

Evidence on the use of unverifiable estimates in required goodwill impairment

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Abstract SFAS 142 requires managers to estimate the current fair value of goodwill to determine goodwill write-offs. In promulgating the standard, the FASB predicted that managers will, on average, use the fair-value estimates to convey private information on future cash flows. The current fair value of goodwill is unverifiable because it depends in part on management's future actions (including managers' conceptualization and implementation of firm strategy). Agency theory predicts managers will, on average, use the unverifiable discretion in SFAS 142 consistent with private incentives. We test these hypotheses in a sample of firms with market indications of goodwill impairment. Our evidence, while consistent with some agency-theory based predictions, does not confirm the private information hypothesis.

Keywords Agency theory · Goodwill impairment · Fair-value accounting · FASB · SFAS 142

JEL Classification D82 · G38 · K22 · M41 · M43 · M44 · M46

1 Introduction

Accounting for acquired goodwill has been subject to considerable debate for at least the past 50 years: Zeff (2005) cites disagreements over goodwill accounting rules as among the causes for the collapse of both the Committee on Accounting

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Principles and the Accounting Principles Board. SFAS 142, issued by the FASB in 2001, introduced a new approach to goodwill accounting by abolishing goodwill amortization and requiring all goodwill be tested periodically for impairment using estimates of its current fair value. In issuing SFAS 142, the FASB (2001, p. 7) predicted that the standard “will improve financial reporting because the financial statements of entities that acquire goodwill and other intangible assets will [now] better reflect the underlying economics of those assets.” Specifically, the FASB expected financial statements generated under the standard to provide “users with a better understanding of the expectations about and changes in [goodwill and other intangible assets] over time.” That is, the board expected that managers would, on average, use estimates of goodwill’s fair value to convey private information on future cash flows.

The SFAS 142 approach to goodwill accounting represents a significant innovation over prior practice and standards in that it relies solely on management estimates of goodwill’s current value.¹ The current fair value of goodwill is a function of management’s future actions, including managers’ conceptualization and implementation of firm strategy. As such, it is difficult to verify and audit. In effect, we expect that the subjectivity inherent in estimating goodwill’s current fair value is greater than that in most other asset classes such as accounts receivables, inventories, and plant, making the goodwill impairment test under SFAS 142 particularly unreliable. Ex post, if a fair-value estimate used to justify goodwill non-impairment is not realized, a manager can claim it was due to factors outside her control (e.g., macroeconomic conditions). It is difficult to falsify such a claim in a court of law: the claim cannot be “objectively characterized as true or false” (*Ollman v. Evans*, 750 F.2d 970, D.C. Cir., 1984). Thus we hypothesize managers exploit the SFAS 142 goodwill impairment test consistent with private incentives, as predicted by agency theory.

How managers will use the opportunity to incorporate estimates of goodwill’s fair value in practice is an empirical question. We investigate managers’ implementation of the SFAS 142 goodwill impairment test in a sample of firms with market indications of goodwill impairment. We examine whether goodwill non-impairment in the sample is associated with proxies for managers’ private information on positive future cash flows and with agency-based motives, including management’s interests in increasing their compensation and in shielding their reputation from the implications of a goodwill write-off. We do not find evidence to confirm the private information argument, but we find some evidence consistent with agency-based predictions. We also test whether goodwill non-impairment varies with firm characteristics predicted by Ramanna (2008) to facilitate discretion under SFAS 142. These characteristics include: (1) the number and size of a firm’s business units; and (2) the proportion of a firm’s net assets that are unverifiable. We find goodwill non-impairments increase in proxies for both characteristics.

