When is the lack of a goodwill impairment informative?

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ABSTRACT: Among firms with depressed equity market values, we examine whether the lack of a goodwill impairment conveys positive value relevant information to investors. We utilize a novel empirical design, which defines a justified non-impairment as one where the equity market value recovers above book value within one year. We find about half of non-impairments are justified based on ex post stock price recovery. We show that these stock price recoveries are more frequent among firms with strong external monitoring and where managers are more likely to possess private information about firm value. We also find that investors react positively to these non-impairment announcements, particularly when non-impairments are expected to be reliable accounting decisions. Finally, we utilize two novel control groups to isolate the informational value of goodwill non-impairment decisions. Overall, our study offers evidence that goodwill non-impairment decisions can reflect informative managerial behavior.

Keywords: Goodwill impairment, Private information, Accounting discretion, Fair value accounting

1 | INTRODUCTION

This study examines the circumstances under which the lack of a goodwill impairment despite a depressed equity market value conveys positive value relevant information to equity investors. Managers are required to periodically assess goodwill for impairment. When a reporting unit's fair value falls below its book value, managers write down the goodwill asset on the balance sheet and record a goodwill impairment charge. Because goodwill impairment testing relies on substantial management judgment, including expectations of future performance, the impairment decision should provide value relevant information to the market. Indeed, upon adoption of SFAS 142, the FASB stated that they expected the new accounting rules to provide "users with a better understanding of the *expectations* about and changes in [goodwill]" (emphasis added). This reasoning applies to both the choice to impair goodwill and the choice *not* to impair goodwill. Moreover, when market values are depressed, goodwill non-impairment should provide good news to market participants, because it can signal that managers expect firm performance to rebound.

Both the design of goodwill accounting rules and practitioner commentary suggest that goodwill non-impairments should provide substantial information about firm value to investors. Goodwill impairment testing requires managers to estimate the fair values of broadly defined reporting units.[1] Only if managers assess that the fair value of a reporting unit exceeds its book value, then no goodwill impairment is necessary. Therefore, the goodwill impairment or non-impairment decision carries substantial information about a firm's economic prospects.[2] In the presence of depressed market values, investors can potentially infer a positive signal about firm value from the non-impairment decision. For example, in their

[1] ASC 350 defines a reporting unit as, "an operating segment or one level below and operating segment (also known as a component)." Anecdotal review of 15 percent of our sample suggests that many firms have only several reporting units making up the entire firm.

[2] Impairment testing for other asset types, like inventory and fixed assets, rely on managers' assessments of smaller asset groups. Additionally, finite-lived fixed assets are not subject to a strict fair value test, but rather a preliminary recoverability test using undiscounted expected net cash flows. Therefore, impairment tests of other asset types are not designed to provide as precise of a signal to investors.

2019 comment letter to the Financial Accounting Standards Board (FASB), Bank of America argues that, "if an entity did not incur an impairment during times of stress, some might view that as an indicator of the strength of the underlying business and the continued success/resiliency of post-acquisition operations" (Bank of America Corporation 2019). Members of the Business Value Resource Panel also note, "…when no recognition of impairment occurs, information is also conveyed that fair values have either been maintained or have increased in value" (Aaron et al. 2019).

Conversely, fair value estimates are subject to substantial managerial discretion such that non-impairments are the result of managerial opportunism, reducing their value relevance, on average. Consistent with this opportunism argument, Ramanna and Watts (2012) fail to detect associations between managers' private information and goodwill non-impairments. Similarly, Li, Shroff, Venkataraman, and Zhang (2011) do not find any evidence of positive market reactions to goodwill non-impairments and conclude that investors view non-impairments as opportunistic avoidance.[3]

We identify a novel empirical design to re-examine the informational value of goodwill non-impairments. We construct a sample of firm-years with market-implied goodwill impairments (i.e., firms that have goodwill on their balance sheet and whose equity market values are depressed below their book values). Goodwill non-impairments occur when firms with market-implied impairments do not significantly impair their goodwill balance, allowing the book value of equity to remain above its market value. The innovation of our research design is that we utilize ex post market value recovery to empirically distinguish between non-impairments that are more likely to be based on managers' optimistic expectations that performance will recover and non-impairments that are more likely driven by managerial opportunism. We define a goodwill non-impairment to be more likely to be based on managers' positive expectations when the non-impairment is followed by an increase in stock price within the following year sufficient to move

[3] In section 2.1, we evaluate the research designs of those studies and explain why our research design may yield evidence of positive private information despite those prior null findings.

the firm's market value of equity above its book value.[4] This recovery of market value provides ex post justification for managers' decisions not to impair goodwill.

We find that a substantial proportion of firms that do not impair goodwill despite market-implied impairments do in fact experience performance recoveries: approximately 47 percent of firms with goodwill non-impairments experience sufficient subsequent returns over the next year to lift market values above book values, thus validating the non-impairment decisions. Excluding financial industries, this rate of recovery is 53 percent. We note that this finding does not necessarily overturn the conclusion from prior literature that the average non-impairment does not reflect positive information about firm value. However, our finding does suggest that some goodwill non-impairments seem to be based on rational expectations of future performance and therefore reflect managers' private information about firm value.

While it is interesting that a substantial proportion of non-impairments are associated with subsequent performance recoveries, this descriptive finding does not provide evidence whether these instances of ex post justified non-impairments occur by chance or are instead reliable accounting decisions that reflect managers' private information. As such, we identify ex ante factors that relate to reliable accounting decisions based on private information. We expect goodwill non-impairments to be more likely to result from reliable accounting choices, and therefore to be more likely to be ex post justified non-impairments, when strong monitoring mechanisms are in place to prevent false or opportunistic non-impairments and when managers possess more private information. We measure monitoring mechanisms as the presence of a Big 4 auditor, analyst monitoring intensity, institutional investor ownership and leverage. Consistent with this notion, we find that goodwill non-impairments of firms with Big 4 auditors, more research analysts, and greater institutional investor ownership are more likely to be ex post justified. We further expect goodwill non-impairments to be more reliable when managers have an informational

[4] This ex post measure of informational value is similar to Asquith, Mikhail, and Au (2005), who define analysts' price targets as high quality if the covered firm's stock price reaches the price target at some point during the twelve months following the analyst report.

advantage over shareholders (i.e., managers are likely to have private information versus not). To proxy these situations, we consider whether firms issue managerial guidance, have insider equity purchases, or initiate stock repurchases. We also examine firms that are restructuring, in which case managers are likely to have more private information about future firm performance, and firms that operate in hard-to-value industries. We find that goodwill non-impairments are more likely to be ex post justified for firms conducting active corporate restructuring activities and firms in hard-to-value industries.

The evidence so far suggests that ex post justified non-impairments are indeed based on reliable accounting decisions that reflect managers' expectations about future firm performance. We next turn our attention to whether these non-impairments convey value relevant information to shareholders. To do so, we examine the short-window market reactions when impairments are expected by the market but not recognized by firms. If non-impairments based on reliable accounting choices convey value relevant information to investors, we expect to observe a positive market reaction to these non-impairments. We construct a composite measure for reliable non-impairments using the above monitoring and private information firm-level factors, which are observable by the market. Interestingly, we document a positive market reaction to non-impairments, on average, consistent with the private information conveyed by non-impairments being value relevant. We further find that the market reaction is proportional to the magnitude of the impairment that was expected but not recognized, and that the market reaction is stronger when the non-impairment is more likely to be reliable (i.e., when the above mechanisms are in place to prevent false non-impairments and when managers are expected to possess an informational advantage over investors).[5]

Next, we identify two control groups against which we estimate the incremental informational value of goodwill non-impairments. First, we compare the rates of stock price recovery of non-impairment firms with and without goodwill on the balance sheet. Relative to firms with no goodwill on their balance

[5] In contrast, Li et al. (2011) examine this hypothesis, yet find no market reaction. However, their sample of non-impairments is comprised mostly of firms with market-to-book ratios above one. See Table 2, Panel A of Li et al. (2011), which states that the median control observation (i.e., non-impairment observation) has a book-to-market ratio of 0.60, translating to a market-to-book ratio of 1.67.

sheets, we hypothesize that goodwill impairment rules require firms with goodwill on their balance sheets to have more reliable justifications for leaving their book values unimpaired. Therefore, we predict greater rates of stock price recovery when a firm with goodwill on the balance sheet leaves their book value unimpaired relative to firms without goodwill. After entropy balancing on predictors of stock price recovery, including our ex ante reliability factors, we find that non-goodwill firms have a 35 percent weighted average rate of equity market value recovery, which is significantly lower than the 47 percent rate of recovery we observe for firms with goodwill on their balance sheet. This finding suggests that, among firms with depressed equity market values, those with goodwill on the balance sheet subject their book values to greater scrutiny and therefore have more informative book values.

Second, as another reasonable control group for our sample of goodwill non-impairment firms, we consider similar firms with goodwill, but with market-to-book ratios between 1.0 and just below 1.5. While these firms are similar to our main group, they are less likely to perform goodwill impairment tests (Lawrence, Sloan, and Sun 2013), making their goodwill non-impairments less likely to convey new value relevant information to investors. Consistent with Lawrence et al. (2013), we also find that the market-to-book cutoff of 1.0 carries important significance for goodwill non-impairment. Among firms with goodwill on the balance sheet and do not record an impairment, those with market-to-book ratios just below 1.0 are more likely to recover their market-to-book ratios above 1.0 than firms with market-to-book ratios just below 1.5 are to recover their market-to-book values above 1.5. This finding suggests that goodwill non-impairments convey significantly more information when the market-to-book ratio falls below 1.0. This finding also helps explain why Li et al. (2011) do not find a market reaction to non-impairments among firms whose market-to-book ratios were generally much greater than 1.0.

Finally, we hand collect information about the goodwill impairment test disclosures of firms in our sample to observe the information explicitly disclosed to investors in 10-K reports. Using 500 observations randomly selected from our sample, we find that 96 percent provide some explanation of their impairment process, such as the methodology used and source of inputs. However, few firms disclose quantitative inputs or outputs. More importantly, we do not detect a relation between the quality of the disclosure and

whether firms experience subsequent stock price recovery (untabulated). Overall, we conclude that, while earlier tests offer some evidence that observable monitoring and private information factors are associated with stock price recovery, most firms that do not recognize market-implied impairments to goodwill do not voluntarily disclose enough information for investors to fully evaluate the reasoning and rigor behind managers' decision-making process. This is consistent with investors' views on the current lack of useful goodwill disclosures and the need for improved disclosures (Peters 2021).

Our study contributes to the value relevance debate of subsequent accounting for goodwill. Subsequent accounting for goodwill has long been an unresolved issue for accounting standard setters. FASB's most recent goodwill project aimed at re-assessing the subsequent accounting of goodwill was abandoned in 2022 after four years of deliberation due to a lack of consensus. Existing academic evidence on the current impairment model is mixed yet largely unfavorable. Although goodwill impairments provide useful information to investors, they lag other observable economic indicators and are therefore not timely.

Prior research concludes that goodwill non-impairments generally reflect managerial opportunism. We believe our evidence compliments Ramanna and Watts (2012), who find no difference in subsequent long-run returns between impairment firms and non-impairment firms, and conclude that non-impairments are not informative, on average. We document a substantial proportion of non-impairments are informative. Moreover, we add nuance to our understanding of goodwill non-impairments; we find that informative non-impairments are more common in non-financial industries, among firms with mechanisms in place to prevent opportunistic non-impairments, and among firms whose managers are more likely to possess an informational advantage over investors. Our evidence also compliments Li et al. (2011) who find no market reaction to the announcement of goodwill non-impairments. We find evidence of market reaction to goodwill non-impairments in our sample of firms with depressed equity market values, particularly when the accounting decision is more likely to be reliable. Finally, using novel control groups, we find evidence that firms' book values are particularly informative when goodwill is on the balance sheet and when the

market-to-book ratio falls below 1.0. As such, our study contributes to the literature examining whether managers' goodwill impairment tests provide useful information for investors.

