disclose their impairment testing method, the second decision managers make is whether to voluntarily disclose this information.[8]

In order to develop a predictive framework for the types of firms choosing to rely on the qualitative assessment, I turn to the prior literature on the determinants of accounting and disclosure choice. In the context of accounting choice, Bartov and Bodnar (1996) argue that "managers should choose [new accounting techniques] if the expected benefit is greater than the expected cost of implementation." In other words, rational managers will choose the alternative with the lowest expected net cost. Given that the primary objective of ASU 2011-08 was to "reduce the cost and complexity of testing goodwill for impairment," it is reasonable to believe that, for at least some firms, the cost of conducting a qualitative assessment is lower than the cost of conducting a quantitative test. However, the majority of corporations with material goodwill balances continue to rely on the quantitative impairment test (64% as of 2017), suggesting that the expected net costs of choosing to rely on one method over another are firm-specific.

I develop the following predictive framework assuming managers are *not* acting opportunistically and expect the empirical results to align with these predictions if this is the case. I assume that the cost to the firm of goodwill impairment testing has two components:[9] 1) the cost of actually conducting the impairment test and 2) the cost of justifying the methods and outcomes of their impairment test to regulators (specifically, auditors and the SEC). The cost of conducting the impairment test includes the costs of gathering relevant information, synthesizing and

[8] Given that firms choose to disclose their goodwill impairment testing method in 87% of my sample observations, I do not focus on the disclosure decision in this study. However, I do rely on the assumption that, if management chooses to make this disclosure, they cannot falsely represent their impairment testing method because they are constrained from doing so by the auditor. In untabulated results, I find no evidence that the "non-disclosers" have a higher likelihood of recognizing large future goodwill impairments.

[9] These two components are not necessarily mutually exclusive and may involve some iteration. It is possible that another relevant cost is the cost of negative investor perceptions of a firm's goodwill impairment testing method. However, given that a) this cost relates more to the firm's disclosure than the impairment testing itself and b) the difference in perceptions across testing methods is unclear ex-ante, I do not include this cost in my framework.

analyzing the information (which may involve hiring a valuation specialist), and concluding on the results of the analysis. I assume that the cost of conducting either impairment test is increasing in the complexity of goodwill but that, as complexity increases, the cost of the qualitative assessment increases at a higher rate than the cost of the quantitative test. There are unlikely to be substantial economies of scale in performing the qualitative assessment given the emphasis on assessing all relevant "events and circumstances." I also assume that, when complexity is low, the qualitative assessment is less costly than the quantitative test.[10] Refer to Figure 2A for a visual depiction of the expected relative costs as a function of goodwill complexity.

The cost of justifying the methods and outcomes of impairment testing to regulators includes gathering additional evidence and/or creating additional documentation in response to auditor questioning and addressing any subsequent correspondence/enforcement from regulatory bodies (e.g., SEC comment letters). As Deloitte notes in an article regarding the implementation of ASU 2011-08, companies "that elect to take advantage of the qualitative assessment option" will still be required to "prepare robust documentation capable of satisfying an auditor's challenge."[11] The firm goes on to explain that "the scrutiny of financial statements by the Securities and Exchange Commission might deter [companies], particularly those with complex business operations and an extensive goodwill balance…from adopting the qualitative assessment option without outside valuation assistance." I expect that the greater the risk of an underlying goodwill impairment (as perceived by regulators), the higher the cost to the firm of justifying their goodwill impairment

[10] Discussions with the Financial Reporting Directors of two large publicly traded companies lend support to these assumptions. One of these Directors explained that due to the company's acquisition intensity and multinational operations, it is actually costlier to gather and synthesize all the relevant "events and circumstances" necessary to conduct a satisfactory qualitative assessment at the reporting unit level than to conduct a quantitative test. Thus, his/her team typically bypasses the qualitative assessment. In contrast, the other Director explained that because his/her company only has one reporting unit, it is much less costly to conduct the qualitative assessment (by simply comparing market value to book value) than to perform a quantitative impairment test.

[11] http://deloitte.wsj.com/cfo/files/2013/02/qualitative_goodwill_impairment_assessment.pdf

testing. I assume that this cost is increasing in riskiness for *both* impairment testing methods but that the marginal cost is higher for the qualitative assessment than for the quantitative test. Refer to Figure 2B for a visual depiction of the expected relative costs as a function of the perceived riskiness of goodwill.

These assumptions about the relative costs of each goodwill impairment testing method lead me to expect that, absent managerial opportunism, the likelihood of relying on a qualitative test is decreasing in 1) goodwill complexity and 2) perceived goodwill riskiness. As such, I include several proxies related to these two constructs as potential determinants of this choice. Some of the following proxies relate more specifically to either goodwill complexity or goodwill riskiness, whereas others plausibly capture elements of both constructs.

First, I expect that, on average, the complexity of goodwill is increasing in firm size. All else equal, the larger the firm, the more likely the firm is to have complex, multinational and/or cross-industry operations, resulting in arguably more complex goodwill impairment testing.[12] Given that goodwill impairment testing must be conducted at the reporting unit level, I also expect that goodwill complexity is increasing in the number of reporting units with goodwill balances. Because reporting units are defined at the operating segment level or one level below, the potential "events and circumstances" relevant to goodwill impairment testing likely are more diverse for firms with more reporting units, resulting in greater complexity. [13] Similarly, firms with dispersed geographic operations must consider a variety of macroeconomic events and circumstances. Thus, I expect that the complexity of goodwill is also increasing in the number of geographic segments.

[12] It is also possible that larger firms have the necessary systems and processes in place to facilitate performing the quantitative test at a relatively low cost, in which case I would also expect a negative association between size and likelihood of relying on a qualitative assessment.

[13] This prediction aligns with the following disclosure from Danaher Corporation's 2017 10-K: "The Company elected to bypass the optional qualitative goodwill assessment allowed by applicable accounting standards and performed a quantitative impairment test for all reporting units as this was determined to be the most effective method to assess for impairment across a large spectrum of reporting units."

Based on the cost assumptions in Figure 2A, I expect *negative* associations between the choice to rely on a qualitative assessment and firm size, number of reporting units, and number of geographic segments.

I expect that the riskiness of an underlying goodwill impairment ("goodwill riskiness") is a function of a firm's recent acquisition and impairment history, recent performance, and other characteristics shown in prior literature (e.g., Ayres, Neal, Reid, and Shipman 2018) to be predictive of goodwill impairments. Prior studies demonstrate that a primary driver of goodwill impairment is overpricing at the time of acquisition (e.g., Gu and Lev 2011). To the extent that recent acquisition activity is positively associated with the risk of an underlying goodwill impairment, I would expect firms with greater recent acquisition activity to be *less* likely to rely on a qualitative assessment.[14] Similarly, the recent recognition of a goodwill impairment could increase the likelihood of recognizing goodwill impairments in the future. There is some evidence that goodwill impairment losses are autocorrelated over time,[15] leading me to expect the risk of an underlying goodwill impairment to be higher on average for firms that have recently recognized a goodwill impairment.

I also expect goodwill riskiness to be a function of a firm's recent performance. As noted by Hayn and Hughes (2006), "goodwill impairment is a result of the deteriorating performance of the acquired business." Furthermore, the FASB includes "a sustained decrease in share price" as a potential circumstance that management should consider in assessing the likelihood of a goodwill impairment (ASU 2011-08). Given that impairment testing is performed at the reporting unit level, the ideal performance measure would be reporting unit-specific. However, because such a

[14] However, it is also possible that firms with a recent acquisition would be *more* likely to rely on a qualitative assessment as they would have just recently conducted a purchase price allocation for the given acquisition.
[15] In a sample of all Compustat firms from 2011-2017, the autocorrelation coefficient (from a regression of a goodwill impairment indicator on the lagged indicator) is approximately 0.32 (not tabulated).

disaggregated measure is not available, I include a measure of overall firm performance in the determinants model. I expect that goodwill riskiness is negatively associated with recent performance and that firms with better recent performance are more likely to rely on a qualitative assessment in the absence of managerial opportunism. I also include a broad measure of ex-ante impairment probability that encompasses several variables (e.g., leverage, change in EBITDA, return volatility) shown to be predictive of goodwill impairments (Ayres et al. 2018).[16,17] Finally, I expect that both the perceived risk of an underlying goodwill impairment and regulatory scrutiny are increasing in the materiality of goodwill. Thus, I predict a negative association between the materiality of goodwill and the likelihood of relying on a qualitative assessment.

I also expect a firm's choice of goodwill impairment testing method to be influenced by the practices of peer firms. Prior literature has documented a "herding effect" associated with the timing and nature of voluntary disclosures (Tse and Tucker 2010; Jung 2013) by which firms observe the disclosures of peer firms and alter their disclosure practices accordingly.[18] It is plausible that this herding effect would apply to accounting method choices in addition to

[16] A related potential determinant is a firm's beginning book-to-market ("BTM") ratio. All else equal, the higher a firm's BTM ratio, the more likely it is that carrying value exceeds fair value at the reporting unit level. Along these lines, Lawrence et al. (2013) provide evidence that the likelihood of an asset write-off is positively associated with the firm's beginning BTM ratio with a discontinuity around a ratio of one. However, given that MTB is included in the impairment prediction model in Ayres et al. 2018 and that beginning BTM is highly correlated with my impairment probability variable, I exclude this measure from the determinants model.

[17] I also considered the possibility that a firm's auditor could influence management's choice of goodwill impairment testing method. However, it seems unlikely that an audit firm would establish one goodwill testing policy to which all of its clients are encouraged to adhere. All of the big four accounting firms wrote comment letters to the FASB regarding ASU 2011-08, each of which expressed both support for the initiative to reduce goodwill testing complexity and concerns about how the qualitative test would be properly implemented. As such, it is reasonable to assume that audit firms' approaches to this accounting issue are firm-specific and that firm-specific characteristics would drive the choice of goodwill testing method rather than the audit firm. When including fixed effects for each of the Big 4 audit firms in the determinants model (not tabulated), the coefficient on the Deloitte fixed effect is negative and significant, and the remaining fixed effects are insignificant.

[18] Tse and Tucker (2010) find that managers exhibit herding behavior in timing the release of bad news. They argue that these results align with the psychology theory of covariation, which predicts that "an agent's behavior [is attributed] to external factors to a larger extent when other agents exhibit similar behavior than when his action is unique." Jung (2013) finds strong evidence of intra-industry "diffusion of disclosure practices" and attributes some of this herding behavior to overlap in institutional investors.

voluntary disclosures. There is evidence of intra-industry "herding behavior" within the text of the comment letters submitted to the FASB regarding ASU 2011-08. For example, the comment letters from Comcast and Time Warner Cable (both in the telecommunications industry) are virtually identical. For these reasons, I predict that the choices of a firm's industry peers will have an impact on the firm's choice of impairment testing method.[19]

3.1.2 Implications of testing method for future goodwill impairments

Given the discretion inherent in applying ASU 2011-08, a natural question is whether managers use this discretion to delay the recognition of underlying goodwill impairments. I address this question by testing whether reliance on a qualitative assessment is associated with future recognition of goodwill impairments over one-, two-, three-, and four-year horizons. This allows me to infer whether managers are acting opportunistically in their decision to rely on one testing method over another.