To generate the sample of firm-years with market indications of goodwill impairment, we begin with firms that have both: (1) book goodwill; and (2) equity-

¹ Prior to SFAS 142, goodwill was impaired only when certain associated long-lived assets were also impaired (SFAS 121); moreover, goodwill was also subject to periodic amortization (APB 17).

market-values greater than equity-book-values. Among these firms, we retain only those that end each of the two subsequent fiscal years with book-to-market ratios (BTM) above one (where book values are calculated before the effect of any goodwill impairment, but after the effect of any other asset write-off). The condition $BTM > 1$ suggests the market expects goodwill impairments; however the condition can also be generated by certain GAAP rules on contingent losses, deferred taxes, and the impairment of (non goodwill) long-lived assets. To mitigate this possibility, we require sample firms to have two consecutive years of $BTM > 1$. Under such a restriction, we argue goodwill is likely to be economically impaired and an accounting write-off is due. We investigate the determinants of goodwill non-impairment at the end of the second fiscal year with $BTM > 1$, conditional on the firms having non-zero goodwill balances at the beginning of that year. There are 124 firm-years on COMPUSTAT that meet the sample selection criteria between the years 2003 and 2006, our sample period.² The frequency of goodwill non-impairment in sample firm-years (i.e., the second fiscal year with $BTM > 1$) is 69 %. If our assumptions underlying the sample selection procedure are reasonable, we would expect this frequency to be closer to zero given the FASB's predictions on how SFAS 142 will be implemented.³

Managers of sample firms may avoid goodwill write-offs because they have (or believe they have) private information on positive future cash flows. By definition, such information is "private" (otherwise the firm will have $BTM < 1$ and will not be in our sample) either because managers are unable or unwilling to credibly communicate the information to markets. We identify firms likely to have favorable private information as those firms with either positive net share-repurchases or positive net insider buying. Both activities suggest management believes the firm is undervalued. We examine whether sample firms without goodwill write-offs are more likely (than those with the write-offs) to have positive repurchases or insider buying. If this is the case, the data support the argument that managers' private information drives non-impairments. We find the frequency of firms with positive net share-repurchases among non-impairers (24 %) is statistically indistinguishable from that among impairers (24 %). Further, the frequency of firms with positive net insider buying among non-impairers (22 %) is also statistically indistinguishable from that among impairers (18 %).

Our use of share repurchases and insider buying as indicators of managers' private information is subject to an important caveat. Such activities, if interpreted by the market as being caused by managers exploiting favorable private information, can result in increased stock returns such that a firm's BTM is no

² Our sample begins in 2003 because that was the first full-year of SFAS 142 adoption after the standard's transition adoption year; our sample ends in 2006 because financial data beyond 2006 was not available when we initiated this study.

³ Of course, not all firms in our sample can be expected to take goodwill write-offs: our paper explores various reasons firms may avoid write-offs. Moreover, not all goodwill write-offs are expected to be in the sample with $BTM > 1$. Appendix 1 explores the association between goodwill write-offs and BTM status in a broad sample of firms. The absolute number of firms taking goodwill write-offs is higher when $BTM < 1$ than when $BTM > 1$, which suggests most goodwill write-off decisions are not on-the-margin vis-à-vis BTM. However, the frequency of firms taking goodwill write-offs is *relatively* more likely when $BTM > 1$ than when $BTM < 1$, suggesting it is reasonable to expect more write-offs when $BTM > 1$.

longer above 1, thus excluding the firm from our sample. Accordingly, our tests using these proxies can be of low power. To mitigate this concern, we investigate whether firms excluded from our final sample (because their BTM ratios fell below one) have a higher incidence of positive private information. We do not find this to be the case, a result inconsistent with selection bias affecting our inferences.

Additionally, we conduct tests based on an ex post analysis of sample firms' stock returns. The purpose is to determine whether, on average, non-impairers are more likely to have higher 1-year-ahead stock returns than impairers. If this is the case, then non-impairment is consistent with managers having positive private information, information that subsequently (over 1 year) becomes public. For the 124 firms in our sample, stock returns data over the following 12 months continue to be available on CRSP for 96 firms. Sixty-four of these 96 firms are non-impairers in the sample year; the other 32 are impairers. The mean and median 1-year-ahead stock returns across non-impairers and impairers are not statistically distinguishable (non-impairers' mean = 22.9 %, median = 12.4 %; impairers' mean = 17.2 %, median = 13.3 %).⁴