2 | BACKGROUND AND HYPOTHESIS DEVELOPMENT

2.1 | Background and prior literature

Under U.S. GAAP, firms that complete a business combination recognize goodwill on their balance sheet when the acquisition purchase price exceeds the fair value of identifiable assets acquired. This asset may stem from several sources. First, in addition to economic benefits that cannot be recognized as individual assets (i.e., talented workforce, customer loyalty), firms often attribute goodwill to increased synergies that they hope achieve with the integration of the acquired company (Hitt, Ireland, and Harrison 2005). Academic research also supports the notion that goodwill may reflect inflated acquisition purchase prices (Gu and Lev 2011; Aktas, Bodt, Bollaert, and Roll 2016).

In the years following the business combination, rather than systematically amortizing the book value of goodwill as a recurring charge against net income (as is done with finite-lived tangible and intangible assets), goodwill is retained on the balance sheet at its initial value and tested at least annually for impairment. When qualitative or quantitative indicators suggest goodwill may have lost value, managers are required to estimate the fair values of reporting units containing goodwill. These valuations incorporate managers' private information about firm prospects and should provide incremental, value relevant information to outside investors. On the other hand, these valuations are also subject to significant managerial discretion, which may result in estimation errors or opportunistic behavior as delaying or avoiding impairment losses.

The research question of whether goodwill non-impairments reflect managers positive private information is explicitly examined in two prior empirical studies: Ramanna and Watts (2012) and Li, Shroff, Venkataraman, and Zhang (2011). Both studies report null results. That is, neither study finds empirical evidence that any goodwill non-impairments are driven by reliable positive private information used in managers' internal valuations. We discuss each of these studies below and explain why certain empirical

design choices may yield null results even if managers' positive private information and rational expectations of future performance drive some goodwill non-impairments.

Ramanna and Watts (2012) construct a sample of firms with two consecutive years of equity market values falling below book values. Among these firms with market-implied impairments, they examine factors associated with managers' choice not to impair goodwill. They search for an association between non-impairment and proxies for private information (future stock returns, insider stock purchases, and firm-level share repurchases). They fail to find evidence that non-impairment is associated with higher future returns or stock purchases. Instead, they document that firms with long-tenured CEOs, firms that give cash bonuses, and firms with largely unverifiable net asset fair values are less likely to impair. This latter evidence is more consistent with non-impairments being driven by managerial opportunism. They conclude, "We do not find evidence to confirm the private information argument, but we find some evidence consistent with agency-based predictions" (Ramanna and Watts 2012).

Ramanna and Watts' (2012) empirical design contrasts characteristics of firms that impair goodwill with those that do not. They argue that if the average non-impairment is driven by managers' positive private information about future firm performance, we should observe subsequent stock returns of non-impairment firms exceeding those of impairment firms. However, the drawback of this approach is that it does not allow for the possibility that some firms recognize goodwill impairments unnecessarily. Chen, Shroff, and Zhang (2019) find that some managers recognize unnecessary goodwill impairments when their market-to-book ratios fall below 1.0. These firms that recognize unnecessary goodwill impairments experience subsequent positive stock returns, which reveals the overly conservative impairment choice. Importantly, Chen et al.'s (2019) findings suggest a potential issue in contrasting impairment and non-impairment firms: there may be no relation between the decision to impair and future returns because unnecessary impairments and justified non-impairments are similarly likely to be followed by positive future returns. Overall, contrasting impairment with non-impairment firms potentially biases against finding evidence of non-impairments being driven by managers' positive private information. We mitigate this bias by using ex post stock price recovery to define when non-impairments are more likely to be based

on managers' positive private information; a goodwill non-impairment is more likely to be based on managers' positive expectations when the stock price increases sufficiently within the next year to move market value above book value.

Another study that explicitly searches for evidence of non-impairments driven by managers' positive private information is Li et al. (2011). Their study examines market reactions to impairments and non-impairments. They find significantly negative market reactions to impairments but do not find a positive market reaction to non-impairments. Consequently, they fail to reject the hypothesis that investors view non-impairments as opportunistic avoidance. They state, "Thus, for this subsample of no-impairment firms, it appears that market participants did not react to the news conveyed by the announcement of zero impairment and did not revise their expectations of firm value upward." (Li et al. 2011).

Notably though, many of the non-impairment firms examined by Li et al. (2011) have market-to-book ratios far exceeding 1.0. Table 2, Panel A of Li et al. (2011) states that the median control observation (i.e., non-impairment observation) has a book-to-market ratio of 0.60, translating to a market-to-book ratio of 1.67. Therefore, despite control firms having similar size and market-to-book ratios as impairment firms, it is unlikely that investors expect impairments for a large fraction of non-impairment firms in the Li et al. (2011) sample. Specifically, for a firm with a market-to-book ratio of 1.67, we contend that investors are not expecting any impairment and, therefore, would not necessarily react when one is not recognized. Our contention is based on research by Lawrence, Sloan, and Sun (2013) which shows impairment size and frequency are near zero when market-to-book exceeds 1.0 and increase discontinuously once the market-to-book ratio falls below 1.0. Overall, examining market reactions to non-impairments in a sample where investors are not expecting impairments has the potential to bias against finding evidence of managers' positive private information. We address this concern by only selecting firms with market-to-book ratios below 1.0. This design choice makes it more likely that investors expect firms to impair goodwill and would be surprised when one is not recognized. In additional analyses, we also use firms with market-to-book ratios just above 1.0 as a comparison group to clarify the importance of this design choice.

Other studies on goodwill impairment accounting generally conclude that goodwill impairments lag observable impairment indicators but are nonetheless informative to investors when they are recognized. Li and Sloan (2017) examine whether goodwill impairments lag fundamental and market indications of impairment. They find that subsequent goodwill impairments and lower returns are predictable using current measures of operating performance and large goodwill balances. They conclude that pre-impairment goodwill balances are generally inflated relative to fundamental and market signals. They infer that some firms use the discretion in goodwill impairment rules to delay goodwill impairments. Our study differs from Li and Sloan (2017) in that we examine a subset of firms with goodwill whose equity market values are already depressed (i.e., not inflated). In a study related to Li and Sloan (2017), Kok, Ribando, and Sloan (2017) conduct a general examination of firms with low market values relative to book values. They find evidence consistent with the notion that firms with low market-to-book ratios generally have inflated book values rather than depressed market values. Specifically, they show that a portfolio of low market-to-book firms tend to have future reductions in book values (e.g., impairments), rather than future appreciation in stock prices. We identify cases in which accounting rules, if applied reliably, signal future increases in stock prices for low market-to-book firms.

2.2 | Case study of goodwill non-impairment

DigitalGlobe, Inc. provides a case study for goodwill a non-impairment that reflects managers' positive private information. Immediately before their February 25, 2016, earnings announcement, DigitalGlobe had a market-to-book ratio of 0.77, suggesting a market-implied impairment of approximately 23 percent of book value (goodwill was 39 percent of book value as of December 31, 2015). The company noted in the 2015 10-K that they had performed a quantitative impairment test because the equity market value had been below book value during the last three months of the fiscal year. Management determined that goodwill was not impaired after internally valuing their single reporting unit using discounted cash

flow analysis.[6] Perhaps lending credibility to DigitalGlobe's non-impairment, the company had robust monitoring mechanisms (i.e., Big 4 auditor, large analyst following, high institutional ownership) and other managerial actions consistent with the notion that managers hold an informational advantage over investors (i.e., regular financial guidance, insider stock purchases, firm-level stock repurchases, corporate restructuring activities, although fairly insignificant R&D spending). In the ensuing 12 months, DigitalGlobe's market value appreciated 83 percent, which suggests that the lack of goodwill impairment reflected managers' positive private information and their rational expectation that firm value will rebound (see Figure 1 for DigitalGlobe's market value changes relative to book value during 2015 and 2016).

2.3 | Hypothesis development

Managers are required to evaluate goodwill for impairment at the reporting unit level at least once each fiscal year. Goodwill impairment tests are conducted after completing impairment testing for all other asset accounts (see ASC 350-20-35-31). To assess the need for goodwill impairment, managers typically employ common valuation techniques such as discounted cash flow and market comparable analyses.[7] If managers' internal valuations of the reporting units fall short of their balance sheet values (i.e., book values), firms recognize a goodwill impairment charge and reduce the value of the goodwill asset. To identify when firms may need an impairment, we follow prior literature and examine market-implied impairments, which is the gap between the firm's book value and equity market value when the market-to-book ratio is lower than 1.0. Cases where firms have a market-to-book ratio below 1.0 and choose not to recognize a goodwill impairment are interpreted as either (1) managers acting on positive private

[6] DigitalGlobe management also made the rare choice to disclose the results of their fair value assessment, which concluded that fair value *exceeded* book value by 35 percent Because DigitalGlobe is a single-reporting-unit firm, management estimated the fair value of the entire firm when conducting the goodwill impairment test. Therefore, DigitalGlobe management was signaling that they believed market value of equity understated its fair value by 75 percent (1.35 / 0.77).

[7] Some firms disclose their valuation approaches in the notes to the financial statements. We explore the disclosures further in Section 5.5.

information or (2) opportunistically delaying goodwill impairment (e.g., Beatty and Weber 2006, Li et al. 2011, Ramanna and Watts 2012).[8]

The combination of a depressed stock price and managers' decision not to impair goodwill is indicative of a difference in opinion between investors and managers about the intrinsic value of the firm. Importantly though, the manager's optimistic signal may or may not be reliable. If the non-impairment is reliable and the manager's optimism is justified, then equity market values are incorrect and should adjust upward in the future. If the manager's non-impairment is not reliable, then equity market values are not understated and will not systematically adjust upward in the future.

We examine the conditions under which goodwill non-impairments are likely to be reliable accounting choices based on managers' positive private information. Managers have incentives to use unjustified optimistic estimates of fair value to avoid recognizing goodwill impairments. Consistent with this explanation, prior academic research has found no evidence that goodwill non-impairments reliably reflect managers' positive private information. Rather than simply asking whether goodwill non-impairments reflect positive private information on average, we identify cross-sectional factors that we expect to help discriminate between reliable and unreliable goodwill non-impairments. The first factor is the extent to which managers are constrained from opportunistically avoiding or delaying goodwill non-impairments. We posit that managers at firms with stronger monitoring mechanisms in place are less able to avoid necessary impairments because they are more scrutinized on average. As such, we expect that goodwill non-impairments are more likely to reflect managers' positive private information when firms have stronger external monitoring.

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[8] At least three caveats exist to this interpretation which have been acknowledged by prior research: (1) The existence of multiple reporting units within a single firm weakens the link between firm-level equity market values and firm-level book values (Ramanna and Watts refer to this as "reporting flexibility"). (2) Firms are permitted to apply estimated control premiums on top of their fair value assessments (as allowed by ASC 350-20-35-23), whereas stock prices generally do not reflect control premiums. (3) Prior to the elimination of step 2 of the goodwill impairment calculation (ASU 2017-04), low fair values of identifiable assets may lead to no impairment even if the estimated fair value of the reporting unit falls short of its book value. These exceptions decrease the ability of goodwill non-impairments to convey positive private information and will generally bias the rate of stock price recovery toward zero.

H1A: Goodwill non-impairments are more reliable when there are monitoring mechanisms in place to prevent managers from avoiding necessary impairments.