Step 1 of the quantitative goodwill impairment test typically involves a discounted cash flow analysis whereby management makes a series of assumptions (e.g., future budgets, discount rate, terminal growth rate) to arrive at an estimated fair value for each reporting unit. If management is aware of inputs to this analysis that may be indicative of a goodwill impairment and has incentives to delay recognizing an impairment, it is possible they would elect to rely on a qualitative assessment in an attempt to obfuscate this information. In this case, I expect the choice to rely on a qualitative assessment to be associated with a higher likelihood of recognizing goodwill impairments in subsequent years.

[19] Another plausible determinant is litigation risk. If managers believe that relying on the qualitative assessment makes them more or less susceptible to litigation after a subsequent goodwill impairment, ex-ante litigation risk could affect this decision. Following Kim and Skinner (2012), I include return skewness, volatility, turnover, and sales growth as proxies for litigation risk in untabulated determinants tests. However, these variables are not significant determinants of impairment method choice. This is not altogether surprising given that securities litigation is most commonly based on SEC Rule 10b-5 which requires plaintiffs to demonstrate scienter. This is a difficult burden of proof, particularly given the legal precedent set in the U.S. Supreme Court's 2015 *Omnicare* decision.

Alternatively, managers' private information might lead them to believe that Step 1 of the quantitative test would reveal a substantial cushion between fair value and carrying value and deem this step unnecessary. In other words, managers might elect to rely on a qualitative assessment only when they believe that goodwill is unlikely to be impaired.[20] If the choice of goodwill impairment testing method is reflective of managers' private information, I expect future goodwill impairments to be less frequent when a firm relies on a qualitative assessment, all else equal.

A third possibility is that the choice of goodwill impairment testing method has no predictive power for goodwill impairments or that my sample period is not long enough to observe the ultimate recognition of previously delayed impairments. Prior literature recognizes the difficulty of identifying predictors of goodwill impairment (Ramanna and Watts 2012; Li and Sloan 2017) and suggests that goodwill impairments are delayed — i.e., "lag behind economic impairments" by three to four years (Hayn and Hughes 2006). I attempt to mitigate this potential issue by examining future impairments over a four-year horizon. However, managers' motivations for choosing one impairment testing method over another could be so varied that there is no systematic relation between this method choice and real future outcomes. Given that each of these possibilities is plausible, I state my first hypothesis in null form:

H1: Reliance on a qualitative goodwill impairment assessment is not associated with the likelihood of future goodwill impairments.

3.1.3 Investor perceptions of reliance on qualitative assessment

After investigating whether the choice of goodwill impairment testing method has implications for future outcomes (i.e., goodwill impairments), I use value-relevance tests to examine whether investors' perceptions of goodwill differ based on this choice. As noted by Barth, Beaver, and

[20] This scenario would be consistent with the statement made by Verizon's VP of Finance in his comment letter that the qualitative assessment would "reduce unnecessary costs associated with calculating the fair value of a reporting unit when there is no reasonable evidence of a potential impairment."

Landsman (2001), "an accounting amount is defined as value relevant if it has a predicted association with equity market values," and value-relevance is one way to operationalize the characteristics of "decision usefulness" as defined by the FASB. Prior value-relevance research has found a significant association between goodwill (both pre- and post-SFAS 142) and a firm's market value of equity, suggesting that investors perceive goodwill as having valuable information about the economic value of the company (Jennings, Robinson, Thompson, and Duvall 1996; Ahmed and Guler 2007). These studies provide evidence that investors use financial information "to assess the amounts and duration of cash flows associated with purchased goodwill and that these assessments are reflected in common stock prices" (Jennings et al. 1996). In this study, I examine whether these assessments differ depending on the goodwill impairment testing method relied upon.

In an efficient market, a firm's market value of equity equals the present value of expected future cash flows. Therefore, accounting information should be associated with market value of equity if investors believe it to be informative about either future cash flows or the discount rate. In the context of this study, I investigate whether investors believe that a firm's goodwill impairment testing method provides them with incremental information about the reliability of reported goodwill. This information could affect investors' assessments of the *amount* of future cash flows or the discount rate applied to future cash flows through what prior literature refers to as "estimation risk." As Botosan (1997) explains, "estimation risk [arises] from investors' estimates of the parameters of an asset's return or payoff distribution." In this framework, additional disclosure reduces uncertainty and thus estimation risk, resulting in a lower discount rate. However, it is unclear ex-ante whether reliance on a qualitative assessment would result in

more or less uncertainty. Furthermore, it is plausible that reliance on a qualitative assessment would shift investors' expectations of future cash flows either up *or* down.

One possibility is that investors perceive the qualitative assessment to be less rigorous and more subjective than the quantitative test, causing them to see reported goodwill as less reliable and more uncertain when a firm relies on a qualitative assessment. In order for this possibility to be plausible, investors must believe that in some scenarios, the subjective nature of the qualitative assessment leaves room for management to conclude that goodwill is not impaired when a quantitative test would suggest otherwise. Li and Sloan (2017) find evidence that "some managers have exploited the discretion afforded by SFAS 142 to delay goodwill impairments."[21] If investors perceive reported goodwill as less reliable for firms that rely on a qualitative assessment, I expect goodwill to be less value-relevant on average.

A second possibility is that investors perceive the choice to rely on a qualitative assessment as reflective of management's private information about future firm performance. In their 2001 review paper, Fields, Lys, and Vincent argue that "accounting provides an avenue through which managers disseminate privately held information, and the specific accounting method choice can play a key role in that communication process." Investors might believe that managers will only choose to rely on a qualitative assessment when their private information leads them to believe goodwill is unlikely to be impaired.[22] Thus, reliance on a qualitative assessment could reveal

[21] In order to arrive at this conclusion, the authors compare the frequency of goodwill impairments (of various magnitudes) in the pre-SFAS 142 era to those in the post-SFAS 142 era. They find a higher incidence of large goodwill impairments post-SFAS 142 and that goodwill impairments are more predictable (based on several market and financial variables) under SFAS 142 than under SFAS 121. They interpret this as evidence that goodwill impairments are less timely on average in the post-SFAS 142 era. The authors' sample period ends in 2011, the year ASU 2011-08 was issued.

[22] This belief would require an assumption that, at some point, the auditor's monitoring role makes it too costly for firms with "risky" goodwill to attempt to rely on a qualitative assessment. Even if the auditor permits the use of a qualitative assessment, the burden of proof required to persuade the auditor that the fair value "more likely than not" exceeds the carrying value could be sufficiently high such that it becomes *more* costly for management to rely on a qualitative assessment than a quantitative test when attempting to defer an impairment.

incremental information about the reliability of goodwill beyond that provided by other publicly available measures. In this scenario, I expect goodwill to be more value-relevant on average for firms that rely on a qualitative assessment.

Finally, it is possible that investors do not perceive any incremental information in the choice of impairment testing method, in which case I expect this choice to have no impact on the value-relevance of goodwill. Given these possibilities, I do not make a directional prediction for the association between impairment method choice and investors' valuation of goodwill and state my next hypothesis in null form:

H2: The goodwill impairment testing method a firm chooses to rely on is not associated with the value-relevance of goodwill.

4 Data and sample selection

To construct my initial sample, I identify all firms that were constituents of the S&P 500 at any point from 2011 through 2017 by using the SPMI (S&P Major Index Identifier) in Compustat, where an SPMI value of 10 indicates membership in the S&P 500. This results in an initial sample of 652 firms. I begin my sample period in August of 2011 because ASU 2011-08 became effective in September 2011 with early adoption permitted "if an entity's financial statements for the most recent annual or interim period [had] not yet been issued" (ASU 2011-08). I restrict my sample to those firms with goodwill balances that comprise at least five percent of total assets, resulting in 2,651 firm-year observations for 462 unique firms.[23] I hand-collect goodwill disclosure data for each of these firm-year observations by reading the footnotes and MD&A pertaining to goodwill in the corresponding 10-K and hand coding a variable (*Qual*) based on the disclosure provided. Please refer to Appendix A for examples of various goodwill disclosures. I set *Qual* equal to one

[23] According to SEC §210.5-02, filers must "state separately each class of [intangible] assets which is in excess of five percent of the total assets." By setting this threshold, I eliminate the potential issue caused by self-selection in the decision to disaggregate beyond the required level.

if the goodwill disclosure indicates that the firm relied on a qualitative assessment for their annual goodwill impairment test (for *any* reporting unit) and zero otherwise.[24] If it is difficult to ascertain the type of impairment analysis relied upon based on a firm's disclosure, I leave *Qual* missing. This was the case for 361 observations (approximately 13.6% of firm-years in my hand-collection sample). I exclude these observations and 126 observations for which the corresponding 10-K is not available on the SEC's EDGAR website.

Because firms are permitted to conduct a qualitative assessment for some reporting units and a quantitative test for others, I also hand-collect a variable *QualPct*, which equals the percentage of reporting units for which a qualitative test is performed. This variable takes a value of either zero or one for over 86% of sample observations, indicating that the vast majority of firms rely on one method for all reporting units in a given year. For my primary analyses, I exclude the 263 observations for which *QualPct* does not equal zero or one but include these observations in untabulated robustness tests (discussed in subsequent sections). By restricting the sample in this way, I reduce measurement error related to *Qual*, thereby increasing the power of my tests. After excluding an additional 23 observations for which necessary data are missing, the resulting sample consists of 1,878 observations for 416 unique firms. Refer to Table 1 for further details regarding sample selection.

I present basic descriptive statistics for reliance on the qualitative goodwill impairment assessment in Table 2. For approximately 34% of my full sample, the 10-K disclosure indicates that the company relied on a qualitative assessment rather than a quantitative impairment test for at least one reporting unit. Within my primary sample (i.e., observations for which *QualPct* equals

[24] I encountered a few disclosures that indicated the firm had started with a qualitative assessment and deemed it necessary to move onto the quantitative test for at least some of its reporting units. Given that I am interested in the method the firm ultimately *relies* upon, I set *Qual* = 0 for these observations.

either zero or one), 26% of 10-K disclosures indicate reliance on the qualitative assessment. From Panel B, it is apparent that reliance on the qualitative assessment was at its lowest in 2011 — which is unsurprising given that ASU 2011-08 did not become effective until September of 2011 — and peaked in 2013, remaining relatively flat thereafter. The distribution of qualitative assessment reliance by GIC sector in Panel C reveals substantial variation across sectors; within the financial sector, firms rely on a qualitative assessment in approximately 45% of firm-years, whereas this number is only 20% for firms in the telecommunications sector.