To investigate whether non-impairment is associated with motives predicted by agency theory to affect management's accounting choice, we test for the cross-sectional variation in goodwill write-offs with proxies for CEO compensation concerns, CEO reputation concerns, asset-pricing concerns, exchange-delisting concerns, and concerns relating to debt covenant violation. Beatty and Weber (2006) predict from prior literature that goodwill write-offs in the initial adoption year of SFAS 142 vary in these motives; they find evidence consistent with some of their predictions. Our agency-based predictions, while derived from those in Beatty and Weber, differ where appropriate, to account for differences in incentives between the transition year and subsequent years. We find no evidence to confirm that asset-pricing concerns and exchange-delisting concerns are associated with goodwill write-off decisions. The result on asset-pricing concerns is consistent with firms' stock prices already reflecting goodwill as impaired, a condition on which we attempted to select the sample. In contrast, we find a statistically higher proportion of firms with covenants that are likely to be goodwill inclusive among sample non-impairers (78 %) than among sample impairers (63 %). The proportion of non-impairing sample firms whose CEOs are likely to have goodwill-inclusive compensation contracts (57 %) is also statistically higher than that of impairing sample firms (39 %). In multivariate tests that control for firm-level economics and management's private information, there is some further evidence that debt-covenant and CEO compensation incentives are associated with non-impairment.

Also in the multivariate tests, we find evidence that non-impairment increases in CEO tenure. Long-tenured CEOs are more likely to have initiated the mergers that generated the goodwill now indicated by the market as impaired. Thus if non-impairment is motivated by managers' interests in shielding their reputations from the implications of a goodwill write-off, long-tenured CEOs are less likely to

⁴ We use data from Thomson One Banker to follow up on the status of the remaining 28 sample firms (i.e., 124 – 96) that are dropped from the CRSP database in the post-sample year. A detailed analysis of these firms is available in Sect. 3. To summarize, most of these firms are acquired, delisted, or thinly traded; statistical comparisons within this subsample are precluded by the low n.

authorize goodwill write-offs.⁵ In the multivariate tests, none of the proxies for managers' positive private information described earlier are statistically associated with non-impairment.

The evidence in this paper is consistent with managers avoiding timely goodwill write-offs under SFAS 142 in circumstances where they have agency-based motives to do so, despite market indications that such write-offs are due. The unverifiable nature of fair-value estimates of goodwill makes such behavior predictable under agency theory (Watts 2003; Ramanna 2008). The evidence does not confirm the FASB's implicit assumption that managers will use estimates of goodwill's fair value to convey private information on future cash flows. At a minimum, the results suggest, on average in our sample, SFAS 142 is generating financial reports that do not reflect economic reality with respect to goodwill. Even if contracts completely adjust for this deficiency (which is unlikely), the standard imposes costs in the sample: in particular, compliance costs and the costs of managers continuing negative NPV operations in order to avoid write-offs.

Our evidence is consistent with prior results on untimeliness of asset write-downs (e.g., Elliott and Shaw 1988) and on the role of managerial incentives in write-down decisions (Francis et al. 1996). Beatty and Weber (2006) also study the role of agency-based incentives in the implementation of SFAS 142, but in its adoption year. We extend their study to the four subsequent years and, moreover, attempt to determine whether managers' private information can explain impairment decisions. Given the innovative nature of SFAS 142 goodwill accounting rules, our evidence provides new insights into whether these rules are effective. In particular, since goodwill is no longer amortized, write-offs are the only way managers are held accountable in the income statement for unallocated acquisition premiums. If, as we find, goodwill write-offs are on average motivated by managers' private incentives, SFAS 142 is generating little accountability for acquired goodwill. This finding is consistent with the observation that both practice prior to the existence of regulated standard setting and standards prior to SFAS 142 did not rely solely on fair-value-based impairment testing for goodwill accounting. More generally, our evidence can speak to the use of unverifiable discretion in financial reporting. Valuing goodwill is part of a broader shift in standard-setting towards valuing the firm (i.e., fair value). Our evidence suggests that fair values, when extended to assets with unauditible valuations, are likely to compromise financial reporting's role as a management control system.