The second factor for evaluating whether goodwill non-impairments are reliable rather than opportunistic is the extent to which managers possess private information about their firms' economic prospects. We define private information as value relevant information known to managers but not reflected in the firm's stock price. We rely on the notion that information asymmetry between managers and investors varies across firms. Goodwill non-impairments can only reflect managers' positive private information to the extent that managers actually possess private information. If managers are not significantly more informed than investors, then it is unlikely that the non-impairment decision is based on managers' superior knowledge of firms' economic prospects. On the other hand, if managers possess an informational advantage over investors, then the decision to not impair goodwill is more likely to be justified and the stock price will recover in future periods.[9] There is significant tension in this hypothesis because greater information asymmetry also provides greater opportunity for managers to opportunistically avoid goodwill impairments that they should have recognized.

H1B: Goodwill non-impairments are more reliable when managers possess private information.

Finally, we examine a more general hypothesis concerning the incremental informative value of goodwill impairment tests holding reliability constant. As noted above, goodwill impairment tests are the final impairment test performed on the balance sheet prior to reporting. Given that goodwill impairment testing relies on substantial management judgment, including expectations of future performance, the impairment decision should provide value relevant information to investors. This reasoning applies to both the choice to impair goodwill and the choice not to impair goodwill.

[9] Information asymmetry also enables adverse selection so that managers have greater opportunity to decline necessary goodwill impairments. For example, they may have negative or uncertain private information instead of positive. If this is the case on average, we will not detect a positive association between private information proxies and stock price recovery.

Practitioners have written in public comment letters that goodwill non-impairments during times of stress convey optimistic information about firm value (Aaron et al. 2019; Bank of America 2019). These comments came in the context of the FASB's project on subsequent accounting for goodwill, arguing that systematic goodwill amortization would reduce the opportunity to convey information through goodwill impairment decisions.

The design of goodwill impairment accounting rules also suggests that goodwill non-impairments provide incremental information to investors about firm value. First, unlike other assets, goodwill impairment testing requires managers to estimate the fair value of the reporting unit level rather than the value of individual assets.[10] Managers estimate the value of goodwill as the excess of the estimated fair value of a reporting unit over the amount allocated to its identifiable assets. As such, the goodwill impairment decision should convey more information than impairment decisions for other assets. Second, goodwill is subject to a strict fair value impairment test. The strict fair value test means that managers do not have an option to use undiscounted cash flows in impairment testing. In contrast, finite-lived assets like PP&E are first subjected to an initial recoverability test, which allows its book value to exceed its fair value so long as the expected undiscounted future net cash flows attributable to an asset exceed its book value. Thus, the decision about whether or not to impair goodwill is a direct reflection of managers' estimates of reporting unit fair value. Based on the above arguments, we hypothesize that goodwill impairment tests that result in no significant impairments convey information about firm value.

H2: Goodwill non-impairments convey information about firm value.

3 | EMPIRICAL DESIGN

[10] For example, finite-lived asset impairment tests are performed at the level of an asset group, which ASC 360 defines as, "…the lowest level for which identifiable cash flows are largely independent of the cash flows of other assets and liabilities." Inventory impairment tests are performed within the inventory line item (see ASC 330).

To test our hypotheses, we employ a novel empirical design that examines the quality of goodwill non-impairments among firms for which investors are likely expecting large goodwill impairments. Two key aspects of our approach are: (1) selecting a sample of firms for which investors are expecting large goodwill impairments and (2) defining a measure for the informational value of goodwill non-impairments.

We use the year-end pre-impairment market-to-book ratio to identify a sample of firms whose investors are expecting significant goodwill impairments (e.g., Beatty and Weber 2006; Li et al. 2011; Ramanna and Watts 2012). We select firms with market-to-book ratios below 0.95 and goodwill on their balance sheets. Under ASC 350-20, firms may first conduct an optional qualitative assessment to test whether it is "more likely than not" that the fair value of a reporting unit is less than its book value (step zero). If the firm determines it is not more likely that fair value is less than book value, it does not need to perform the quantitative impairment test (step one). Our market-to-book requirement makes it likely that firms will proceed to step one of their goodwill impairment tests, in which they estimate the fair values of their reporting units. We also note that firms may schedule their required annual goodwill impairment tests at various times during the fiscal year. However, a low market-to-book ratio at the fourth quarter balance sheet date makes it likely that the goodwill impairment analysis must be reconsidered when preparing the annual earnings announcement and 10-K.

To distinguish whether non-impairments are more likely to be based on managers' positive information and those that are more likely driven by managerial opportunism, we use the long-run recovery of market value above book value following the non-impairment. For each observation, we accumulate raw buy-and-hold returns starting the day before the earnings announcement date and extending as long as one year after the 10-K filing date. We define the indicator variable *RECOVER* as equal to one if the buy-and-hold returns are sufficient to lift market value above post-impairment book value anytime during the accumulation window and zero otherwise. This measure is based on Asquith, Mikhail, and Au (2005), who define analysts' price targets as high quality if the covered firm's stock price reaches the price target at some point during the twelve months following the analyst report. We expect that a goodwill non-impairment is more likely to be based on managers' positive information when subsequent stock price

recovery moves the firm's market value of equity above its book value (*RECOVER* = 1). That is, the non-impairment decision appears to be justified by ex post stock price recovery.

Our first empirical model examines whether proxies for monitoring mechanisms and managers' informational advantage is associated with the likelihood of stock price recovery following non-impairment. We estimate model 1 using a logistical regression.

$$RECOVER = \alpha + \beta_1 \times MONITORING + \beta_2 \times PRIVATE\_INFO + \beta_i \times \text{Controls} + \text{Industry Fixed Effects} + \text{Year Fixed Effects} + \varepsilon \quad (1)$$

The *MONITORING* term represents a set of variables that constrain firms from opportunistic goodwill non-impairments (i.e., H1A). Hypothesis 1A predicts positive coefficients for the monitoring variables. Big 4 audit quality is subject to debate, but some studies find that Big 4 auditors deliver higher quality audits than other accounting firms (e.g., Eshleman and Guo 2014). We create an indicator variable that equals one for firms audited by one of the Big 4 auditors, and zero otherwise (*BIG4*). Second, Ayres et al. (2019) find evidence consistent with the notion that analysts are effective at monitoring firms' goodwill impairment choices. We include the natural log of analyst following (*Ln(ANALYSTS)*). Third, Glaum et al. (2018) find that institutional investors provide some external monitoring of goodwill impairments.[11] We include the percentage of shares outstanding held by large institutions (*INST*). Finally, Frankel et al. (2008) suggest that lenders view goodwill balances and impairments as informative and therefore may serve as an additional monitor on the accounting quality for goodwill. Therefore, we include a variable capturing the relative magnitude of leverage in the capital structure (*LEVERAGE*).

The *PRIVATE_INFO* term represents a set of variables that proxy for managers' informational advantage over investors. Hypothesis 1B predicts positive coefficients for the private information variables. Prior evidence suggests that financial guidance is an effective method for managers to communicate their

[11] Glaum et al. (2018) examine an international sample. Their findings are strongest in countries with weak enforcement regimes.

private information about future firm performance (e.g., Patell 1976, Penman 1980, Guay et al. 2016). If managers who forecast future firm performance have more information about firm prospects than those who do not, then we expect higher quality goodwill impairment decisions from firms that provide guidance. We include an indicator variable equal to one for firms that issue financial guidance, and zero otherwise (*GUIDANCE*). We also include indicator variables that equal one for firms with insider equity purchases (*IBUY*) and firm-level share repurchases (*REPURCHASE*). Due to the costly nature of insider purchases of company equity, we expect managers to increase open market purchase activity when they have a strong expectation that their firm is undervalued (e.g., John and Mishra 1990, Babenko et al. 2012). Firm-level share repurchases may also reflect positive private information (e.g., Constantinides and Grundy 1989, Babenko et al. 2012). Managers cite equity undervaluation as a primary motivation for share repurchases (Brav et al. 2005). We also include an indicator variable that equals one for firms engaging in restructuring activities (*RESTRUCTURING*), and zero otherwise. Corporate restructuring activities may indicate that managers are taking actions to enhance firm value. Managers are typically in the best position to know whether these restructuring plans will be successful, and therefore they likely possess significant private information. Previous studies suggest that restructurings improve future operating performance and mitigate investors' negative reactions to large goodwill impairments (e.g., Cready et al. 2012, Jarva 2009). While the above managerial actions suggest managers possess private information, they can also take such actions to intentionally mislead investors. Therefore, these hypothesized factors may have no association or a negative association with future stock price recovery in our setting.

We also construct a composite measure using the above firm-level monitoring and private information factors to represent the extent to which we expect the goodwill non-impairment to be reliable. We define an ex ante indicator variable (*RELIABLE*) based on the equal-weighted sum of the factors. We refer to the score as ex ante because we calculate it based on all factors without regard to whether each factor ultimately is associated with an ex post justified goodwill non-impairment. To calculate *RELIABLE*, we begin by assigning one point to each of the eight factors. If the observation is above the sample median for a factor, that observation receives a point for that factor. For example, the median percentage of shares

outstanding held by institutional investors in our sample is 48.6%. Thus, firms with more than 48.6% of its shares outstanding held by institutional investors receive one point for that factor. For indicator variables, we award one point if the factor is equal to one, and zero otherwise. We compute the sum of points across all eight factors for each observation. The maximum number of points is eight, and the minimum is zero. Higher values indicate that the goodwill non-impairment is more likely to be reliable and less likely to represent a false non-impairment. Finally, we set the indicator variable, *RELIABLE*, to one for firms with total points that are above the sample median, and zero otherwise.[12] In Table 2, Panel B, the median point total is four.

Finally, we consider firms that are more difficult for outside investors to value. When firms are difficult for outside investors to value, managers' reported book values may be more well informed than investors' market values. Chan et al. (2001) write, "Under generally accepted U.S. accounting principles, many types of intangible assets are not reported in firms' financial statements. When a firm has large amounts of such intangibles, the lack of accounting information generally complicates the task of equity valuation." Chan et al. (2001) use R&D intensity as their proxy for firms' investments in these unrecognized intangibles. We argue that in the case of difficult-to-value firms, goodwill impairment tests have the potential to be more informative because they represent an opportunity for managers to communicate their private information about firm prospects to investors. On the other hand, the difficulty of valuation opens up the possibility that managers opportunistically avoid recognizing goodwill impairments. We identify R&D intensity on the industry level rather than the firm level because of strong association between R&D expenditures and industry membership. We construct an indicator variable (*R&D_INDUSTRY*) equal to one if the mean R&D intensity for a GICS industry is greater than the median GICS industry value, and set to zero otherwise. Given that this variable is constructed at the industry level, we do not include industry fixed effects when examining the relation between R&D intensity and stock price recovery.

[12] We find consistent results using the sum across the eight factors (i.e., count variable ranging from 0 to 8).

In our model we control for several factors that are plausibly associated with our reliability measures and the likelihood or recovery. While all observations in our sample have market-to-book values less than 0.95, firms with lower market-to-book ratios are less likely to recover as the required rate of return to recover is greater. We control for this by including the market-to-book ratio for each observation (*MTB*). We also consider the length of time of a firm's market-value being depressed below book-value by controlling for the percentage of trading days over the past six months that a firm's stock has been trading below book-value (*UNDERWATER_PCT*). We control for firms' fundamental performance with operating cash flow (*CASHFLOW*) and year-over-year sales growth percentage (*SALES_GROWTH*) from the most recent fiscal year. Lastly, we control for the size of the firm as the market capitalization as of the most recent year end (*Ln(MARKET_VALUE)*).