5 Research Design and Results

5.1 Determinants of goodwill impairment testing method

In order to identify factors associated with the choice to rely on a qualitative goodwill assessment, I estimate the following logistic determinants model:

$$Qual_{it} = \beta_0 + \beta_1 LnAssets_{it} + \beta_2 PredRepUnits_{it} + \beta_3 GeoSegments_{it} + \beta_4 AcqIntensity_{it} + \beta_5 RecentImp_{it} + \beta_6 Momentum_{it} + \beta_7 HighImpProb_{it} + \beta_8 GoodwillPct_{it} + \beta_9 IndustryAvg_{it} + \beta_{10} LagQual_{it} + \varepsilon \quad \textbf{(1)}$$

where *Qual* is an indicator variable equal to one (zero) if the firm relied on a qualitative (quantitative) goodwill assessment for any reporting unit during the year. Because the number of reporting units is disclosed in only 58% of my sample observations, I include a measure for "predicted" reporting units (*PredRepUnits*). To construct this measure, I regress number of reporting units on number of business segments, number of operating segments, and industry indicators for the subsample of observations with a disclosed number of reporting units. I apply the resulting coefficients to the remaining observations to create a predicted value for number of reporting units. Thus, *PredRepUnits* equals the disclosed number of reporting units when this disclosure is available and the predicted number of reporting units otherwise. *GeoSegments* is the number of geographic segments for a given firm-year from the Compustat Historical Segments

file. *AcqIntensity* is the amount of goodwill acquired in the preceding two years scaled by total assets, and *RecentImp* is an indicator variable equal to one if the firm recognized a goodwill impairment in the preceding two fiscal years and zero otherwise. *Momentum* is market-adjusted monthly returns over the previous 12 months, and *HighImpProb* is an indicator variable equal to one if the firm-year's ex-ante goodwill impairment probability score (calculated using a prediction model adapted from Ayres et al. 2018) is in the top decile and zero otherwise. Refer to Appendix B for further details regarding the calculation of this variable. *GoodwillPct* is goodwill as a percentage of market value of equity, and *IndustryAvg* is the contemporaneous industry average of *Qual* (calculated at the GIC sector level). Results are similar when using the lagged industry average (not tabulated). In two out of three specifications, I include the lagged value of *Qual* at the firm level given that this choice is highly "sticky."

I exclude firm fixed effects from the determinants models as I expect their inclusion would subsume much of the effect of interest given that the choice to rely on a qualitative assessment versus a quantitative test is highly autocorrelated by firm (at approximately 0.65). I am more interested in investigating the *types* of firms choosing to rely on a qualitative assessment than the determinants of within-firm variation in this choice and thus exclude firm fixed effects from these models. When including firm fixed effects in the estimation of the determinants model (not tabulated), over 75% of observations are dropped due to a lack of variation in the dependent variable within firm.

Descriptive statistics for the variables in the determinants model are presented in Table 3. For the full sample, goodwill comprises 26% of market value of equity on average with a median value of 20%. This ratio is significantly higher for firm-years in which the firm relies on a quantitative test (mean of 28%) versus a qualitative assessment (mean of 20%). Goodwill impairments are

relatively frequent, with 20% of firm-years reporting a goodwill write-off in the preceding two years. Sample observations have assets of $29.1 billion on average with a median value of $12.3 billion, indicating a highly right-skewed distribution. Firms that rely on a qualitative assessment are considerably smaller on average than those that rely on a quantitative assessment with a mean asset value of $21.7 billion versus $31.7 billion. Interestingly, although *HighImpProb* is significantly more likely to equal one for firm-years in which a quantitative test was performed, *HighImpProb* still equals one for 8% of firm-years in which the firm relied on a qualitative assessment.

Results of estimating the logistic determinants model are presented in Table 4. In column 1, I estimate equation (1) including *IndustryAvg* and *LagQual* but without year and industry fixed effects. In column 2, I exclude both *IndustryAvg* and *LagQual* but include both year and industry fixed effects to control for trends in reliance on the qualitative assessment by year and/or industry. I designate industries based on the 11 Global Industry Classification (GIC) sectors. This specification allows me to assess the incremental impact of each determinant on the propensity to rely on a qualitative assessment after controlling for the prior year's choice. Column 3 shows results of estimating equation (1) without *IndustryAvg* but with year and industry fixed effects. Average marginal effects are adjacent to the corresponding coefficients. Given that goodwill impairment testing method reliance is highly autocorrelated by firm, I estimate a Cox proportional hazard model, which "[exploits] each firm's time-series data by including annual observations as time-varying covariates" (Shumway 2001) up until the *first* time a firm chooses to rely on a qualitative assessment. Results of the hazard model, which indicate the determinants of a firm's reliance on a qualitative assessment for the first time, are presented in column 4. I cluster standard errors by firm in all specifications.

The results in Table 4 suggest a negative relation between reliance on a qualitative assessment and number of reporting units. This finding aligns with the prediction that beyond a certain threshold of complexity, conducting a qualitative assessment becomes costlier than conducting a quantitative test. There is no evidence, however, of an association between either firm size or number of geographic segments and choice of impairment testing method.[25] The results across all specifications indicate that firms with recent acquisition activity and/or goodwill impairments are significantly *less* likely to rely on a qualitative assessment.[26] The marginal effect of having a recent goodwill impairment is a 6.4 percent decrease in the likelihood of relying on a qualitative assessment (in column 1). The coefficient on *Momentum* is significantly positive across all specifications, indicating that the better a firm's prior stock price performance, the higher the firm's likelihood of relying on a qualitative assessment. Contrary to predictions, the coefficient on *HighImpProb* is not significant. In all specifications, *GoodwillPct* is significantly negatively associated with reliance on a qualitative assessment.

Finally, *IndustryAvg* is positively associated with the choice to rely on a qualitative assessment, providing evidence that firms are influenced by the contemporaneous behavior of their peers in deciding which goodwill impairment testing method to rely on.[27] As expected, *LagQual* is a strong predictor of *Qual*; however, its inclusion in the model does not subsume the effects of the other

[25] When excluding *PredRepUnits*, the coefficient on GeoSegments is significantly negative (untabulated); however, this association is subsumed in the specifications reported in Table 4.

[26] In untabulated tests, I examined whether the average three-day stock return around a firm's preceding acquisition announcements is associated with the firm's choice of impairment testing method. The rationale for this is that, if the market correctly perceives the value of a particular acquisition upon announcement, a positive (negative) return should be negatively (positively) associated with the risk of a subsequent goodwill impairment related to the acquisition. However, these measures were insignificant (and their inclusion did not alter any other results).

[27] When I omit *IndustryAvg* and industry fixed effects (untabulated), the percentage of industry peers with a prior year goodwill impairment is significantly *negatively* associated with reliance on a qualitative assessment. This aligns with my expectation that the likelihood of relying on a qualitative assessment is decreasing in the perceived riskiness of goodwill. This assumes managers believe that *auditors* (or regulators) will perceive the risk of a goodwill impairment to be higher if industry peers have recently recognized a goodwill impairment, regardless of the *manager's* perception of riskiness.

significant determinants. Results of the hazard model are presented in column 4 of Table 4 and suggest that number of reporting units, recent acquisition and impairment activity, and momentum are significant determinants of the *initial* choice to rely on a qualitative assessment instead of performing a quantitative test. The area under the ROC curve is approximately 88% in both columns 1 and 3, indicating that the specifications that include *LagQual* have "excellent" explanatory power (Hosmer and Lemeshow 2000, p.162).

Taken together, these findings align with the expectation that when goodwill is more complex, the relative cost of relying on a qualitative assessment increases. Furthermore, these results suggest that it is costlier to justify relying on a qualitative assessment (instead of a quantitative test) to regulators, particularly when the risk of an underlying impairment is high. Overall, results of the determinants test provide preliminary evidence that, on average, managers are not using the qualitative assessment opportunistically.

5.2 Impairment testing method and future goodwill impairments

In the exposure draft period before ASU 2011-08 was issued, some stakeholders voiced concerns that allowing firms to rely on a qualitative assessment would "likely delay the recognition of goodwill impairment losses." This would erode the quality of reported goodwill and potentially increase the likelihood of recognizing impairment losses in the future. In this case, one might infer that, on average, managers have used the discretion inherent in ASU 2011-08 opportunistically. To examine this possibility, I test whether reliance on a qualitative assessment is predictive of future goodwill impairments by estimating the following logistic regression:

$$LargeFutureImp_{it+1\text{-}t+n} = \beta_0 + \beta_1 Qual_{it} + \beta_2 ROA_{it} + \beta_3 Loss_{it} + \beta_4 AcqIntensity_{it} + \beta_5 Momentum_{it} + \beta_6 RecentImp_{it} + \beta_7 HighImpProb_{it} + \beta_8 LnAssets_t + \Sigma\beta IndustryFE + \Sigma\beta YearFE + \varepsilon \quad \textbf{(2)}$$

where *LargeFutureImp* is an indicator variable equal to one if the firm recognizes a "large" goodwill impairment in the subsequent period (either the following one-, two-, three-, or four-year

period) and zero otherwise. I consider an impairment "large" if it exceeds 10 percent of the firm's beginning goodwill balance.[28] Similar to Hayn and Hughes (2006), I include several variables in an attempt to control for overall firm performance and acquisition intensity, which are likely associated with future impairments. *ROA* is the firm's current year income before extraordinary items scaled by total assets, and *Loss* is an indicator variable equal to one if the firm has a current year net loss and zero otherwise. *AcqIntensity* is the amount of goodwill acquired in the preceding two years scaled by total assets. As Hayn and Hughes (2006) note, prior literature suggests that "firms engaged in an acquisition 'spree' tend, on average, to overpay for the acquired firms," which increases the likelihood of future goodwill impairments. I include *Momentum*, *RecentImp*, *HighImpProb*, and *LnAssets* as defined in equation (1). I also include industry and year fixed effects and cluster standard errors at the firm level.

Given that *HighImpProb* is a proxy for the ex-ante probability of a goodwill impairment, I expect this variable to be a positive predictor of future goodwill impairments. Additionally, a significant coefficient on *Qual* would provide evidence that the choice of goodwill impairment testing method is predictive of future goodwill impairments. One caveat to this analysis is that goodwill impairments have been found to "lag behind the economic impairment of goodwill by an average of three to four years" (Hayn and Hughes 2006). Thus, it is possible that a longer time horizon is necessary to detect a relation between the independent variables and the likelihood of future goodwill impairments.

Results of equation (2) are presented in Table 5. Note that these tests are performed on the primary sample (i.e., observations for which the firm relied on the same testing method across all

[28] Results (untabulated) are robust, but slightly weaker, when using a threshold of 5% of the beginning goodwill balance. When I remove the impairment materiality threshold, the association between qualitative assessment reliance and future impairments becomes insignificant but remains negative.

reporting units). The column numbers correspond with the time horizon over which *LargeFutureImp* is measured (e.g., in column 3, *LargeFutureImp* equals one if the company recognizes a goodwill impairment greater than ten percent of beginning goodwill in the subsequent three years).

In columns 2 and 3, the coefficient on *HighImpProb* is positive and significant as expected.[29] The coefficients on *RecentImp* are also positive and significant across all specifications, suggesting that goodwill impairments tend to recur, and there is evidence of a positive association between *AcqIntensity* and recognizing an impairment over the subsequent three to four years. Finally, size and *Momentum* are negatively associated with the incidence of future impairments.