The remainder of the paper is organized as follows. Section 2 describes the goodwill impairment test in SFAS 142, the construction of the sample and variables, and the research design. Descriptive statistics and the results of univariate and multivariate tests are presented in Sect. 3. Section 4 concludes with a summary and implications.

⁵ Avoiding timely impairments to prevent debt covenant violations can also be motivated by CEO reputation concerns (in addition to transferring wealth from debt holders to shareholders) since failure to do so can be perceived as managerial incompetence.

2 The study

In this section, we first explain (in Sect. 2.1) the SFAS 142 goodwill impairment rules. In Sect. 2.2, we describe the sample selection procedure and address potential caveats in the process. In Sect. 2.3, we discuss the possible motives (and our proxies for those motives) for managers to avoid impairment write-offs. In Sect. 2.4, we describe two firm characteristics (and their empirical proxies) that can provide managers with the ability to use the unverifiable discretion in SFAS 142. Section 2.5, describes the research design for multivariate tests.

2.1 Unverifiable discretion in the SFAS 142 goodwill impairment test

Prior to SFAS 142, accounting for acquired goodwill was governed by APB 17 (AICPA 1970) and SFAS 121 (FASB 1995). Under these standards, firms had the option to account for acquisitions using the pooling-of-interests method, thereby avoiding goodwill recognition altogether. Goodwill, when recognized, was subject to periodic amortization. Goodwill was also subject to impairment but only when certain associated long-lived assets were also impaired. The test for asset impairment was based on comparing undiscounted future cash flows to book values. SFAS 142 abolished goodwill amortization and required instead an impairment-only approach to goodwill. Further, SFAS 142 no longer tied the goodwill impairment decision to impairment decisions on related long-lived assets. Instead, goodwill is now impaired based on a comparison of a fair-value estimate of goodwill with the book value of goodwill.

SFAS 142 lays out the following procedure for goodwill impairment. All acquired goodwill is initially allocated among the “reporting units” of a firm. Generally, a reporting unit is an operating segment, or a component thereof, if that component constitutes a business with discrete financial information that is regularly reviewed by management (SFAS 142, §30). Goodwill is tested for impairment at this reporting unit level. For a given reporting unit, the goodwill impairment test is a two-step procedure as described below.

1. The reporting unit’s total fair value is estimated by management or their agents. This fair value is then compared with the unit’s total book value. If the fair value is greater than the book value, step 2 is skipped, and no impairment loss is recognized.
2. If the unit’s estimated fair value is less than its book value, the fair value of the unit’s goodwill is estimated. The fair value of goodwill is defined as the difference between the unit’s total fair value (from step 1) and the sum of the fair values of the unit’s non goodwill net assets. The fair value of goodwill is then compared with the book value of goodwill. Any excess of goodwill’s book value over its fair value is recorded as the unit’s write-off. No loss or gain is recognized if the goodwill’s fair value estimate exceeds its book value. Goodwill write-offs from the firm’s various reporting units are aggregated and reported as a separate above-the-line item in the income statement.

There are three layers of discretion in the impairment procedure described above. First, acquired goodwill, which represents rents expected from an acquisition, must be allocated across reporting units. Second, the discounted future value of those reporting units must be estimated; and third, the current value of the units' net assets (including non goodwill intangibles) must be estimated. The discretion in the first two layers is difficult to audit in that it is *ex post* unverifiable. A similar argument can be made about the discretion in the third layer, particularly with regards to current-value estimates of thinly traded assets and liabilities.

While there is discretion associated with estimating accruals in nearly all areas of accounting, we argue the subjectivity inherent in estimating the current fair value of goodwill is greater than that in most other asset classes such as accounts receivables, inventories, and plant. There are two bases for this argument. First, uncertainty in future cash flows: the uncertainty in future cash flows associated with capitalized goodwill is higher (relative to other capitalized assets) because goodwill represents a present-value estimate of future rents. The realization of those rents depends on several unpredictable factors such as the firm's competitive position vis-à-vis its customers, its suppliers, its employees, and the regulatory environment. Second, moral hazard: the ability to realize the value embedded in book goodwill is contingent on management's future effort. Allowing managers to fair-value goodwill can result in managers receiving compensation (by overstating profits through non-impairment) on projects that are likely to fail. When that failure does occur, managers cannot be held accountable because it is impossible to objectively assess whether the failure was due to management actions.⁶