To evaluate the value relevance of goodwill non-impairments, we use short-window announcement returns when impairments are expected by the market but not recognized by the firm. If investors view non-impairments as being motivated by positive private information, we should observe a positive reaction to their announcement that is proportional to the expected, but not recognized, impairment amount (e.g., Li et al. 2011). We estimate model 2 using an ordinary least squares regression.

$$ARET\_ANNOUNCEMENT = \alpha + \beta_1 \times SIGNAL + \beta_2 \times RELIABLE + \beta_3 \times SIGNAL \times RELIABLE + \beta_4 \times \text{Controls} + \varepsilon \quad (2)$$

We assume that investors become aware of the non-impairments either at the time of the earnings announcement or shortly after, at the time of the 10-K filing. Therefore, we define the announcement period as one trading day prior to the earnings announcement date (Compustat variable *rdq*) extending through one trading day following the 10-K filing (SEC Analytics Suite variable: *fdate*). We accumulate buy-and-hold returns during the announcement period and subtract buy-and-hold value-weighted market returns for the same period to calculate *ARET_ANNOUNCEMENT*. We also construct a variable called *SIGNAL*, which equals the percentage difference between the post-impairment book value and pre-announcement market value of equity, calculated as (1/*MTB*) – 1. *SIGNAL* represents the magnitude of the goodwill impairment

that was expected but not recognized. Previously defined, *RELIABLE* is our ex ante composite measure that capture the extent to which we expect the non-impairment to be a reliable accounting decision based on managers' positive private information. A positive coefficient for β_3 would indicate that goodwill non-impairments that are reliable accounting decisions are value relevant and that investors respond proportionally to the magnitude of the goodwill impairment that was expected but not recognized. In this model we include controls for other information released at the earnings announcement including the annual earnings guidance surprise (*EARNINGS_GUIDANCE*), the earnings surprise (*EARNINGS_SURPRISE*), the annual sales guidance surprise (*SALES_GUIDANCE*), the annual sales surprise (*SALES_SURPRISE*), and an indicator if the firm recognized a partial goodwill impairment (*IMPAIR*). The Appendix provides detailed variable definitions.

4 | DATA AND SAMPLE CONSTRUCTION

We construct a sample of firms from 2002 to 2019 that do not recognize a significant goodwill impairment despite having a large market-implied goodwill impairment. Table 1 presents the attrition steps to arrive at our main sample: (1) we identify 67,398 firm-year observations with data available to construct our variables after excluding negative book value firms. We require data from Compustat, Center for Research in Security Prices (CRSP), Audit Analytics, the Institutional Brokers' Estimate System (I/B/E/S), and Thomson Reuters Insiders and Institutional Holdings databases. (2) We require material goodwill balances, which we define as pre-impairment goodwill balances greater than five percent of pre-earnings-announcement market value. (3) We require pre-impairment market-to-book ratios (i.e., pre-earnings-announcement market values divided by pre-impairment book values) below 0.95. After these three steps, we arrive at a sample of 3,747 observations for which we argue the market expects significant goodwill impairments to be recognized. Two additional attrition steps identify our main sample of goodwill non-impairments: (4) We require non-zero post-impairment goodwill balances. This requirement makes it likely that ending book values are less than or equal to managers' assessments of their fair values. If ending book values were greater than managers' fair value assessments, they would likely have impaired goodwill

further. (5) Finally, we require post-impairment market-to-book ratios to remain below 0.95. Post-impairment market-to-book ratios less than 0.95 signal to investors that managers' valuations of the firm exceed stock market valuations. Our main sample is 3,334 firm-years (1,587 unique firms).

Figure 2 presents a visual representation of our main sample. Market value is at least five percent below book value at year-end as well as two trading days prior to the earnings announcement. In Figure 2, the dotted line is a representation of buy-and-hold returns for a firm whose market value recovers to that lower bound. We set *RECOVER* to one when the dotted line crosses over the book value. We set *ARET_ANNOUNCEMENT* equal to the abnormal return during the short-window announcement period starting the day before the earnings announcement and ending the day after the 10-K is filed.

5 | EMPIRICAL RESULTS

5.1 | One-year recovery following goodwill non-impairment announcement

Figure 3 reports the rate of recovery in goodwill non-impairment firms. We find that seven percent of non-impairment firms recover during the announcement period, defined as one trading day before the earnings announcement until one trading day after the 10-K filing date. The highest concentration of recovery takes place within three months of the announcement period; 26 percent of firms recover during this period. We also find that 47 percent of firms have cumulative buy-and-hold returns sufficient to recover their market values above post-impairment book values in the year following the 10-K filing. Our results in Figure 3 suggest that nearly half of non-impairments are ex post justified based on future stock returns. We note that this finding is consistent with the conclusion from prior literature (Ramanna and Watts 2012, Li et al. 2011) that non-impairments, on average, represent opportunism rather than positive private information about firm value. However, these percentages indicate that a nontrivial proportion of goodwill non-impairments are consistent with managers signaling positive private information, which is informative to investors.

Table 2 presents descriptive statistics for variables in our main sample. Based on data from Audit Analytics, 61 percent of sample firms are audited by a Big 4 auditor (*BIG4*) (i.e., PwC, Deloitte, Ernst and

Young, and KPMG). We calculate the natural logarithm of one plus analyst following (*Ln(ANALYSTS)*), which has a mean of 1.403 and median of 1.386. This equates to a mean and median of three analysts for our sample (unreported). The mean sample firm has 49 percent institutional ownership (*INST*). On average, firms in our sample have leverage ratios of 21 percent (*LEVERAGE*). For our firm-level informational advantage factors, we find that 45 percent of our sample firms issued guidance during the preceding fiscal year (*GUIDANCE*), 65 percent had insiders buying stock during the preceding fiscal year (*IBUY*), 50 percent completed firm-level share repurchases during the prior fiscal year (*REPURCHASE*), and 24 percent incurred restructuring expenses during the preceding year (*RESTRUCTURING*).

Table 2, Panel B, presents the calculation of our composite measure, *RELIABLE*, using the above monitoring and informational advantage factors. As stated previously, we begin by giving one point to an observation for each factor above its respective sample median (or one point for each indicator factor equal to one). We then calculate the sum of points across the eight factors for each observation. The median number of total points in our sample is four. As such, we set *RELIABLE* to one for observations with greater than four total points, and zero for observations with four or less total points.

Among our control variables, the sample mean (median) post-impairment market-to-book ratio is 0.662 (0.701) (Table 2, Panel A). The maximum post-impairment market-to-book ratio is 0.95, consistent with our sample construction. The mean firm in our sample had a market value of equity below book value (*UNDERWATER_PCT*) for 83 percent of the preceding 126 trading days (i.e., six months of trading before their fiscal year-end), and the median firm had market value below book value for all 126 days trading days. Sample firms have mean operating cash flows (*CASHFLOW*) of 3.4 percent of lagged total assets. Mean sales growth (*SALES_GROWTH*) is 3.1 percent. For market value of equity, the mean is $2 billion and the median is $129 million (untabulated). We calculate the natural logarithm of market value (*Ln(MARKET_VALUE)*) to normalize the distribution.

Table 3 reports Pearson and Spearman pairwise correlations of our main variables. Many of the ex ante factors intended to predict stock price recovery are positively associated with *RECOVER*, but are also positively associated with *MTB* and *Ln(MARKET_VALUE)* and negatively associated with

UNDERWATER_PCT. These relations underscore the importance of controlling for these key firm characteristics before inferring the predictive ability of our ex ante factors.

Table 4 reports the industry and year concentrations and rates of stock price recovery. Panel A presents the industry breakdown based on 24 GIC industry groups within our sample. While the mean recovery is 47 percent across all firms, the equal-weighted mean recovery across industries is 51 percent (untabulated). We find that banks make up approximately 24 percent of our sample and have relatively low rates of stock price recovery after a non-impairment. Excluding all finance-related industries, the average rate of recovery is 53 percent across firms. In comparison, the mean recovery rate among firms in R&D-intensive industries (i.e., industries with above median R&D expense scaled by lagged assets) is 54 percent (equal-weighted mean recovery across R&D industries is 55 percent), consistent with the notion that goodwill impairment tests are particularly informative for hard-to-value firms. Panel B presents the rates of recovery by year. The rates of stock price recovery fluctuate significantly in some years, likely because of market-wide factors, but in most years the rate hovers around 45 percent. The equal-weighted mean recovery across years is 45 percent. Overall, this table underscores the importance of accounting for industry and year factors in our multivariate analyses.

Table 5 presents multivariate logistic regressions to identify factors associated with *RECOVER*. We include monitoring firm-level factors in column 1, informational advantage factors in column 2, and all firm-level factors in column 3. All regressions include the control variables. We find that audit quality (*BIG4*), analyst following (*Ln(ANALYSTS)*), institutional ownership (*INST*), and restructuring activities (*RESTRUCTURING*) are positively associated with the likelihood of stock price recovery (*RECOVER*).[13] In column 4, we document a positive and significant coefficient for *RELIABLE* (0.368, p-value < 0.01),

[13] In an untabulated analysis, we replace *UNDERWATER_PCT* with stock price volatility, measured as the standard deviation of daily stock returns for the 252 trading days prior to the balance sheet date, and our inferences are unchanged. All factors that predicted recovery in Table 5 continue to predict stock price recovery at equal or greater levels of statistical significance. We believe *UNDERWATER_PCT* fits our setting slightly better since ASC 350-20-35c, explicitly lists "a sustained decrease in share price" as an indicator that a reporting unit's book value exceeds fair value.

which suggests that, in aggregate, external monitoring and managers' informational advantage over investors are valuable in predicting when goodwill non-impairments are reliable accounting decisions that contain information value. Therefore, we find evidence consistent with hypotheses H1A and H1B.

Finally, in column 5 we examine whether goodwill non-impairments carry more significant implications in hard-to-value industries, proxied by high R&D expenditures. In these industries, we hypothesize that managers hold an informational advantage over investors, and therefore their goodwill accounting choices may be based on this private information and investors have not been able to previously incorporate into stock prices. We document a positive and significant coefficient on *R&D_INDUSTRY* (0.219, $p < 0.05$), which suggests that firms in these industries experience a high rate of stock price recovery.[14] This provides additional evidence consistent with H1B.

5.2 | Investor response to non-impairment announcement

In our next analysis, we examine investors' responses to goodwill non-impairment announcements. In addition to examining investors' unconditional reactions to non-impairments, we seek to understand whether investors differentiate between non-impairment announcements that are expected to be reliable reflections of managers' positive private information and those that are not. If investors view the former type of non-impairments as being motivated by positive private information, we should observe a positive reaction to their announcement.

Table 2, Panel A, presents descriptive statistics of the variables used in market reaction analysis. We find the average short-window abnormal announcement stock return is positive 0.3 percent (*ARET_ANNOUNCEMENT*). *SIGNAL* represents the required return for pre-announcement market-value to reach post impairment book-value ((calculated as 1/*MTB*)-1). We denote this variable as *SIGNAL* because it represents the minimum return required for market values to achieve the minimum fair value signaled by

[14] In an untabulated test, we examine whether proprietary information (proxied by filing a confidential treatment order, form CT ORDER) indicates that management possesses important information that investors do not. The sample size decreases to 1,798 because CT ORDERS did not begin being disclosed until May 2008. We do not observe a higher rate of recovery among firms with CT ORDER filings.

managements' non-impairment decision. Our sample of non-impairments includes small impairments, as long as goodwill is not fully impaired and the post-impairment market-to-book ratio remains below 0.95. We find that 18 percent of our sample recognize small goodwill impairments (*IMPAIR*), with the remaining 82 percent recognizing no impairments.