Across all specifications, the coefficient on *Qual* is negative and significant.[30] The marginal effects of relying on a qualitative assessment range from a 2% reduction (column 1) to a 7% reduction (column 4) in the likelihood of recognizing a large future goodwill impairment. This is similar in magnitude to the marginal effects of having a recent goodwill impairment and being in the top decile of ex-ante impairment probability. Because this association holds even after controlling for other predictors of goodwill impairment, it is reasonable to conclude that reliance on a qualitative assessment provides incremental information about the likelihood of recognizing a future impairment, which should be of interest to market participants.

One important assumption underlying the above conclusion is that managers cannot use the qualitative assessment to delay the recognition of an impairment indefinitely. If this assumption

[29] For robustness, I replace *HighImpProb* with an alternative proxy for ex-ante impairment risk, *NoCushion*, in untabulated tests. *NoCushion* is an indicator variable equal to one when the pre-impairment value of goodwill exceeds the "cushion" between market value of equity and pre-impairment book value of equity, and this variable is significantly positively associated with the incidence of large future impairments over all four time horizons.

[30] For robustness, I re-estimate these tests including the observations for which *QualPct* is between zero and one (untabulated). The coefficient on *Qual* remains negative and significant in columns 2, 3, and 4, but the significance is weaker. This is not surprising. If firms rely on a qualitative assessment for some but not all reporting units, the reporting units for which the firm conducts a quantitative test are likely more at risk of having an underlying goodwill impairment. Finally, results are robust to using a 5% threshold in defining *LargeFutureImp*.

were invalid, one could interpret the results in Table 5 as evidence that, on average, managers use the qualitative assessment *in order to* delay or avoid recognizing an impairment. This interpretation would be consistent with the conclusion drawn by Giedt et al. (2018). However, two features of my study suggest that this interpretation does not reflect economic realities. First, the time horizon for my tests of future impairments extends four years in the future. Hayn and Hughes (2006) note that, after the implementation of SFAS 141, "there [existed], on average, a time lag of three to four years between the deterioration in the performance of the acquired business that gave rise to the goodwill and the actual write-down of that goodwill." Even if managers were able to use the discretion in the qualitative assessment to temporarily delay recognizing an impairment, it is unlikely they could successfully 'fool' their auditors for several consecutive years. Second, this alternative interpretation assumes that managers are not recognizing goodwill impairments when performance indicators suggest that they *should*. However, as the results of my determinants tests suggest, the firms that rely on a qualitative assessment are, on average, those that are performing *better* (and thus are at a lower risk of having an underlying impairment). Thus, it is more plausible that, on average, managers' choice to rely on a qualitative assessment is reflective of their private information that the risk of an underlying goodwill impairment is low.

Although the results in Table 5 suggest that reliance on a qualitative assessment is a negative predictor of future impairment *on average*, it is plausible that this association varies in the cross-section. Specifically, I expect that when the ex-ante probability of goodwill impairment is high and the manager still elects to rely on a qualitative assessment, this will result in a higher likelihood of a large future impairment. This could be the result of the manager opportunistically delaying impairment recognition *or* due to the qualitative assessment's failure to identify an underlying impairment despite the manager's good faith effort. In order to examine this possibility, I re-

estimate equation (2) including an interaction between *Qual* and *HighImpProb*, a proxy for the ex-ante probability of an underlying goodwill impairment. As in Table 5, standard errors are clustered at the firm level.

Results of these tests are presented in Table 6 and are generally consistent with those in Table 5. However, now that the model allows the coefficient on *Qual* to vary by ex-ante impairment probability, *Qual* has a stronger negative association with future goodwill impairments. In columns 1 and 3, the coefficient on the interaction between *Qual* and *HighImpProb* is positive and significant and is even larger in magnitude than the coefficient on *Qual*, indicating that the negative association between *Qual* and future impairments is actually *reversed* when the firm has a high ex-ante probability of goodwill impairment.[31] In conjunction with the results from Table 5, these results suggest that although managers do not use the qualitative assessment opportunistically on *average*, reliance on the qualitative assessment appears to be associated with delayed goodwill impairments for firms with high ex-ante impairment probability.[32]

5.3 Value-relevance tests

After determining whether the choice to rely on a qualitative assessment is associated with the incidence of future goodwill impairments, I investigate whether this choice is associated with the value-relevance of goodwill (H1). To do so, I estimate equation (3) following Jennings (1996).

$$MVE_{it+1} = \beta_0 + \beta_1 Goodwill*Qual_{it} + \beta_2 Goodwill_{it} + \beta_3 OtherAssets_{it} + \beta_4 TotalLiab_{it} + \beta_5 Qual_{it} + \Sigma\beta Controls_{it} + \Sigma\beta Goodwill_{it}*Controls_{it} + \varepsilon \quad \textbf{(3)}$$

where *MVE* is the market value of equity three months after fiscal year-end, and *Goodwill*, *OtherAssets*, and *TotalLiab* are goodwill, all other assets, and total liabilities (respectively) as of

[31] T-tests reject the null that the coefficients on *Qual* and *Qual***HighImpProb* are equal for each of these columns (not tabulated).

[32] Note in Table 3 that approximately 8% of firm-years for which *Qual*=1 are considered to have high ex-ante impairment probability (*HighImpProb*=1) versus 11% for the *Qual*=0 subsample. When using *NoCushion* in lieu of *HighImpProb*, the interaction with *Qual* is positive and significant across all four time horizons (not tabulated).

year-end. *Controls* represents a vector of control variables from the determinants model and include *RecentImp*, *AcqIntensity*, and *HighImpProb*.[33] The coefficient of interest is β_1. A significant coefficient on the interaction between goodwill and the qualitative assessment indicator would provide evidence in support of rejecting the null hypothesis that the choice of goodwill impairment testing method has no effect on the value-relevance of goodwill, suggesting that investors perceive incremental information in this choice.

I include interactions between goodwill and each of the three control variables (*RecentImp*, *AcqIntensity*, and *HighImpProb*) because it is plausible that investors would value goodwill differently depending on the firm's recent goodwill impairment and/or acquisition activity. *HighImpProb* is intended to capture the perceived risk of an underlying goodwill impairment. I expect investors to discount goodwill for firms in the top decile of predicted impairment probability, resulting in a negative coefficient on the interaction between goodwill and *HighImpProb*. It is crucial to control for the risk of an underlying goodwill impairment (e.g., *HighImpProb*) as well as the interaction between this construct and goodwill; otherwise, it is impossible to speak to whether reliance on a qualitative assessment is incrementally informative beyond other publicly available information.

Prior value-relevance research has recognized the potential problems introduced by the "scale effect" in price-level regressions (Barth and Kallapur 1996; Easton and Sommers 2003). Barth and Kallapur (1996) note that "cross-sectional scale differences among sample firms" can result in heteroscedastic error terms and suggest that "when scale differences are of concern, accounting researchers should…report inferences based on White standard errors." Easton and Sommers (2003) provide compelling evidence of coefficient bias resulting from scale differences whereby

[33] I do not control for *LnAssets*, *Momentum*, or *GoodwillPct* in the value-relevance tests as each of these variables has a mechanical association with market value of equity (the dependent variable).

"large firms [have] undue influence on the estimates of the regression coefficients." In order to remedy this issue, Easton and Sommers (2003) propose the use of a weighted least squares estimation method in which market value is specified as the weighting variable (or deflator).[34] Given these two econometric concerns, I employ a weighted least squares method for the value-relevance tests in addition to using ordinary least squares.

A common concern in examining the consequences of a voluntary accounting practice or disclosure is potential self-selection bias. In the context of this study, self-selection will bias the estimated coefficients if the determinants of a firm's choice to rely on a qualitative assessment are correlated with the market's valuation of goodwill. In order to mitigate this potential issue, I use propensity score matching to match "treatment" (*Qual* = 1) observations to "control" (*Qual* = 0) observations on the propensity score resulting from the logistic estimation of equation (1).[35] Propensity score matching is useful when the "treatment" is largely explained by observable factors and when the functional form of the relation between the determinants and the outcome variables is unknown (Tucker 2010). In this case, the explanatory power of the determinants model is excellent (with an area under the ROC curve of 0.88), suggesting that the choice of impairment testing method is largely explained by the identified variables.[36] Although I primarily draw inferences from tests on the full sample, given the possibility of non-linear relations between the

[34] I choose lagged market value of equity as my weighting variable. Untabulated results are robust to using the dependent variable (i.e., market value of equity three months after fiscal year end) as the weighting variable. This approach effectively results in "a regression of a column of ones on the inverse of market [value] and each of the accounting variables deflated by market [value]" (Easton and Sommers 2003).

[35] I match without replacement using a caliper width equal to 20% of the standard deviation of the propensity score, which aligns with the optimal caliper width recommended by Austin (2010).

[36] However, Shipman, Swanquist, and Whited (2017) note that it is a "common misperception that a PSM matching model should be specified based on fit or predictive power" and that "the goal is to balance potentially confounding or misspecified covariates between treatment groups." Please refer to Appendix D where I present descriptive statistics on the propensity score-matched sample as evidence of covariate balance across treatment and control groups.

observable determinants and the outcome variable, I re-estimate equation (3) using the matched sample.

Results of estimating equation (3) on the full sample and the propensity score matched sample are presented in columns 1-2 and 3-4 of Table 7, respectively. My primary tests exclude firm-years with goodwill impairments given that a quantitative test necessarily had to have been performed for all impairment firm-years, although results are robust to including these observations (not tabulated). The odd-numbered columns show results from estimating equation (3) using weighted least squares (with White standard errors), and the even-numbered columns include results of the ordinary least squares specification (with standard errors clustered by firm and year).

Across all columns, the coefficients on *Goodwill*, *OtherAssets* and *TotalLiab* are significant and of reasonable magnitudes.[37] Notably, goodwill appears to be more value-relevant than other assets. Consistent with expectations, the coefficient on the interaction between *Goodwill* and *HighImpProb* is negative and significant in columns 1, 2, and 3, suggesting that investors discount goodwill when the perceived riskiness of an underlying goodwill impairment is high. Results are robust to using *NoCushion* in lieu of *HighImpProb* (untabulated).

The primary coefficient of interest is on the interaction between *Goodwill* and *Qual*. This coefficient is positive and significant across all four specifications. This result suggests that, after controlling for other factors that affect the valuation of goodwill, investors place a premium on goodwill for firms that rely on a qualitative assessment. One explanation for this finding is that investors perceive reliance on a qualitative assessment to be reflective of managers' private information about future firm performance.

[37] Theory suggests that the predicted coefficients on assets and liabilities in a valuation model are 1 and -1, respectively. However, as noted by Holthausen and Watts (2001), coefficients will only be exactly one in the absence of any measurement error.

The robustness of the results to using a propensity score matched sample (columns 3 and 4) provide corroborating evidence that the main results are not driven by underlying differences in the identified (observable) control variables between firms that rely on a qualitative assessment and those that perform a quantitative test. It is likely that there are *unobservable* factors associated with both the choice to rely on a qualitative assessment and the market's valuation of goodwill – in fact, my results suggest that one such factor is managers' private information about future firm performance. However, this "selection on unobservables" (Lennox, Francis, and Wang 2012) issue is not a problem for the inferences I draw in this study. Rather, it allows for a consistent interpretation of my results: that managers use their private information in choosing a goodwill impairment testing method and that investors perceive this choice to be reflective of managers' private information. However, I cannot rule out the possibility of *observable* correlated omitted variables, which limits my ability to conclusively speak to *why* there is a premium on goodwill for firms relying on a qualitative assessment.