Table 6 presents the ordinary least squares regression results examining variables associated with announcement returns. In column 1, we regress *ARET_ANNOUNCEMENT* against *IMPAIR*, surprise variables, and guidance variables.[15] Because all firms in our sample do not recognize the full market-implied impairment amount, the implication is that the announcement reveals a difference in opinion between investors and managers. Based on the low equity market value, investors have pessimistic valuations of the firm. Based on the high book value, managers have relatively optimistic views of firm value. In column 1, we observe a positive and significant intercept, suggesting that investors react unconditionally positive upon revelation of the goodwill non-impairments. In column 2, we add the *SIGNAL* variable. The positive coefficient on *SIGNAL* suggests the market reaction to non-impairments is proportional to the impairment that was expected but not recognized. This positive coefficient contrasts with the insignificant coefficient in a similar regression run by Li et al. (2011).[16] Because the Li et al.'s (2011) sample of non-impairments includes mostly firms with market-to-book ratios above 1.0, it is possible that investors in their sample are not expecting goodwill impairments and are therefore not surprised when none are recognized. Finally, we run the full regression specification presented in model 2 by interacting the *SIGNAL* variable with the *RELIABLE* variable and report the results in column 3. We find a positive and significant coefficient for the interaction term, *SIGNAL* × *RELIABLE* (0.009, $p < 0.05$). However, the main effect coefficients for *RELIABLE* and *SIGNAL* are not statistically significant. This result suggests that investors react more strongly to the announcement of goodwill non-impairments when

[15] In untabulated tests, we estimate these regressions separately for small-impairment (*IMPAIR* = 1) and non-impairment (*IMPAIR* = 0) firms. Overall, we find that the results are strongest when no impairment is recognized.
[16] See Li et al. (2011) Table 4; coefficient on "U-ILOSS * control * post-142," which is not significantly different from zero.

they are expected to be reliable. Overall, we find evidence that investors react positively to the announcement of goodwill non-impairments that are expected to be reliable. Despite the positive average reaction, the small magnitude of the coefficients suggests that investors discount the notion that managers' goodwill impairment choices are fully attributable to positive private information about firm prospects. Another possible explanation for this somewhat muted response is that investors, who may not be familiar with goodwill accounting rules, are unaware that managers are sending positive signals about firm value.

5.3 | Price recovery of goodwill versus non-goodwill firms

Finally, we examine whether goodwill non-impairments are informative in general (H2). We use our full sample of goodwill non-impairment firms and construct a control sample of firms whose market-to-book ratio is below 0.95 but do not have goodwill (i.e., "non-goodwill firms"). Table 7 presents descriptive statistics of predictors of stock price recovery for the subsamples. Because these characteristics are substantially different between the groups (Panel A), we use entropy balancing to re-weight the subsample of non-goodwill firms based on the variables that predict recovery (Hainmueller 2012). The entropy balancing procedure ensures that the predictors of recovery have similar means, variances, and skewness between the goodwill non-impairment firms and non-goodwill firms. We present the standard differences and variance ratio in Panel B to demonstrate successful entropy balancing. After balancing, all standard differences (variance ratios) are within +/- 0.1, indicating balanced covariates (Rubin 2001, Austin 2011).

After entropy balancing on predictors of stock price recovery, we find that firms with goodwill are 12 percent (47 percent minus 35 percent) more likely to have their equity market values recover above book values within one year. This is consistent with H2. Table 8 reports a multivariate logistic regression including industry and year fixed effects and the entropy weights. The positive coefficient on *Goodwill* is consistent with the above result that, among firms with depressed equity market values, those with goodwill are more likely to experience stock price recovery. This result suggests that goodwill non-impairments convey useful information that firms without goodwill do not convey.

5.4 | Price recovery using alternative market-to-book thresholds

Lawrence et al. (2013) show that the market-to-book threshold of 1.0 holds specific importance when it comes to testing goodwill for impairment. The magnitude and likelihood of goodwill impairments are very near zero when the market-to-book ratio exceeds one. ASC 350-20-35-22 states that, "Quoted market prices in active markets are the best evidence of fair value and shall be used as the basis for the measurement, if available." Therefore, it is likely that firms with market-to-book ratios below 1.0 are significantly more likely to conduct goodwill impairment tests than those with market-to-book ratios above 1.0. Consequently, we argue that another reasonable control group for our sample of goodwill non-impairment firms are similar firms with goodwill, but with market-to-book ratios just above 1.0. These firms are similar but are much less likely to perform goodwill impairment tests. As a result, we can partially attribute differences in subsequent returns across these two groups to the goodwill impairment test. In Tables 9 and 10, we examine whether, among firms with goodwill on their balance sheets, those with market-to-book ratios falling just below 1.0 (*TREATED* = 1) earn higher future returns than those with market-to-book ratios falling just below 1.5 (*TREATED* = 0). Goodwill impairment tests will tend to weed out of our treatment sample, but not our control sample, firms for which the book value of equity falls below its fair value. In Table 9, we present descriptive statistics of firms in our main non-impairment sample, except that we limit to firms with market-to-book ratios above 0.67 to ensure we have a comparable control group. We use a control group that consists of firms with goodwill on their balance sheets, but with a market-to-book ratios greater than 1.0 and less than 1.425.[17] Our *MEET_THRESHOLD* variable is equal to one if firms' market value of equity rises above the threshold market-to-book ratio (1.0 for our *TREATED* = 1 firms and 1.5 for our *TREATED* = 0 firms), and zero otherwise. We entropy balance our treatment and control group firms on the returns needed to lift market equity values above the threshold value (*RETURN_NEEDED*), our reliability indicator, firm performance, size and the percentage of the prior six

[17] Just as 0.95 is 5 percent below 1.0, 1.425 is 5 percent below 1.5.

months that equity market value was below the threshold (*UNDERNEATH_PCT*). After entropy balancing, both treatment and control firms need the same subsequent returns to lift market equity values above the threshold value, are equally reliable, have equal operating performance, size and have had their equity market values below the threshold value for an equal amount of time. Despite these equivalencies, firms with market-to-book ratios falling just below 1.0 are 37 percent (62 percent minus 27 percent) more likely to have their equity market values recover above threshold values within one year. This is consistent with *H2*. This is also in contrast to Kok et al. (2017) who show that firms with depressed market-to-book ratios are much more likely to experience subsequent impairments than subsequent increases in market value. We attribute this difference to the goodwill impairment test, which requires firms with goodwill on the balance sheet to have significantly stronger fundamental reasons to allow their book values to exceed market values. Table 10 presents multivariate logistic regressions including industry and year fixed effects and the entropy weights. The positive coefficient on *TREATED* is consistent with the above result that the firms performing goodwill impairment tests and leaving goodwill unimpaired is a strong signal that market values will increase in the future.

5.5 | 10-K footnote disclosures

As a part of the now-suspended standard-setting process, the FASB solicited comments on various aspects of proposed rule changes to accounting for goodwill. Question 20 of the July 9, 2019, invitation to comment stated, "What is your assessment of the incremental costs and benefits of disclosing the facts and circumstances that led to impairment testing that have not led to a goodwill impairment loss?" We provide descriptive evidence on the disclosures offered by firms in our sample regarding their controversial decisions not to recognize market-implied goodwill impairments. Firms in our sample have significantly depressed market values, and therefore are likely performing rigorous goodwill impairment testing. We randomly select 500 observations from our sample (15 percent of the total sample) and read their 10-K footnote disclosures regarding their goodwill impairment testing procedures and outcomes. The firm characteristics of these observations closely match those of our full sample. We find that the vast majority of firms have some explanation of their process. In untabulated analyses, we document that 96 percent of

firms disclose their basic valuation methodology. Among those disclosing, 74 percent use an income methodology (e.g., discounted cash flow analysis), and 40 percent use a market methodology (e.g., benchmarking to market multiples of comparable firms). However, only 10 percent of firms disclose a quantitative input to one of these methodologies, such as discount rates, growth rates, market multiples, or control premiums. Finally, 16 percent of firms disclose a quantitative output (e.g., the excess of fair value over book value or sensitivity analyses). Large firms with Big 4 auditors, larger analyst following, and larger institutional ownership appear to provide more comprehensive disclosure. Importantly, in untabulated tests, we do not detect a relation between the quality of such disclosure to whether firms experience subsequent stock price recovery. We conclude that very few firms provide concrete information about their goodwill impairment testing. This lack of voluntary disclosure makes it difficult for investors to understand the reasonableness, rigor, and ultimately the reliability of managers' valuations.

6 | CONCLUSION

We examine firms that do not significantly impair goodwill despite strong market signals that investors expect large goodwill impairments. Almost half (47 percent) of these firms appear justified in their non-impairments based on subsequent economic performance. In contrast to prior research, which finds no evidence of goodwill non-impairments being driven by managers' positive private information, we find evidence that about half of impairments meet this explanation. Strong external monitoring mechanisms and indicators that managers hold an informational advantage over investors help discriminate between reliable and unreliable goodwill non-impairments. Investors react positively to goodwill non-impairments, particularly when the above reliability factors are present. Finally, we utilize two novel control groups to isolate the informational value of goodwill non-impairment decisions.

Overall, we provide some evidence of the informational value of the current goodwill impairment testing model. Despite the lack of empirical academic evidence, several prominent practitioner organizations asserted that during times of stress, goodwill non-impairments can signal managers' private information about favorable firm prospects. The decision not to recognize a market-implied goodwill

impairments is one of the most controversial accounting decisions made by firms. Previous academic evidence suggests that the impairment-only model results in goodwill impairments that convey negative private information (e.g., Li et al. 2011). Our new evidence suggests that firms may also convey positive private information through goodwill non-impairments and document the factors that help discriminate between reliable and unreliable accounting choices. Finally, we add to the stream of research that suggests investors can benefit from a strong understanding of the accounting rules (e.g., De Franco et al. 2011, Campbell et al. 2015, Rouen et al. 2021). We suggest that managers may reliably signal positive information about firm value through their subsequent accounting for goodwill.

Appendix

Variable definitions

ARET_ANNOUNCEMENT	The buy-and-hold returns from the trading day prior to the earnings announcement to the trading day after the 10-K filing minus the buy-and-hold value-weighted market return.
BIG4	Equal to one if the firm is audited by a Big 4 auditor (i.e., PwC, Deloitte, Ernst and Young, and KPMG), and zero otherwise. Obtained from Audit Analytics.
CASHFLOW	Annual operating cash flow for the preceding fiscal year scaled by lagged total assets. Winsorized at +/- 100% of prior year assets.
EARNINGS_GUIDANCE	Management forecasted annual earnings per share minus the mean I/B/E/S forecasted annual earnings per share scaled by the market value of equity. If a firm is not covered by I/B/E/S this variable is equal to zero. Winsorized at +/-10% of the market value of equity.
EARNINGS_SURPRISE	The I/B/E/S annual actual earnings minus the mean analyst earnings forecast scaled by the market value of equity. If a firm is not covered by I/B/E/S, then the variable is equal to the current year's annual operating earnings per share minus the prior year's annual operating earnings per share scaled by the market value of equity. Winsorized at +/-10% of the market value of equity.
GOODWILL	Equal to one if the observation has material goodwill (> 5% of pre-earnings-announcement market value), and zero otherwise.
GUIDANCE	Equal to one if the firm issued guidance anytime during the preceding year, and zero otherwise. Obtained from I/B/E/S.
IBUY	Equal to one if any insiders made open-market purchases during the preceding year, and zero otherwise.
IMPAIR	Equal to one if a goodwill impairment is recorded in the current announcement (*gdwlipq* < 0), and zero otherwise.
INST	Institutional ownership as a percent of total shares outstanding as of the end of the preceding year.
LEVERAGE	Total debt (*dltt* + *dlc*) divided by total assets (*at*).
Ln(MARKET_VALUE)	The natural log of market value of equity at the end of the second trading day prior to the earnings announcement date.
Ln(ANALYSTS)	The natural log of one plus the number of analysts following the firm during the preceding year. Obtained from I/B/E/S.
MEET_THRESHOLD	Equal to one if firms' market value of equity rises above the threshold market-to-book ratio (1.0 for our *TREATED* = 1 firms and 1.5 for our *TREATED* = 0 firms), and zero otherwise.
MTB	Market value of equity two days before the earnings announcement divided by the book value of equity reported at the earnings announcement.
RELIABLE	Equal to one if the firm has above the median number of monitoring and private information factors listed in Table 2, and zero otherwise.