Next, I conduct a falsification test to further address the concern that some types are firms are simply more likely to rely on a qualitative assessment *and* to have more value-relevant goodwill. To do so, I examine the difference in the value-relevance of goodwill before the issuance of ASU 2011-08 (the "pre-period") between firms that largely rely on a qualitative assessment versus those that largely rely on a quantitative test during the sample period. If reliance on a qualitative assessment truly affects investors' perceptions of a firm's goodwill, I expect to see no difference in the value-relevance of goodwill between these two groups in the pre-period as the qualitative assessment was not yet permitted. Untabulated results of this analysis reveal that, in the pre-period, goodwill is *not* more-value relevant for firms that largely rely on a qualitative assessment versus a quantitative test post-ASU 2011-08. This null result provides some assurance that it is not simply

the case that some types of firms are more likely to rely on a qualitative assessment *and* to have more value-relevant goodwill. However, the persuasiveness of this test relies on the assumption that these omitted firm characteristics remained constant from the pre-period to the sample period.

6 Conclusion

In this study, I examine the implications of a recent standard change that allows firms to reduce the costs and complexities of goodwill impairment testing by conducting a qualitative assessment rather than a traditional quantitative test. I find that firms for which goodwill is less complex and/or the probability of goodwill impairment is low are more likely to rely on a qualitative assessment for their impairment testing. Further, I find evidence that reliance on a qualitative assessment is negatively associated with the likelihood of recognizing a goodwill impairment in subsequent years. Finally, I find that investors place a substantial premium on goodwill when a firm relies on a qualitative assessment rather than a quantitative impairment test, suggesting that investors perceive incremental information in this choice. Overall, the evidence suggests that, on average, managers are not using the discretion provided by ASU 2011-08 opportunistically, that managers choose to rely on a qualitative assessment when they believe a goodwill impairment is unlikely, and that investors perceive this choice as reflective of managers' private information about future firm performance.

These findings should be of interest to the FASB as they suggest that the provisions in ASU 2011-08 have allowed companies to choose a less costly goodwill impairment testing method without eroding either 1) investor confidence in reported goodwill or 2) the reliability of reported goodwill. My results provide evidence that is relevant to the concerns expressed by some parties during ASU 2011-08's exposure draft period. Furthermore, this study is relevant to managers of firms with goodwill balances who could benefit from understanding how investors perceive the

choice of one impairment testing method over another. Finally, my findings contribute to the existing literature by identifying another significant predictor of future goodwill impairments.

Given that ASU 2011-08 was enacted relatively recently, this study will benefit from additional years of data. The choice of goodwill impairment testing method is just one element of goodwill disclosure, a rich source of information that can potentially be used to better understand managers' choices in accounting for goodwill, the incentives that shape their goodwill disclosures, and how investors perceive these disclosures.

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Appendix A: Examples of Goodwill Impairment Testing disclosure

Qualitative assessment:

> *"Impairment of Goodwill*: See our accounting policy related to testing goodwill for impairment in Note A in the notes to the consolidated financial statements.
>
> For the annual test in 2014, **we performed an optional qualitative assessment for our North American Commercial and Canada Retail reporting units** (combined goodwill of $1.28 billion at the time of the impairment test) to determine whether it was more likely than not that their fair values were less than their carrying amounts. The assessment requires management to identify the key drivers of fair value for the reporting units, to consider all significant events and circumstances that are relevant to their fair values, and then to weigh the positive and negative evidence. Examples of factors considered include trends and conditions in the macro economy, industry, and financial markets, as well as Staples-specific factors that would likely be considered by market participants, such as recent financial results and our latest forecasts, our current strategic plans, and our stock price. This process requires management to exercise a great deal of judgment. Based on our assessment, we concluded that it was more likely than not that the reporting units' fair values continued to exceed their carrying values by significant margins, and accordingly that it was not necessary to perform the two-step impairment test for these reporting units."

- Staples' 2014 10-K

Quantitative test:

> "When performing the quantitative two-step goodwill impairment test, Mattel utilizes the fair value based upon the discounted cash flows that the business can be expected to generate in the future (the "Income Approach"). The Income Approach valuation method requires Mattel to make projections of revenue, operating costs, and working capital investment for the reporting unit over a multi-year period. Additionally, management must make an estimate of a weighted average cost of capital that a market participant would use as a discount rate. Changes in these projections or estimates could result in a reporting unit either passing or failing the first step of the impairment model, which could significantly change the amount of any impairment ultimately recorded.
>
> **During the third quarter of 2015, Mattel assessed its goodwill for impairment by performing the quantitative two-step goodwill impairment test**. Mattel determined that its goodwill was not impaired since, for each of the reporting units, the fair value of the reporting unit exceeded its carrying value."

- Mattel's 2015 10-K

Qualitative Assessment for some reporting units:

"During the 2012 annual review of goodwill, **management performed the qualitative assessment for six reporting units**. Management concluded that it was not more likely than not that the estimated fair values of the six reporting units were less than their carrying values. As such, no further analysis was required."

"During the 2012 annual review of goodwill, **management proceeded directly to the two-step quantitative impairment test for three reporting units** as follows: the Primary Metals segment, the Alumina segment, and the Global Rolled Products segment."

- Alcoa's 2012 10-K

Appendix B: Impairment Prediction Model

In order to construct a goodwill impairment probability score for my cross-sectional tests, I adapt the goodwill impairment prediction model used by Ayres et al. (2018). Consistent with Ayres et al. (2018), the dependent variable *IMPAIR* equals one if the firm has a goodwill impairment greater than 0.5% of total revenue in the current year and zero otherwise. Due to lack of data availability, I exclude number of segments and indicator variables for auditor expertise from my model. I estimate the prediction model on a sample of all Compustat firm-years from 2006 through 2017 with a) necessary data and b) goodwill equal to at least five percent of total assets; however, I exclude the 2,192 observations in my sample in order to avoid overfitting the model. This results in a sample of 17,189 versus a sample of 19,905 observations in Ayres et al. (2018) who utilize a sample period from 2001 through 2014. I present the results of my prediction model in Column 1 and the results from Ayres et al. (2018) in Column 2 below. Results are fairly similar, with market value, differences between market and book values, the existence of losses and restructuring charges, prior stock returns, and profitability all being significant predictors of underlying goodwill impairments. Variable definitions from Ayres et al. (2018) are included in the table below. In order to construct a goodwill impairment probability score for each of my sample observations, I apply the coefficients from Column 1 (including the untabulated coefficients on year and industry fixed effects) to the 2,192 firm-years in my sample.

	(1)		**(2)**		
	Coefficient	z-stat	Coefficient	z-stat	Variable definition
LN_MKVALT	0.153***	7.225	0.048*	1.87	Natural log of the company's market value of equity
MKT_IMP_PCT	0.598***	11.298	2.880***	6.30	Indicator variable equal to one when market value of assets is below book value of assets and zero otherwise
MKTBK	-0.003	-0.609	-0.303**	-2.29	Market to book
INT_PCT	1.280***	6.199	2.721***	15.41	Pre-impairment percentage of assets composed of goodwill.
LOSS	1.845***	25.061	1.007***	12.79	Indicator variable equal to one when firm incurs loss before extraordinary items and zero otherwise
LEVERAGE	0.011	1.114	-0.000	-0.18	Total interest bearing debt divided by preimpairment book value of equity
ROA	-2.240***	-12.255	-1.691***	-6.37	Net income before extraordinary items scaled by average total assets
GW_ACQ	-0.090	-1.114	0.267***	4.14	Indicator equal to one if company performed goodwill-increasing acquisition during the year and zero otherwise
*EBITDA_*Δ	-0.194**	-2.002	-0.280*	-1.70	Change in EBITDA from prior period scaled by MVE
RETURN	-0.272***	-4.028	-0.585***	-6.13	Company's buy and hold stock return over the current year
STDEV	0.447	1.268	2.775***	6.70	Standard deviation of returns over current year
MKT_IMP_IND	0.427***	5.599	0.719***	6.28	Percentage by which book value of assets exceeds market value of assets
BIG4	0.311***	3.870	0.298***	3.24	Indicator equal to one if firm has Big 4 auditor and zero otherwise
RESTRUCTURE	0.161***	2.631	0.353***	5.37	Indicator equal to one if firm has restructuring expenses and zero otherwise
LN_SEGMENTS	N/A		0.453***	9.31	Natural log of number of segments
NAT_EXP	N/A		0.284***	3.98	Indicator equal to one if audit firm audits over 30 percent of total industry audit fees and zero otherwise
CITY_EXP	N/A		0.006	0.09	Indicator equal to one if company's audit firm audits over 50% of city-level audit fees in an industry and zero otherwise
Fixed Effects	Year & Industry		Year & Industry		
Area Under ROC	0.835		0.844		
Observations	17,189		19,905		

Appendix C: Variable Definitions

Variable Name	Definition
AcqIntensity	The sum of acquired goodwill (ACQGDWL) over the preceding two fiscal years (t-1 and t-2) scaled by lagged total assets (AT), winsorized by year at the 1st and 99th percentiles
GeoSegments	Number of geographic segments from Compustat Segments file; set to one if missing
Goodwill	Goodwill (Compustat GDWL)
GoodwillPct	Goodwill (Compustat GDWL) as a percentage of market value of equity (Compustat PRCC_F*CSHO), winsorized by year at the 1st and 99th percentiles
HighImpProb	Indicator variable equal to one if the firm-year is in the top decile of goodwill impairment probability and zero otherwise (refer to Appendix B)
IndustryAvg	Contemporaneous industry average of *Qual* calculated at the GIC sector level
LagQual	The value of *Qual* from the previous year
LargeFutureImp	Indicator variable equal to one if the company recognizes a goodwill impairment greater than 10% of beginning goodwill over the subsequent cumulative period and zero otherwise
LnAssets	The natural logarithm of total assets (Compustat AT)
Loss	Indicator variable equal to one if the company recognized a loss before extraordinary items (IB) for the year and zero otherwise
Momentum	Monthly buy-and-hold abnormal returns over the 12 months prior to fiscal year end, adjusted by value-weighted index from CRSP (vwretd)
MVE	Market value of equity three months after fiscal year end (PRCC_Q*CSHOQ)
NoCushion	Indicator variable equal to one when the (pre-impairment) value of goodwill (GDWL+GDWLIP) exceeds the "cushion" between market value of equity and (pre-impairment) book value of equity (CSHO*BKVLPS + GDWLIP)
OtherAssets	Assets other than goodwill (Compustat AT - GDWL)
PredRepUnits	Equals the number of reporting units disclosed in a company's 10-K if disclosed; otherwise, equals the predicted number of reporting units using coefficients from a regression of reporting units on number of business segments, number of operating segments, and industry indicators (R-squared of 28%, not tabulated); note: for this regression, number of segments set to one if missing
Qual	Indicator variable equal to 1 if firm relied on a qualitative assessment for any reporting unit during a given year and zero otherwise
QualAlt	Indicator variable equal to one if firm-specific average of *Qual* is above the median and zero otherwise
QualPct	The percentage of reporting units for which a qualitative assessment is performed
RecentAcq	Indicator variable equal to one if the firm completed an acquisition resulting in goodwill of at least one percent of revenue during either the current or previous fiscal year (i.e., Compustat ACQGDWL/REVT is greater than or equal to 0.01)
RecentImp	Indicator variable equal to one if the firm recognized a goodwill impairment in the two preceding fiscal years and zero otherwise
ROA	Current year income before extraordinary items (IB) scaled by average total assets (AT+PY AT)/2, winsorized by year at the 1st and 99th percentiles
TotalLiab	Total liabilities (Compustat LT)

Appendix D: Descriptive statistics for propensity score-matched sample

***Note:** To construct my propensity score-matched sample, I match without replacement using a caliper width equal to 20% of the standard deviation of the propensity score. This aligns with the optimal caliper width recommended by Austin (2010). The propensity score-matched sample contains 926 firm-year observations for 322 unique firms as compared to the primary sample of 1,878 firm-year observations and 416 unique firms. The descriptive statistics below indicate that the only statistically significant mean difference between the *Qual* = 0 and *Qual* = 1 subsamples is for *TotalAssets*. All variables are defined in Appendix C.