R&D_INDUSTRY	Indicator equal to one if the mean research and development expense (*xrd*) scaled by lagged assets for a GICS industry is greater than the median GICS industry value, and zero otherwise.
RECOVER	Equal to one if the buy-and-hold returns are sufficient to lift market value above post-impairment book value anytime beginning on the day before the earnings announcement and ending 252 trading days after the 10-K filing, and zero otherwise.
REPURCHASE	Equal to one if the firm reported cash outflows from common or preferred stock repurchases during the preceding year, and zero otherwise.
RESTRUCTURING	Equal to one if the firm reported non-zero restructuring charges ($rcp \neq 0$), and zero otherwise.
RETURN_NEEDED	Required rate of return for pre-announcement market-values to achieve the threshold *MTB* ratio.
SALES_GROWTH	Annual sales growth percentage for the preceding fiscal year. Winsorized at +/- 100%.
SALES_GUIDANCE	Management forecasted annual sales minus the mean I/B/E/S forecasted annual sales scaled by the market value of equity. If a firm is not covered by I/B/E/S this variable is equal to zero. Winsorized at +/-10% of the market value of equity.
SALES_SURPRISE	The I/B/E/S annual actual sales minus the mean analyst sales forecast scaled by the market value of equity. If a firm is not covered by I/B/E/S, then the variable is equal to current year's annual sales minus prior year's annual sales scaled by the market value of equity. Winsorized at +/-10% of the market value of equity.
SIGNAL	The return required to push the market value of common equity to the book value of common equity. Equivalent to (1/*MTB*)-1.
TREATED	Indicator equal to one if the firm has a *MTB* less than 0.95, and zero if *MTB* is greater than 1.0 and less than 1.425.
UNDERNEATH_PCT	The percentage of trading days for the 126 trading days prior to fiscal yearend that the market value of equity was less than the threshold *MTB* ratio based on fiscal yearend book value of equity.
UNDERWATER _PCT	The percentage of trading days that market value of equity was less than the fiscal yearend book value of equity for the 126 trading days prior to fiscal year-end.

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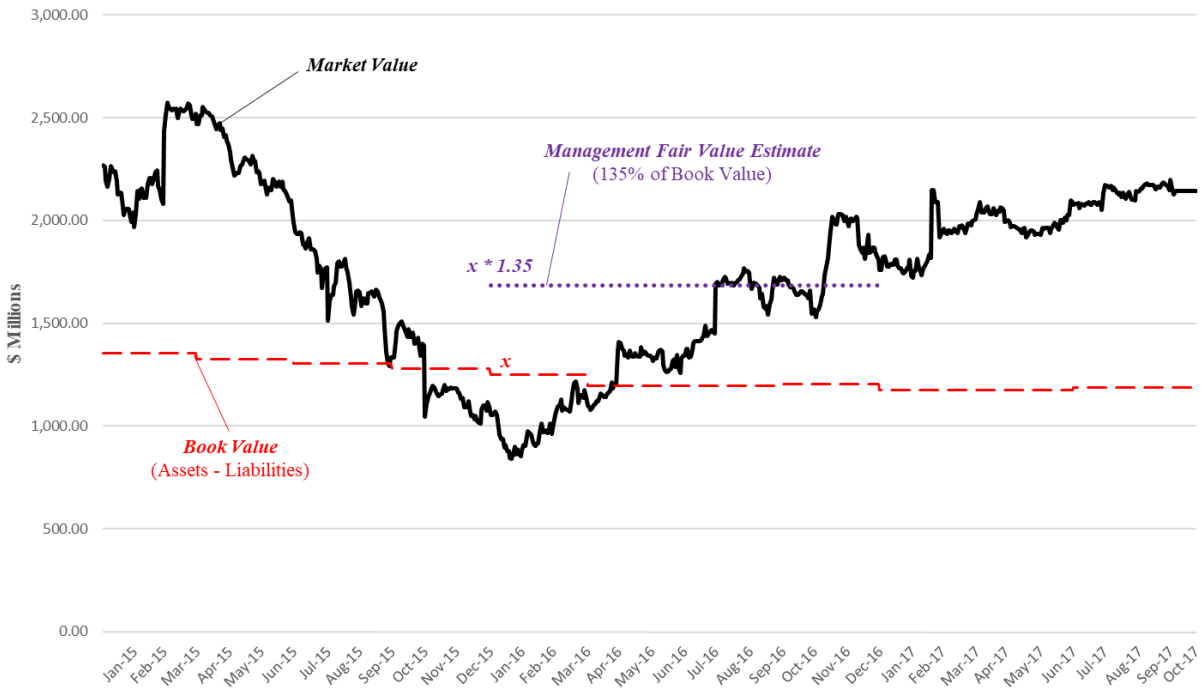
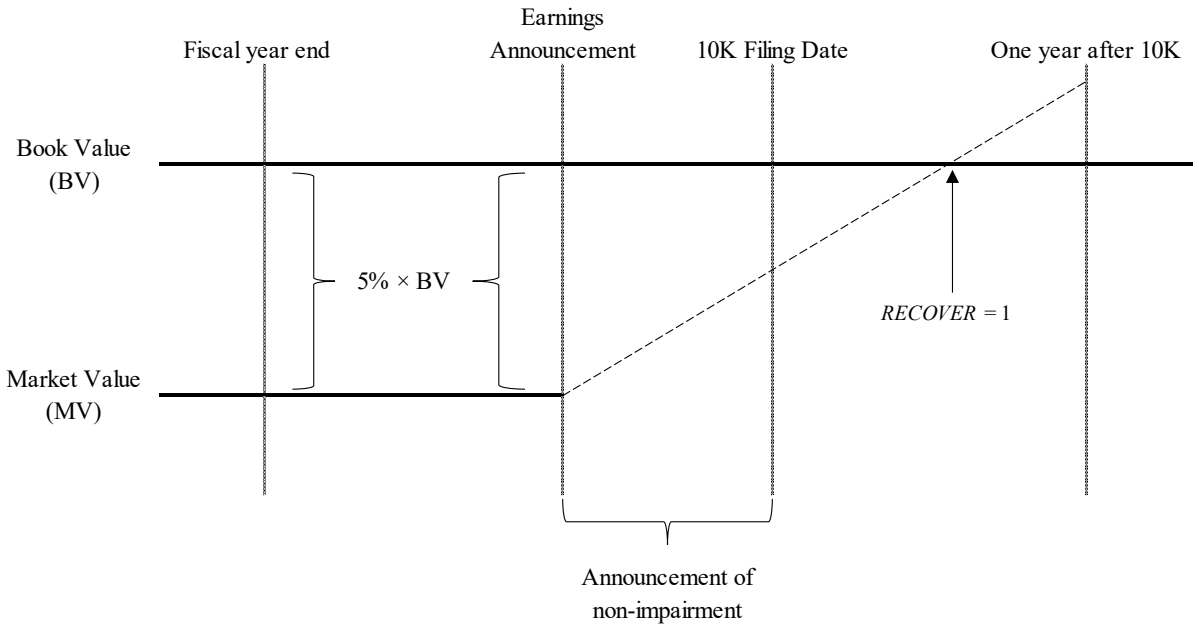
Figure 1
DigitalGlobe, Inc.



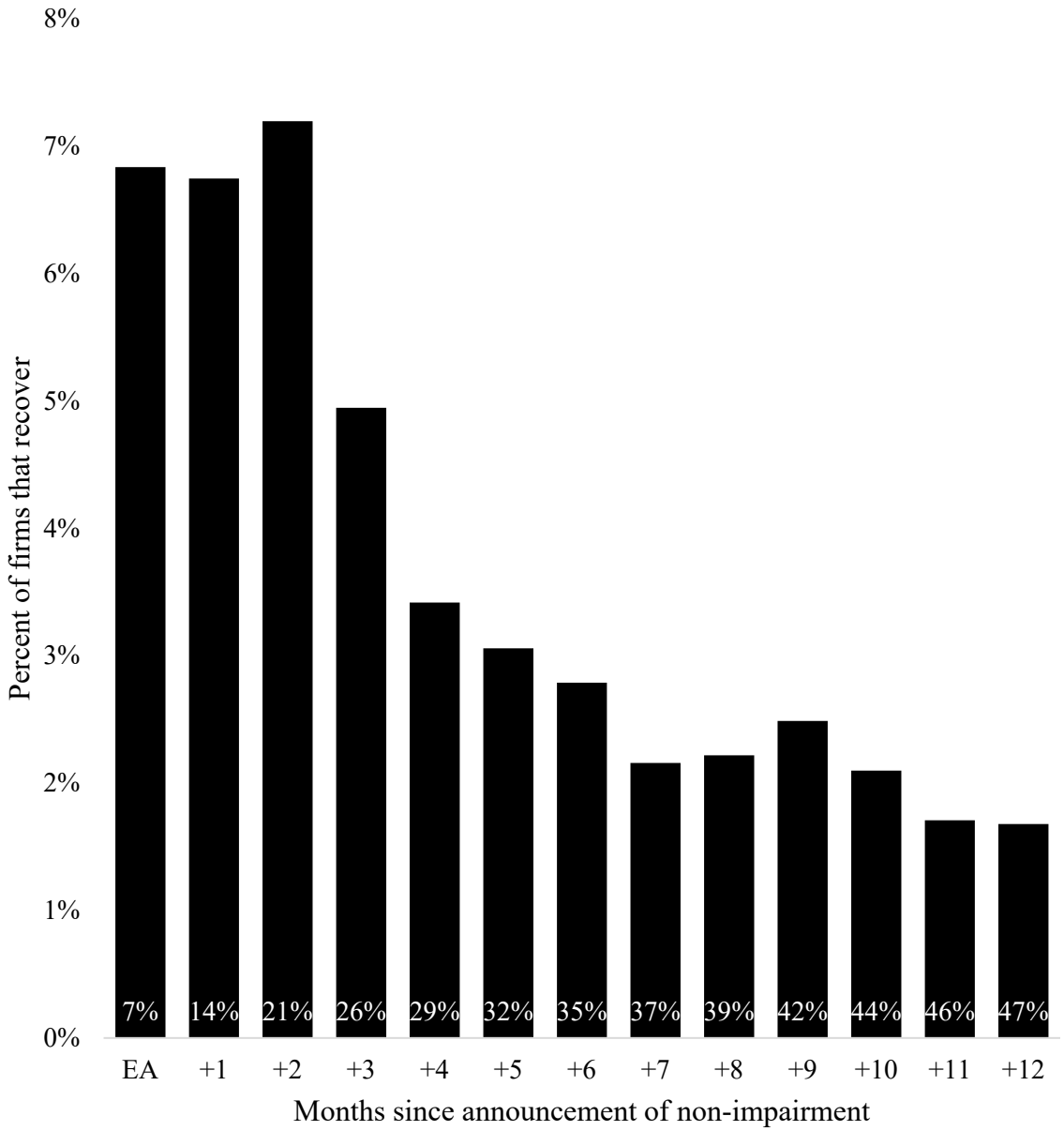
This figure presents the book and market value of DigitalGlobe, Inc. from January 2015 to October 2017. The graph depicts the recovery of DigitalGlobe, Inc.'s market value relative to management's valuation at December 2015. The solid black "Market Value" line indicates DigitalGlobe's market value of common equity. The dotted red line is DigitalGlobe's book value. The "x" mark indicates DigitalGlobe's book value of common equity disclosed in their 2015 10-K. The purple dotted line indicates management's estimate of firm value, which is 35% above book value.

Figure 2
Setting



This figure depicts our sample selection criteria and provides a visualization for the definition of *RECOVER*, which is equal to one if a firm's market value meets or exceeds the firm's book value within one-year of the Form 10-K filing date.

Figure 3
Timing of recovery



This figure presents the percentage of firms whose stock price recovers above book value each month since the announcement of the non-impairment. EA represents the announcement of the non-impairment and is defined by the time period starting one day before the earnings announcement and ending one day after the date of the 10-K filing. The cumulative percentage of firms that recovered are displayed within each bar.

Table 1

Sample construction

	Firm-years	Firms
(1) Firms with data available between 2002 and 2019	67,398	8,592
(2) Pre-impairment goodwill balance > 5% of market value	30,159	4,867
(3) Pre-impairment market-to-book ratio below 0.95	3,747	1,794
Firms with significant market-implied impairments	**3,747**	**1,794**
(4) Post-impairment goodwill balance > 0	3,436	1,632
(5) Post-impairment market-to-book ratio below 0.95	3,334	1,587
Firms with goodwill non-impairments	**3,334**	**1,587**

This table presents sample attrition in constructing the sample of non-impairment firms. In step 1 we require firms to have data available from Compustat and CRSP, as well as company identifiers to be able to match firms to I/B/E/S, Thomson Reuters, and the SEC's website. In step 2, we require firms to have pre-impairment goodwill balances greater than 5% of pre-earnings-announcement market value of equity. In step 3, we require firms to have pre-impairment market-to-book ratios below 0.95 at fiscal year end and immediately prior to the earnings announcement. In step 4, we require some goodwill to be left unimpaired. In step 5, we require firms to have a post-impairment market-to-book ratio lower than 0.95.

Table 2

Descriptive Statistics

Panel A: Empirical distributions

Variable	Obs.	Mean	Median	Sd	Min	Max
RECOVER	3,334	0.474	0.000	0.499	0.000	1.000
BIG4	3,334	0.612	1.000	0.487	0.000	1.000
Ln(ANALYSTS)	3,334	1.403	1.386	1.023	0.000	3.829
INST	3,334	0.491	0.489	0.330	0.000	1.766
LEVERAGE	3,334	0.213	0.165	0.183	0.000	0.950
GUIDANCE	3,334	0.454	0.000	0.498	0.000	1.000
IBUY	3,334	0.650	1.000	0.477	0.000	1.000
REPURCHASE	3,334	0.505	1.000	0.500	0.000	1.000
RESTRUCTURING	3,334	0.240	0.000	0.427	0.000	1.000
RELIABLE	3,334	0.416	0.000	0.493	0.000	1.000
MTB	3,334	0.662	0.701	0.198	0.026	0.950
UNDERWATER _PCT	3,334	0.832	1.000	0.265	0.008	1.000
CASHFLOW	3,334	0.034	0.027	0.080	-1.000	0.973
SALES_GROWTH	3,334	0.031	0.001	0.254	-1.000	1.000
Ln(MARKET_VALUE)	3,334	5.132	4.861	1.931	-0.674	12.093
ARET_ANNOUNCEMENT	3,334	0.003	-0.005	0.177	-0.781	2.167
IMPAIR	3,334	0.181	0.000	0.385	0.000	1.000
EARNINGS_SURPRISE	3,334	-0.007	0.000	0.053	-0.100	0.100
SALES_SURPRISE	3,334	0.001	0.000	0.061	-0.100	0.100
EARNINGS_GUIDANCE	3,334	0.000	0.000	0.009	-0.100	0.100
SALES_GUIDANCE	3,334	-0.001	0.000	0.022	-0.100	0.100

Panel B: Factors used to calculate *RELIABLE*

Private information		Managerial opportunism	
Condition	Obs.	Condition	Obs.
BIG4 = 1	2,041	*BIG4* = 0	1,293
NUMEST > 3	1,600	*NUMEST* ≤ 3	1,734
INST > 0.489	1,667	*INST* ≤ 0.489	1,667
LEVERAGE > 0.165	1,667	*LEVERAGE* ≤ 0.165	1,667
GUIDANCE = 1	1,514	*GUIDANCE* = 0	1,820
IBUY = 1	2,167	*IBUY* = 0	1,167
REPURCHASE = 1	1,683	*REPURCHASE* = 0	1,651
RESTRUCTURING = 1	801	*RESTRUCTURING* = 0	2,533
Firms with > 4 conditions:		Firms with ≤ 4 conditions:	
RELIABLE = 1	1,387	*RELIABLE* = 0	1,947

This table presents descriptive statistics for the sample of non-impairment firms. Variable definitions are presented in the Appendix. Panel A presents empirical distributions of main variables. Panel B presents the individual factors used to calculate the composite measure *RELIABLE*.

Table 3

Pairwise Correlations

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
(1) *RECOVER*		**.14**	**.11**	**.12**	.01	**.12**	.01	.02	**.13**	**.14**	**.38**	**-.22**	**.11**	.02	**.11**	**.18**	.01	**.06**	-.02	*.03*	.01
(2) *BIG4*	**.14**		**.46**	**.46**	**.14**	**.31**	**-.08**	**.06**	**.17**	**.51**	**.10**	**-.10**	**.10**	-.01	**.50**	-.02	**.09**	-.02	**-.08**	*-.03*	*-.03*
(3) *Ln(ANALYSTS)*	**.12**	**.46**		**.62**	**.10**	**.45**	.01	**.14**	**.13**	**.61**	**.11**	**-.19**	**.10**	.01	**.76**	**-.05**	**.15**	**-.05**	**-.16**	-.04	-.04
(4) *INST*	**.13**	**.45**	**.62**		**.14**	**.43**	**-.05**	**.17**	**.23**	**.62**	**.10**	**-.19**	**.15**	.00	**.57**	.00	**.14**	-.02	**-.08**	**-.06**	-.04
(5) *LEVERAGE*	.00	**.13**	**.11**	**.13**		**.15**	.03	**-.05**	**.09**	**.28**	**-.15**	**-.13**	**.09**	.04	*.03*	-.01	**.12**	**-.06**	**-.06**	.00	**-.05**
(6) *GUIDANCE*	**.12**	**.31**	**.45**	**.43**	**.15**		**-.05**	*.03*	**.29**	**.60**	**.05**	**-.20**	**.13**	.00	**.29**	.00	**.13**	.01	**-.10**	**-.05**	**-.05**
(7) *IBUY*	.01	**-.08**	.01	**-.05**	.04	**-.05**		.02	**-.10**	**.13**	**-.05**	-.02	.00	.01	**-.05**	.02	.00	*-.03*	-.02	.02	-.01
(8) *REPURCHASE*	.02	**.06**	**.14**	**.17**	**-.05**	*.03*	.02		.00	**.23**	**.10**	.00	.04	-.04	**.22**	.03	.01	-.01	.01	-.02	-.02
(9) *RESTRUCTURING*	**.13**	**.17**	**.13**	**.23**	**.09**	**.29**	**-.10**	.00		**.35**	.02	**-.14**	.01	**-.06**	**.06**	.01	**.13**	-.01	**-.07**	.00	**-.06**
(10) *RELIABLE*	**.14**	**.51**	**.62**	**.62**	**.30**	**.60**	**.13**	**.23**	**.35**		**.06**	**-.21**	**.11**	-.02	**.50**	-.02	**.16**	-.02	**-.11**	-.04	**-.07**
(11) *MTB*	**.40**	**.09**	**.11**	**.10**	**-.13**	**.05**	**-.05**	**.10**	.02	**.06**		**-.13**	**.07**	**.12**	**.33**	-.01	**-.15**	**.10**	**.07**	-.02	.01
(12) *UNDERWATER _PCT*	**-.24**	**-.12**	**-.21**	**-.21**	**-.14**	**-.23**	-.02	-.01	**-.16**	**-.26**	**-.15**		**-.05**	**-.16**	**-.05**	*.03*	**-.11**	**.08**	**.10**	.01	.02
(13) *CASHFLOW*	**.14**	**.18**	**.14**	**.23**	**.17**	**.22**	**-.06**	.02	**.08**	**.18**	**.09**	**-.11**		.02	**.12**	.04	.02	**.07**	.00	*-.03*	.00
(14) *SALES_GROWTH*	*.03*	.00	.02	.02	**.06**	.01	.00	-.02	**-.09**	-.01	**.14**	**-.14**	**.07**		**.07**	-.01	**-.05**	.01	**.06**	.01	-.02
(15) *Ln(MARKET_VALUE)*	**.13**	**.52**	**.76**	**.63**	**.07**	**.33**	**-.05**	**.21**	**.09**	**.53**	**.33**	**-.09**	**.17**	**.10**		**-.05**	*.03*	.02	**-.06**	*-.03*	-.02
(16) *ARET_ANNOUNCEMENT*	**.20**	-.02	-.04	.00	*-.03*	-.02	.01	.04	.01	-.02	.02	**.07**	*.03*	.03	.00		**-.09**	**.12**	**.08**	**.05**	.04
(17) *IMPAIR*	.01	**.09**	**.15**	**.15**	**.11**	**.13**	.00	.01	**.13**	**.16**	**-.13**	**-.12**	*.03*	**-.09**	.04	**-.10**		**-.12**	**-.09**	**-.05**	**-.07**
(18) *EARNINGS_SURPRISE*	**.09**	.02	-.02	.02	**-.06**	.04	-.04	.01	.00	.01	**.11**	**.07**	**.07**	.04	**.05**	**.18**	**-.11**		**.12**	**.04**	.01
(19) *SALES_SURPRISE*	-.01	**-.08**	**-.16**	**-.07**	**-.06**	**-.09**	-.02	.01	**-.06**	**-.10**	**.07**	**.11**	-.02	**.09**	**-.07**	**.09**	**-.09**	**.14**		*.03*	**.05**
(20) *EARNINGS_GUIDANCE*	.02	*-.03*	**-.05**	**-.07**	.00	**-.07**	*.03*	-.01	-.01	**-.05**	-.02	-.01	-.02	.01.	**-.06**	**.05**	-.03	.03	.03		**.13**
(21) *SALES_GUIDANCE*	.01	-.02	-.03	-.02	**-.05**	*-.03*	.00	-.03	**-.05**	-.04	.01	.00	-.04	-.01	-.02	.04	**-.05**	.01	**.05**	**.11**	

This table presents Pearson/Spearman pairwise correlations above/below the diagonal. Variable definitions are presented in the Appendix. *Italics*, underline, and **bold** represent statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively, based on two tailed tests.

Table 4

Recovery by industry and year

Panel A: Industries

GIC Industry Group	Observations	*R&D_INDUSTRY*	*RECOVER*
Banks	784	0	37%
Capital Goods	266	1	56%
Insurance	233	0	34%
Technology Hardware & Equipment	213	1	58%
Consumer Durables & Apparel	188	1	44%
Diversified Financials	187	0	42%
Energy	164	0	59%
Healthcare Equipment & Services	159	1	55%
Software & Services	159	1	57%
Commercial & Professional Services	149	1	52%
Consumer Services	139	0	47%
Media & Entertainment	137	1	45%
Retailing	123	0	46%
Materials	110	1	55%
Pharmaceuticals, Biotechnology & Life Sciences	48	1	67%
Telecommunication Services	42	1	43%
Food, Beverage & Tobacco	38	0	66%
Semiconductors & Semiconductor Equipment	38	1	76%
Transportation	37	0	51%
Automobiles & Components	34	1	47%
Real Estate	27	0	37%
Food & Staples Retailing	26	0	46%
Utilities	18	0	50%
Household & Personal Products	15	1	60%
Total	**3,334**		**47%**

Panel B: Years

Year	Observations	*RECOVER*	Year	Observations	*RECOVER*
2002	279	71%	2011	289	40%
2003	108	51%	2012	227	59%
2004	70	53%	2013	92	39%
2005	77	55%	2014	141	34%
2006	60	42%	2015	206	61%
2007	255	22%	2016	103	43%
2008	633	56%	2017	104	38%
2009	313	47%	2018	138	38%
2010	221	29%	2019	18	39%

This table presents the concentration of observations by industry (Panel A) and year (Panel B) in our sample. The percentage of firms with stock price recovery following goodwill non-impairments is presented for each group. Our industry-level indicator for above-median R&D expenditures (*R&D_INDUSTRY*) is presented in Panel A.