PSM Sample								
	n	mean	sd	min	p25	p50	p75	max
TotalAssets	926	26,229	50,679	798	5,314	11,247	28,827	702,095
PredRepUnits	926	4.22	3.10	1.00	2.00	3.41	5.60	34.00
GeoSegments	926	9.10	6.88	1.00	4.00	8.00	12.00	68.00
AcqIntensity	926	0.03	0.06	0.00	0.00	0.00	0.03	0.60
RecentImp	926	0.13	0.34	0.00	0.00	0.00	0.00	1.00
Momentum	926	0.07	0.27	-0.71	-0.10	0.05	0.20	1.99
HighImpProb	926	0.08	0.27	0.00	0.00	0.00	0.00	1.00
GoodwillPct	926	0.19	0.17	0.00	0.07	0.14	0.26	1.19
IndustryAvg	926	0.38	0.11	0.00	0.29	0.40	0.48	0.78

Partitioned PSM Sample								
	QualGW = 0			***QualGW = 1***			**T-Test of Means**	
	n	mean	p50	count	mean	p50	diff	t-statistic
TotalAssets	463	30,350	11,500	463	22,108	10,979	8241.6*	**2.48**
PredRepUnits	463	4.25	3.82	463	4.18	3.17	0.07	0.32
GeoSegments	463	9.07	8.00	463	9.14	8.00	-0.08	-0.17
AcqIntensity	463	0.03	0.00	463	0.03	0.00	0.00	-0.37
RecentImp	463	0.13	0.00	463	0.13	0.00	0.00	-0.20
Momentum	463	0.08	0.06	463	0.06	0.04	0.02	1.04
HighImpProb	463	0.08	0.00	463	0.08	0.00	0.00	-0.12
GoodwillPct	463	0.19	0.13	463	0.20	0.15	-0.01	-0.99
IndustryAvg	463	0.38	0.39	463	0.38	0.41	0.00	-0.09

Appendix E: Reconciliation with Contemporaneous Studies

Given the existence of two contemporaneous working papers on the qualitative assessment (Black et al. 2019; Giedt et al. 2018), it is important to highlight and explain key similarities and differences between these studies and my own. Although the primary research questions in these three studies differ, there is some notable overlap. For example, both my study and Black et al. (2019) examine the characteristics associated with using the qualitative assessment. Additionally, all three studies attempt to address (some version of) the question of whether the qualitative assessment has had an impact on the incidence and/or magnitude of goodwill impairments. However, each study comes to a different conclusion in addressing this question.

In my tests of future impairments, I find evidence of a negative association between reliance on a qualitative assessment and the likelihood of recognizing a goodwill impairment in subsequent years on average. However, Black et al. find that "in the post-adoption period, firms performing the qualitative assessment have an incrementally higher likelihood of impairment loss recognition" compared to control groups (p. 20). I *do* find that in the subset of firm-years with the highest ex-ante impairment probability, reliance on a qualitative assessment is actually a *positive* predictor of future goodwill impairments. Black et al., however, find a positive association between qualitative assessment "performers" and the incidence of goodwill impairments *on average*.[38] Giedt et al. also come to a different conclusion regarding the association between the qualitative assessment and impairment recognition. They conclude that "the opportunistic discretion due to [ASU 2011-08] has an incrementally significant effect...on avoiding and minimizing goodwill impairments" (p. 24). There are several major differences across these three studies in terms of sample formation, data collection, variable measurement, and research design that likely drive the differences in findings and conclusions.

First, there are substantial differences between my sample and the samples used in these two working papers. I restrict my sample to S&P 500 firm-years with goodwill balances that comprise at least five percent of total assets. Black et al. (2019) require firm-years to have goodwill balances greater than or equal to 1% of total assets, and Giedt et al. (2018) do not impose any restrictions on the significance of the firm's goodwill (conditional on having a non-zero goodwill balance). Given that the costs of impairment testing are likely much lower for firms with immaterial goodwill balances, these sample differences potentially account for differences in findings across the studies.[39] Additionally, my sample period extends through 2017 whereas the sample periods in Black et al. (2019) and Giedt et al. (2018) end in 2015 and 2013, respectively. Determinants and effects of the new standard might change over time as managers and investors learn about the costs and benefits of the qualitative assessment, leading to differences in associations over different sample periods (particularly given the relatively short time period that ASU 2011-08 has been in effect).

[38] This finding is difficult to interpret given that firms necessarily *must* perform a quantitative test in impairment years.
[39] As discussed below, Black et al.'s classification of "performing" (treatment) and "silent" (control) observations appears to be highly correlated with the materiality of goodwill.

The next significant difference between these three studies is in the data collection. Both my study and Black et al. (2019) rely on hand-collection of 10-K goodwill disclosures about the qualitative assessment, whereas Giedt et al. (2018) do not. In Giedt et al.'s main analysis, "the treatment is the introduction of a new qualitative estimate" (p. 23). Because the authors do not identify *which* firms are electing to rely on the qualitative assessment, their ability to draw conclusions about whether managers are using the discretion inherent in ASU 2011-08 opportunistically is limited.[40]

In contrast, Black et al. (2019) do hand-code goodwill disclosures; however, their classification of these disclosures differs substantially from mine. The primary differences are as follows: First, I classify observations based on whether the firm disclosed having *relied on* a qualitative assessment or a quantitative test whereas Black et al. classify observations based on whether the firm disclosed that they *performed* a qualitative assessment. Thus, in instances where a firm disclosed starting with a qualitative assessment but proceeding to a quantitative test, Black et al.'s classification would differ from mine. Second, when the impairment testing method a firm *relied upon* is not discernable from the disclosure, I drop the observation (14% of my hand-collected sample) whereas Black et al. would likely classify the observation as "silent" or, in some cases (as in their Appendix C), "performing." This categorization differs from mine in that it does not identify the impairment testing method the firm ultimately *relies upon* in a given year. It is plausible that some firms that are silent about the qualitative assessment rely on the qualitative assessment but do not disclose their choice because of the immateriality of goodwill.[41]

Finally, the research designs for the goodwill impairment analyses in these two studies differ from mine. Both Black et al. (2019) and Giedt et al. (2018) conduct a "pre-post" analysis to test for an association between the incidence of goodwill impairments and the enactment of ASU 2011-08 (see Columns 1-2 in Tables 4 and 5 of Black et al. and Table 5 in Giedt et al.). These designs raise a few concerns. First, both studies use a *POST* indicator variable to examine changes in the frequency (and/or magnitudes) of goodwill impairments after the enactment of ASU 2011-08. However, these variable definitions do not incorporate the fact that many firms elected to early adopt the provisions of ASU 2011-08.[42] This measurement difference could be one potential driver of the differences in findings across the three studies.

Another design difference between my study and Black et al. is that I measure the use of the qualitative assessment at the firm-year level while Black et al. measure it at the firm level, which

[40] Although the authors refer to their analysis as a "difference-in-differences" design, there is no variation in what they refer to as the "treatment" (i.e., the enactment of ASU 2011-08) within the post period. Thus, their design is effectively a single-group pre-post analysis that is vulnerable to several internal validity threats. For example, the pre-period coincides with the immediate aftermath of the financial crisis, whereas the post-period (2012 and 2013) saw more consistently positive returns. It is difficult to rule out this (and other) market-wide trends/events as potential confounds using the authors' current research design.

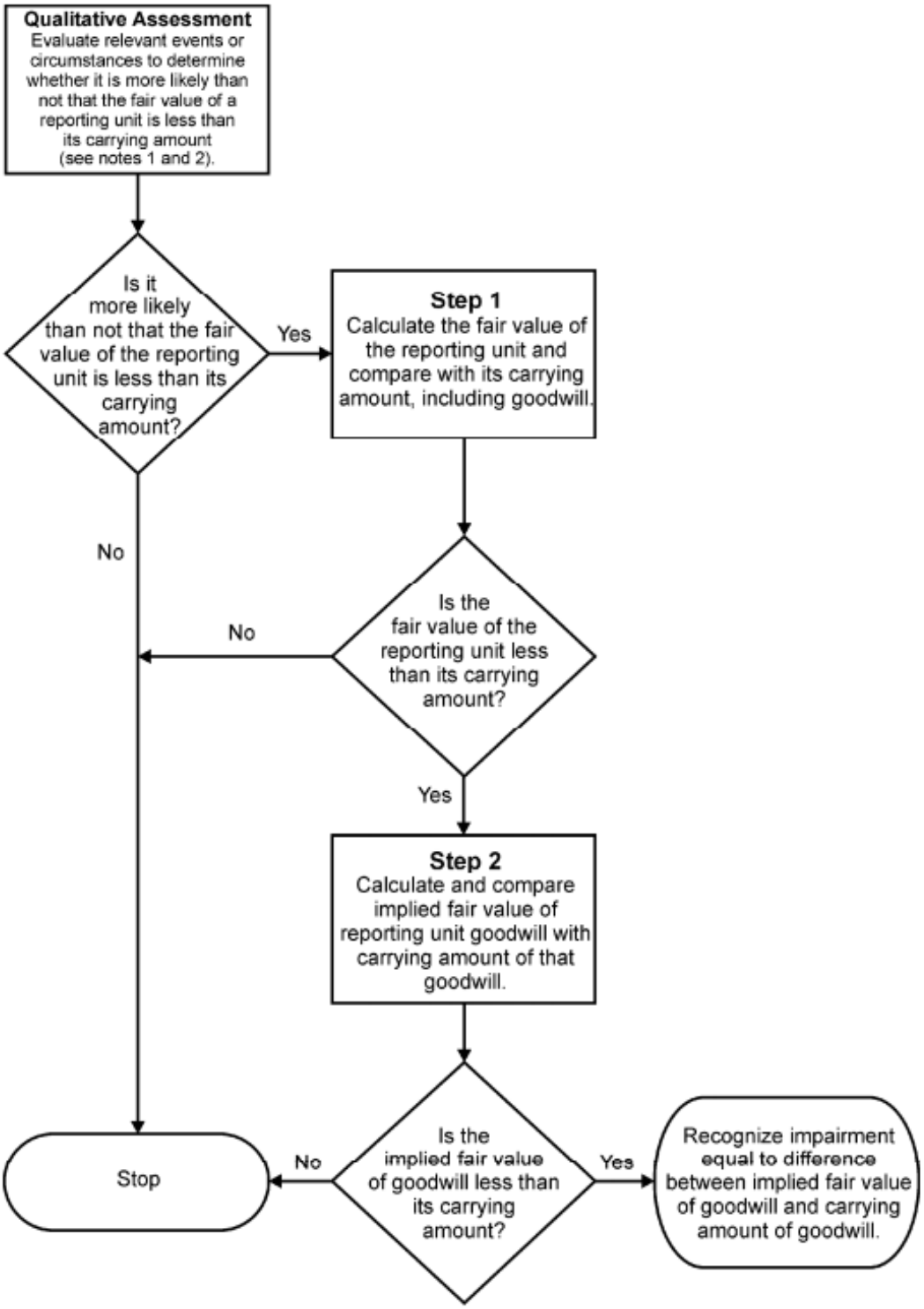
[41] Note that, according to the authors' descriptive statistics, the median intangible balance as a percentage of total assets for "silent" observations is half that of "performing" observations, suggesting that firms with immaterial goodwill balances are less likely to provide robust goodwill disclosure.