Table 5

Predicting price recovery for non-impairment firms

	Dependent Variable = *RECOVER*				
	(1)	(2)	(3)	(4)	(5)
BIG4	0.250**		0.244**		
	(2.18)		(2.12)		
Ln(ANALYSTS)	0.252***		0.251***		
	(3.35)		(3.24)		
INST	0.361**		0.323*		
	(1.98)		(1.73)		
LEVERAGE	0.229		0.237		
	(0.82)		(0.85)		
GUIDANCE		0.138	-0.018		
		(1.32)	(-0.17)		
IBUY		0.066	0.045		
		(0.70)	(0.47)		
REPURCHASE		-0.018	-0.026		
		(-0.20)	(-0.28)		
RESTRUCTURING		0.326***	0.293**		
		(2.86)	(2.54)		
RELIABLE				0.368***	0.454***
				(3.29)	(4.28)
R&D_INDUSTRY					0.219**
					(2.39)
MTB	7.162***	6.825***	7.182***	6.890***	6.780***
	(21.64)	(21.46)	(21.63)	(21.55)	(21.74)
UNDERWATER _PCT	-1.217***	-1.373***	-1.209***	-1.346***	-1.491***
	(-5.85)	(-6.70)	(-5.80)	(-6.56)	(-7.45)
CASHFLOW	1.286**	1.324**	1.382**	1.261**	1.451**
	(2.09)	(2.16)	(2.23)	(2.07)	(2.49)
SALES_GROWTH	-0.225	-0.262	-0.194	-0.266	-0.244
	(-1.28)	(-1.49)	(-1.09)	(-1.61)	(-1.40)
Ln(MARKET_VALUE)	-0.187***	-0.019	-0.189***	-0.053*	-0.069**
	(-4.20)	(-0.68)	(-4.19)	(-1.70)	(-2.41)
Ind. + Year FE	Yes	Yes	Yes	Yes	Year only
AUC	0.834	0.831	0.834	0.831	0.826
N Observations	3,334	3,334	3,334	3,334	3,334

This table presents logistic regressions examining the determinants of stock price recovery among non-impairment firms. Columns 1 through 4 include industry and year fixed effects. Column 5 does not include industry fixed effects as *R&D_INDUSTRY* is measured at the industry level. Variable definitions are presented in the Appendix. Z-statistics are reported in parentheses below each coefficient estimate. *, **, *** represent statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively, based on two-tailed tests. AUC stands for Area under the ROC curve.

Table 6

Investor response to goodwill non-impairments

	Dependent Variable = *ARET_ANNOUNCEMENT*		
	(1)	(2)	(3)
Intercept	0.011***	0.003	0.008
	(3.40)	(0.72)	(1.59)
RELIABLE		0.003	-0.004
		(0.49)	(-0.61)
SIGNAL		0.010***	0.004
		(4.83)	(1.31)
SIGNAL × RELIABLE			0.009**
			(2.19)
IMPAIR	-0.031***	-0.036***	-0.036***
	(-3.87)	(-4.46)	(-4.42)
EARNINGS_SURPRISE	0.357***	0.374***	0.373***
	(6.19)	(6.50)	(6.48)
SALES_SURPRISE	0.167***	0.180***	0.181***
	(3.33)	(3.59)	(3.61)
EARNINGS_GUIDANCE	0.629*	0.613*	0.591*
	(1.83)	(1.79)	(1.73)
SALES_GUIDANCE	0.244*	0.244*	0.245*
	(1.76)	(1.77)	(1.78)
N Observations	3,334	3,334	3,334
Adjusted R^2	0.025	0.031	0.033

This table presents OLS regressions of announcement returns on information announced during the announcement window. Variable definitions are presented in the Appendix. T-statistics are reported in parentheses below each coefficient estimate. *, **, *** represent statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively, based on two-tailed tests.

Table 7

Differences between firms with and without goodwill

Panel A: Before entropy balancing

	Firms with Goodwill (N = 3,334) *GOODWILL* = 1			Firms without Goodwill (N = 4,230) *GOODWILL* = 0				Variance
	Mean	Variance	Skewness	Mean	Variance	Skewness	Std Diff	Ratio
RECOVER	0.47	0.25	0.11	0.40	0.24	0.43	0.28	1.04
MTB	0.66	0.04	-0.70	0.62	0.05	-0.56	1.05	0.81
RELIABLE	0.42	0.24	0.33	0.22	0.17	1.34	0.81	1.41
CASHFLOW	0.03	0.01	-0.93	0.01	0.02	-2.31	2.00	0.40
SALES_GROWTH	0.03	0.06	1.14	-0.01	0.10	0.56	0.67	0.60
Ln(MARKET_VALUE)	5.13	3.73	0.65	4.26	2.70	0.45	0.23	1.38
UNDERWATER_PCT	0.83	0.07	-1.35	0.89	0.05	-2.07	-0.80	1.32

Panel B: After entropy balancing

	Firms with Goodwill (N = 3,334) *GOODWILL* = 1			Firms without Goodwill (N = 4,230) *GOODWILL* = 0				Variance
	Mean	Variance	Skewness	Mean	Variance	Skewness	Std Diff	Ratio
RECOVER	0.47	0.25	0.11	0.35	1.20	32.48	0.52	0.21
MTB	0.66	0.04	-0.70	0.66	0.04	-0.70	0.00	1.00
RELIABLE	0.42	0.24	0.33	0.42	0.24	0.33	0.00	1.00
CASHFLOW	0.03	0.01	-0.93	0.03	0.01	-0.94	0.00	0.99
SALES_GROWTH	0.03	0.06	1.14	0.03	0.06	1.14	0.00	1.00
Ln(MARKET_VALUE)	5.13	3.73	0.65	5.13	3.73	0.65	0.00	1.00
UNDERWATER_PCT	0.83	0.07	-1.35	0.83	0.07	-1.35	0.00	1.00
Match Ratio		0.31	Ratio: Firms with above equal weights in e-balance / all control firms					
Maximum Weight		57.32	Maximum weight assigned to a single control observation by e-balance					

This table presents descriptive statistics for firms with book values above market values separately for firms with and without goodwill. We entropy balance the non-goodwill firms such that they have similar means, variances, and skewness related to predictors of recovery. 'Std Diff' is equal to the difference in means divided by the variance of the Goodwill sample. The 'variance ratio' is the ratio of the variances. We present the Match Ratio and Maximum Weight as statistics of the entropy balancing procedure.

Table 8

Price recovery of goodwill versus non-goodwill firms

	Dependent Variable = *RECOVER*	
	(1)	(2)
GOODWILL	0.151***	0.142**
	(2.59)	(1.97)
CASHFLOW		0.826**
		(2.11)
SALES_GROWTH		-0.264**
		(-2.12)
Ln(MARKET_VALUE)		-0.058**
		(-1.97)
MTB		6.724***
		(29.47)
UNDERWATER _PCT		-0.954***
		(-4.96)
RELIABLE		0.423***
		(4.95)
Entropy balance weights applied	Yes	Yes
Ind. + Year FE	Yes	Yes
Pseudo R^2	0.08	0.26
N Observations	7,564	7,564

This table tests whether, among firms with market-to-book ratios below 0.95, firms with goodwill balances are more likely to recover their stock prices above book value. Panel B reports entropy balanced logistic regressions examining stock price recovery rates. Variable definitions are presented in the Appendix. Z-statistics are reported in parentheses below each coefficient estimate. *, **, *** represent statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively, based on two-tailed tests.

Table 9

Market-to-book thresholds: 1.0 versus 1.5

Panel A: Before entropy balancing

	TREATED = 1 0.67 ≤ MTB ≤ 0.95 (N = 1,861)			TREATED = 0 1.00 ≤ MTB ≤ 1.425 (N = 3,809)				Variance
	Mean	Variance	Skewness	Mean	Variance	Skewness	Std Diff	Ratio
MEET_THRESHOLD	0.62	0.24	-0.50	0.55	0.25	-0.19	0.31	0.95
RETURN_NEEDED	0.25	0.02	0.30	0.25	0.01	0.25	0.13	1.07
RELIABLE	0.45	0.25	0.22	0.54	0.25	-0.14	-0.36	0.99
CASHFLOW	0.04	0.01	1.33	0.05	0.01	-1.80	-1.83	0.86
SALES_GROWTH	0.04	0.06	1.11	0.09	0.06	1.38	-0.76	1.05
Ln(MARKET_VALUE)	5.62	3.65	0.64	6.40	3.10	0.47	-0.21	1.18
UNDERNEATH_PCT	0.81	0.08	-1.20	0.89	0.05	-1.99	-0.97	1.53

Panel B: After entropy balancing

	TREATED = 1 0.67 ≤ MTB ≤ 0.95 (N = 1,861)			TREATED = 0 1.00 ≤ MTB ≤ 1.425 (N = 3,809)				Variance
	Mean	Variance	Skewness	Mean	Variance	Skewness	Std Diff	Ratio
MEET_THRESHOLD	0.62	0.24	-0.50	0.27	0.19	5.64	1.49	1.25
RETURN_NEEDED	0.25	0.02	0.30	0.25	0.02	0.30	0.00	1.00
RELIABLE	0.45	0.25	0.22	0.45	0.25	0.22	0.00	1.00
CASHFLOW	0.04	0.01	1.33	0.04	0.01	1.33	0.00	1.00
SALES_GROWTH	0.04	0.06	1.11	0.04	0.06	1.11	0.00	1.00
Ln(MARKET_VALUE)	5.62	3.65	0.64	5.62	3.65	0.64	0.00	1.00
UNDERNEATH_PCT	0.81	0.08	-1.20	0.81	0.08	-1.20	0.00	1.00

Match Ratio	0.31	Ratio: Firms with above equal weights in e-balance / all control firms
Maximum Weight	8.14	Maximum weight assigned to a single control observation by e-balance

This table presents descriptive statistics separately for firms with market-to-book ratios falling just below 1.0 and those falling just below 1.5. We entropy balance the firms falling below 1.5 such that they have similar means, variances, and skewness related to predictors of recovery. 'Std Diff' is equal to the difference in means divided by the variance of the Goodwill sample. The 'variance ratio' is the ratio of the variances. We present the Match Ratio and Maximum Weight as statistics of the entropy balancing procedure.

Table 10

Price recovery above market-to-book thresholds: 1.0 versus 1.5

	Dependent Variable = *MEET_THRESHOLD*	
	(1)	(2)
TREATED	0.257***	0.234***
	(3.63)	(3.02)
RELIABLE		0.358***
		(3.96)
CASHFLOW		1.355**
		(2.25)
SALES_GROWTH		-0.197
		(-1.22)
Ln(MARKET_VALUE)		-0.070***
		(-2.72)
MTB		-5.786***
		(17.19)
UNDERWATER _PCT		-0.585***
		(-3.01)
Entropy balance weights applied	Yes	Yes
Ind. + Year FE	Yes	Yes
Pseudo R^2	0.12	0.19
N Observations	5,670	5,670

This table tests whether, among firms with market-to-book ratios below 0.95, firms with goodwill balances are more likely to recover their stock prices above book value. Panel B reports entropy balanced logistic regressions examining stock price recovery rates. Variable definitions are presented in the Appendix. Z-statistics are reported in parentheses below each coefficient estimate. *, **, *** represent statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively, based on two-tailed tests.