[42] For example, within my sample, 66 firms chose to rely on the qualitative assessment in 2011 compared to 106 firms in 2012.

effectively holds constant a firm's impairment testing method across the sample period.[43] The fact that *QUAL* is measured at the firm level while the goodwill impairment indicator (*GW_WD*) is measured at the firm-year level makes it difficult to interpret the results of their analysis of the effect of the qualitative assessment on the frequency of goodwill impairment (i.e., Tables 4 and 5 in Black et al. 2019). Based on their definition of *QUAL*, it is possible that the performance of the qualitative assessment could actually occur *after* the year in which the goodwill impairment is measured (e.g., if the firm recognized a goodwill impairment in 2013 but did not perform a qualitative assessment until 2015). As a result of these key differences in sample selection, variable measurement, and research design choices, some of the findings in my study differ from those in Black et al. (2019) and Giedt et al. (2018).

[43] Firms can and do vary their reliance on the qualitative assessment over time. The authors note that they remove the "76 firms that switched between performing and bypassing the qualitative assessment" (p. 14), which represent approximately 4% of their sample firms. For comparison, 34% of my sample firms change impairment testing method at least once from 2012 to 2017.

Figure 1: Goodwill Impairment Testing Method Flowchart[44]



[44] This flowchart was obtained directly from ASC 350-20-55-25. Per ASC 350-20-35, firms have the "unconditional option to bypass the qualitative assessment." As such, I believe it would be more accurate if the flowchart depicted the initial decision to begin with the qualitative assessment or proceed directly to Step 1 of the quantitative test.

Figure 2A:
Cost of Conducting Impairment Test

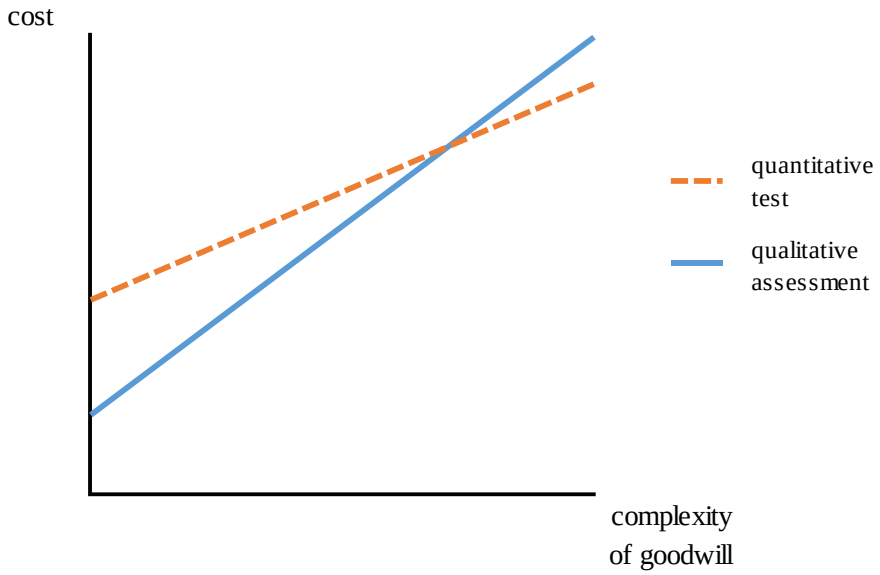


Figure 2B:
Cost of Justifying Impairment Test

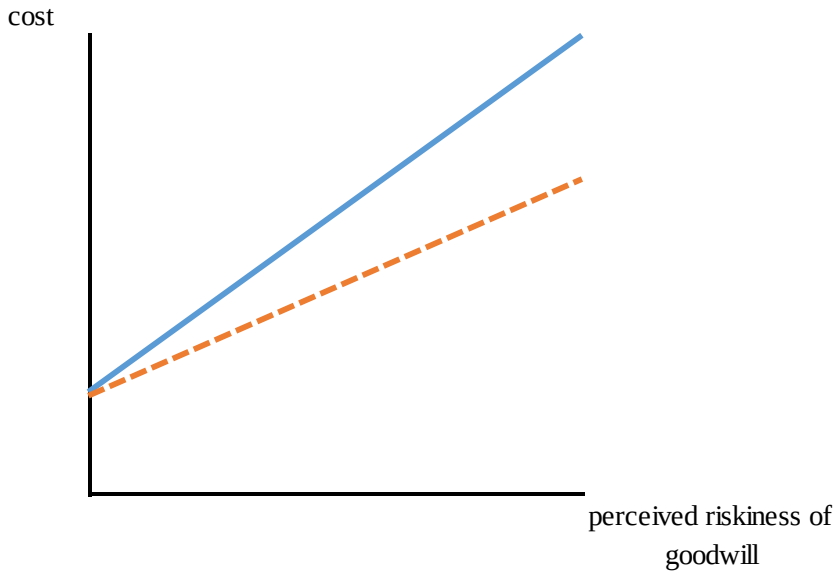


Table 1: Sample Selection

This table provides details on my sample selection procedure. I begin my sample in July of 2011 given that ASU 2011-08 became effective in September of 2011 with early adoption permitted. I exclude observations for which goodwill comprises less than five percent of total assets given the SEC's requirement for filers to separately present intangible assets that constitute at least five percent of assets.

	Observations	Unique firms
Annual observations for firms that were in the S&P 500 at any point from 2011 through 2017 and fiscal year ends between July 31, 2011 and May 31, 2018	4,249	652
Less: firm-years missing either goodwill (GDWL) or total assets (AT) in Compustat	(160)	
Less: firm-years for which goodwill < 5% of total assets	(1,438)	
Sample for hand-collection	2,651	462
Less: observations without 10-K availability on SEC's EDGAR website	(126)	
Less: observations for which goodwill impairment testing method is indeterminable	(361)	
Full sample	2,164	437
Less: observations for which firm disclosed using quantitative impairment test for some reporting units and qualitative assessment for others	(263)	
Less: remaining observations missing necessary data	(23)	
Sample used for primary analyses	1,878	416

Table 2: Descriptive statistics for hand-collected sample

In this table, I provide descriptive statistics on the use of the qualitative assessment in my hand-collected sample. Panel A includes overall descriptive statistics for the frequency of qualitative versus quantitative goodwill analyses. Panel B details the frequency of qualitative assessment use by sample year, and Panel C details this frequency by Global Industry Classification (GIC) sector.

Panel A: Use of quantitative vs. qualitative

Full sample	Number of Observations	Percent of Observations
Firm-years for which quantitative test is performed for all reporting units	1,427	66%
Firm years for which qualitative assesssment is performed for any reporting ur	737	34%
Firm-years for which testing method can be inferred (full sample)	2,164	100%

Sample for primary analyses	Number of Observations	Percent of Observations
Firm-years for which quantitative test is performed for all reporting units	1,395	74%
Firm years for which qualitative assesssment is performed for all reporting uni	483	26%
Firm-years for which testing method can be inferred (full sample)	1,878	100%

Panel B: Qualitative assessment usage by year - full sample

Year	Number of Observations for which *Qual* =1	Total Observations	Percent of Observations for which *Qual* =1
2011	66	280	24%
2012	106	333	32%
2013	126	330	38%
2014	120	323	37%
2015	117	319	37%
2016	103	306	34%
2017	99	273	36%
Total	737	2,164	34%

Panel C: Qualitative assessment usage by GIC sector - full sample

GIC Sector	Number of Observations for which *Qual* =1	Total Observations	Percent of Observations for which *Qual* =1
Energy	40	90	44%
Materials	50	157	32%
Industrials	89	370	24%
Consumer Discretionary	143	335	43%
Consumer Staples	55	211	26%
Healthcare	90	350	26%
Financial	53	118	45%
Information Technology	166	375	44%
Telecom	9	44	20%
Utilities	31	79	39%
Real Estate	11	35	31%
Total	737	2,164	34%

Table 3: Descriptive statistics for primary sample

In this table, I report descriptive statistics for the variables included in the determinants model. Panel A includes descriptive statistics for the full sample, and Panel B is partitioned by the value of *Qual*, where *Qual* = 0 indicates that the firm relied on a quantitative test, and *Qual* = 1 indicates the firm relied on a qualitative assessment for all reporting units for a given year. T-statistics for tests of mean differences between the *Qual* = 0 and *Qual* = 1 subsamples are presented in Panel B. All variables are defined in Appendix C.

Panel A: Primary Sample

	n	mean	sd	min	p25	p50	p75	max
TotalAssets	1,878	29,111	60,663	649	5,539	12,347	28,827	717,242
PredRepUnits	1,878	5.43	4.36	1.00	3.00	4.27	7.00	52.00
GeoSegments	1,878	9.49	7.95	1.00	4.00	8.00	13.00	83.00
AcqIntensity	1,878	0.04	0.10	0.00	0.00	0.00	0.04	1.01
RecentImp	1,878	0.20	0.40	0.00	0.00	0.00	0.00	1.00
Momentum	1,878	0.03	0.28	-1.04	-0.12	0.02	0.17	2.82
HighImpProb	1,878	0.10	0.30	0.00	0.00	0.00	0.00	1.00
GoodwillPct	1,878	0.26	0.27	0.01	0.09	0.20	0.35	4.58
IndustryAvg	1,878	0.34	0.12	0.00	0.25	0.33	0.42	0.67

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Panel B: Partitioned Sample

	Qual = 0			***Qual = 1***			**T-Test of Means**	
	n	mean	p50	n	mean	p50	diff	t-statistic
TotalAssets	1,395	31,667	13,133	483	21,730	10,693	9937.7**	3.11
PredRepUnits	1,395	5.90	5.00	483	4.09	3.00	1.814***	8.00
GeoSegments	1,395	9.66	8.00	483	9.00	7.00	0.652	1.56
AcqIntensity	1,395	0.04	0.00	483	0.03	0.00	0.0144**	2.73
RecentImp	1,395	0.23	0.00	483	0.13	0.00	0.0995***	4.74
Momentum	1,395	0.02	0.01	483	0.07	0.04	-0.0495***	-3.40
HighImpProb	1,395	0.11	0.00	483	0.08	0.00	0.0295	1.88
GoodwillPct	1,395	0.28	0.22	483	0.20	0.15	0.0878***	6.19
IndustryAvg	1,395	0.32	0.29	483	0.39	0.41	-0.0668***	-11.14

Table 4: Determinants of goodwill impairment testing method

This table reports results from the determinants tests. Columns 1, 2, and 3 report results from logistic regressions and the corresponding marginal effects, and column 4 reports results from a Cox proportional hazard regression. The "failure" variable in the Cox proportional hazard regression equals one the *first* time a firm relies on the qualitative assessment and zero otherwise. Marginal effects are computed holding all other covariates at their mean values. Year and industry fixed effects are included in columns 2 and 3, and standard errors are clustered by firm across all specifications. T-statistics are reported in parentheses. All variables are defined in Appendix C.

Table 4: Determinants of goodwill impairment testing method (continued)

		(1)		(2)		(3)		(4)
		Logit	Marginal Effects	Logit	Marginal Effects	Logit	Marginal Effects	Hazard Model
	Predicted signs							
Ln(Assets)	(-)	-0.014	-0.002	-0.025	-0.004	0.022	0.003	-0.090
		(-0.17)		(-0.25)		(0.26)		(-1.40)
PredRepUnits	(-)	-0.072**	-0.011**	-0.111***	-0.019***	-0.093**	-0.014***	-0.055*
		(-2.13)		(-3.28)		(-2.55)		(-1.85)
GeoSegments	(-)	-0.011	-0.002	-0.015	-0.003	-0.014	-0.002	0.005
		(-0.91)		(-0.99)		(-1.02)		(0.49)
AcqIntensity	(-)	-2.466***	-0.365***	-1.597**	-0.276**	-2.163**	-0.320**	-4.989**
		(-2.86)		(-2.03)		(-2.33)		(-2.36)
RecentImp	(-)	-0.433*	-0.064*	-0.480**	-0.083**	-0.406*	-0.060*	-0.597**
		(-1.80)		(-2.14)		(-1.70)		(-2.50)
Momentum	(+)	0.652**	0.097**	0.446**	0.077**	0.632**	0.094**	0.721***
		(2.51)		(2.01)		(2.49)		(4.84)
HighImpProb	(-)	0.047	0.007	-0.102	-0.018	-0.068	-0.010	0.130
		(0.15)		(-0.39)		(-0.22)		(0.52)
GoodwillPct	(-)	-1.554***	-0.230***	-1.390**	-0.240**	-1.881***	-0.278***	0.010
		(-2.98)		(-2.49)		(-3.70)		(0.03)
IndustryAvg	(+)	3.787***	0.561***					2.675***
		(4.74)						(4.00)
LagQual	(+)	3.083***	0.457***			3.105***	0.460***	
		(16.60)				(16.19)		
Constant		-2.503***		0.606		-0.471		
		(-3.15)		(0.58)		(-0.50)		
Observations		1,491		1,878		1,491		1,349
Fixed Effects		None		Year and Industry		Year and Industry		None
Standard Error Clustering		by firm		by firm		by firm		by firm
Area under ROC		0.879		0.716		0.879		N/A

Table 5: Future goodwill impairments

This table reports results of tests of future goodwill impairments where the dependent variable is an indicator variable, *LargeFutureImp*, which equals one if the company recognizes a goodwill impairment greater than 10% of beginning goodwill over the subsequent cumulative period and zero otherwise. These tests are performed on the sample for which *QualPct* equals either zero or one. Marginal effects are computed holding all other covariates at their mean values. Industry and year fixed effects are included and standard errors are clustered by firm in all specifications. T-statistics are reported in parentheses. All variables are defined in Appendix C.

	(1)		(2)		(3)		(4)	
	(t+1)	Marginal Effects	(t+1, t+2)	Marginal Effects	(t+1, t+3)	Marginal Effects	(t+1, t+4)	Marginal Effects
Qual	-0.770**	-0.017*	-1.133***	-0.042***	-0.744**	-0.041**	-1.171***	-0.065***
	(-1.99)		(-3.19)		(-2.39)		(-2.99)	
ROA	-1.845	-0.041	-1.612	-0.060	0.176	0.010	-0.765	-0.043
	(-0.66)		(-0.57)		(0.06)		(-0.23)	
Loss	-0.053	-0.001	-0.017	-0.001	0.178	0.010	0.212	0.012
	(-0.08)		(-0.02)		(0.25)		(0.28)	
AcqIntensity	0.155	0.003	1.938	0.072	3.186*	0.175*	4.125**	0.230*
	(0.14)		(1.50)		(1.77)		(2.04)	
Momentum	-1.539**	-0.034**	-1.722***	-0.064***	-1.341***	-0.074***	-1.160**	-0.065**
	(-2.54)		(-3.35)		(-2.69)		(-2.53)	
RecentImp	0.932***	0.021***	0.799***	0.030**	0.834***	0.046**	0.953***	0.053***
	(3.04)		(2.59)		(2.63)		(3.05)	
HighImpProb	0.587	0.013	0.937**	0.035**	1.017**	0.056**	0.775	0.043
	(1.32)		(2.14)		(2.32)		(1.52)	
Ln(Assets)	-0.169	-0.004	-0.309**	-0.011**	-0.345**	-0.019**	-0.332**	-0.018**
	(-1.14)		(-2.03)		(-2.06)		(-2.09)	
Constant	-0.298		1.566		2.466		2.948	
	(-0.18)		(0.93)		(1.32)		(1.61)	
Observations	1,733		1,466		1,191		918	
Fixed Effects	Year and Industry		Year and Industry		Year and Industry		Year and Industry	
Standard Error Clustering	firm level		firm level		firm level		firm level	
Area under ROC	0.816		0.827		0.811		0.826	

Table 6: Future goodwill impairments by ex-ante impairment probability

This table reports results of cross-sectional tests of future goodwill impairments where the dependent variable is an indicator variable, *LargeFutureImp*, which equals one if the company recognizes a goodwill impairment greater than 10% of beginning goodwill over the subsequent cumulative period and zero otherwise. These tests are performed on the sample for which *QualPct* equals either zero or one. Industry and year fixed effects are included and standard errors are clustered by firm in all specifications.. T-statistics are reported in parentheses. All variables are defined in Appendix C.

	(1) (t+1)	(2) (t+1, t+2)	(3) (t+1, t+3)	(4) (t+1, t+4)
Qual	-1.286***	-1.420***	-1.001***	-1.424***
	(-2.72)	(-3.59)	(-2.87)	(-3.10)
*Qual*HighImpProb*	1.764**	1.063	1.179*	1.212
	(2.32)	(1.53)	(1.67)	(1.25)
HighImpProb	0.334	0.822*	0.855*	0.640
	(0.72)	(1.89)	(1.93)	(1.22)
ROA	-1.922	-1.595	0.076	-0.973
	(-0.69)	(-0.57)	(0.02)	(-0.29)
Loss	-0.141	-0.083	0.077	0.125
	(-0.22)	(-0.12)	(0.11)	(0.17)
AcqIntensity	0.072	1.870	2.948	3.902*
	(0.07)	(1.48)	(1.59)	(1.90)
Momentum	-1.632***	-1.745***	-1.374***	-1.211**
	(-2.67)	(-3.36)	(-2.72)	(-2.53)
RecentImp	1.021***	0.844***	0.883***	0.962***
	(3.36)	(2.74)	(2.76)	(3.10)
Ln(Assets)	-0.174	-0.308**	-0.347**	-0.336**
	(-1.19)	(-2.05)	(-2.08)	(-2.10)
Constant	-0.298	1.556	2.519	3.009
	(-0.18)	(0.92)	(1.35)	(1.62)
Observations	1,733	1,466	1,191	918
Fixed Effects	Year and Industry	Year and Industry	Year and Industry	Year and Industry
Standard Error Clustering	firm level	firm level	firm level	firm level
Area under ROC	0.818	0.826	0.809	0.827

Table 7: Value-relevance tests

In this table, I report results from my primary value-relevance tests where the dependent variable equals the market value of equity three months after year-end. Columns 1 and 2 show results for the primary sample, and columns 3 and 4 show results for the propensity score matched sample. I employ a weighted least squares estimation method in the odd-numbered columns for which the "weighting" variable is the lagged market value of equity. The even-numbered columns show results of estimating equation 3 using ordinary least squares. In the WLS specifications, I use White robust standard errors. In the OLS specifications, I cluster standard errors by firm and year. T-statistics are reported in parentheses. All variables are defined in Appendix C.

	(1)	(2)	(3)	(4)
	Primary sample		PSM sample	
	WLS	OLS	WLS	OLS
*Goodwill*Qual*	1.553***	1.870***	1.529***	1.900***
	(4.08)	(2.81)	(3.27)	(2.81)
Goodwill	2.055***	2.020***	2.012***	1.804***
	(9.40)	(6.30)	(4.78)	(4.86)
OtherAssets	1.430***	1.452***	1.565***	1.548***
	(7.26)	(3.29)	(4.63)	(2.64)
TotalLiab	-1.314***	-1.340***	-1.402***	-1.332*
	(-5.41)	(-2.60)	(-3.09)	(-1.74)
HighImpProb	-7,393.849***	-9,869.049***	-8,793.320***	-11,382.687*
	(-4.10)	(-2.64)	(-2.79)	(-1.78)
*Goodwill*HighImpProb*	-0.916***	-0.854*	-1.135**	-1.160
	(-3.93)	(-1.92)	(-2.37)	(-1.49)
Qual	-4,683.195***	-6,863.408**	-8,063.374***	-11,269.812***
	(-3.14)	(-2.58)	(-4.04)	(-3.69)
RecentImp	-4,553.746***	-5,170.674**	-4,590.287	-4,849.761
	(-2.77)	(-2.41)	(-1.63)	(-1.42)
AcqIntensity	-15,328.862***	-18,208.674**	-11,817.624	-10,320.845
	(-3.56)	(-2.40)	(-0.82)	(-0.33)
*Goodwill*RecentImp*	0.491	0.652***	0.871	1.313
	(1.54)	(2.65)	(0.87)	(0.96)
*Goodwill*AcqIntensity*	-0.112	-0.150	-1.317	-1.710
	(-0.26)	(-0.24)	(-0.71)	(-0.49)
Constant	11,653.873***	13,945.130***	14,326.707***	17,334.965***
	(12.68)	(5.05)	(7.61)	(4.72)
Observations	1,620	1,636	846	854
R-squared	0.629	0.647	0.599	0.614
Fixed Effects	N/A	None	N/A	N/A
Standard Error Clustering	Robust	by Firm and Year	Robust	by Firm and Year