2.2 Sample selection

Our objective is to test whether firms with the ability and motives to manage SFAS 142 goodwill impairment losses actually do so. To do this, we need to identify a sample of firm-years where goodwill is likely impaired. We use the presence of book goodwill and the time-series of firms' book-to-market ratios (BTM) to select our sample (where, as noted earlier, BTM is calculated after the effect of all non goodwill write-offs, but before the effect of any goodwill impairment). We begin with firms that have equity-book-values < equity-market-values and at least \$1 million of book goodwill at the end of year $t - 2$. Then, we retain only those firms that end year $t - 1$ with $BTM > 1$. When a firm goes from having equity-book-values < equity-market-values (in year $t - 2$) to having $BTM > 1$ (in year $t - 1$), there is likely an overstatement in its book value, suggesting a write-off is due. However, such a change can be associated with no write-off if the decline in market value is attributable to circumstances where GAAP does not require recognizing a contemporaneous expense (e.g., certain contingencies, deferred taxes, pensions, etc.). Further, GAAP rules on the impairment of certain (non goodwill) long-lived

⁶ Unlike moral hazard implicit in valuing items like net accounts receivable (where subsequent management effort on collecting receivables is observable and can be entered into evidence), it is very difficult to make the case (in the event of *ex post* litigation) that goodwill losses were due to management inaction (rather than macroeconomic conditions). That is, the claim cannot be "objectively characterized as true or false" (*Ollman v. Evans*, 750 F.2d 970, D.C. Cir., 1984), the legal standard for verifiability.

assets can also result in firms with $BTM > 1$ not taking write-offs. Under these rules, impairment is triggered only when the *undiscounted* sum of future cash flows attributed to an asset is less than that asset's book value.⁷

To minimize the circumstances where the change from equity-book-values < equity-market-values (in year $t - 2$) to $BTM > 1$ (in year $t - 1$) is not associated with GAAP requirements for a contemporaneous write-off, we limit our sample to firms where BTM stays above one for an additional fiscal year (year t). Additionally, we require that these firms begin year t with a non-zero goodwill balance. We argue that firms with two successive years of $BTM > 1$ are likely to have impairment in net assets. Further, since the firms have goodwill on their books, we expect at least some of that write-off to be in goodwill. Note that if a firm takes an adequate write-off from an account other than goodwill, it is, by selection, not in our sample because its BTM should no longer be >1 . We intentionally exclude negative book-value firms and firms with $BTM < 1$ from our analysis since the case for impairment in their goodwill is less compelling.

We examine the determinants of goodwill impairment in the second fiscal year with $BTM > 1$ (i.e., in year t). There are 124 “year t ” observations in the COMPUSTAT database that meet our sample criteria. To understand the sample selection procedure more fully, see Appendix 1. The observations are from years 2003 through 2006. SFAS 142 was promulgated in June 2001 and mandatory adoption was required for fiscal years beginning after December 15, 2001. We exclude the initial adoption year (2002) from our year t analysis of impairments because in 2002 firms were permitted to ascribe goodwill impairments below-the-line to a “change in accounting principle;” in all subsequent years, impairments are charged above-the-line, to “income from continuing operations.” Beatty and Weber (2006) find evidence that, absent contracting incentives, firms accelerate impairments into the adoption year to qualify for below-the-line accounting treatment. Thus the factors that facilitate adoption-year impairments likely differ from the factors that facilitate impairments in subsequent years.⁸

One can argue that the sample selection procedure is biased towards identifying firms that are not representative of the general population. Firms with two consecutive years of $BTM > 1$ are uncompetitive or are otherwise suffering from serious economic woes that make accounting compliance issues secondary. The incidence and properties of non-compliance in our sample are therefore not representative of accounting practice in the general population. An analogy to this argument is a criticism of a study that documents properties of brake failures in cars that travel over 50 mph in a 30 mph zone on the basis that most drivers do not engage in such activity.

⁷ Even in circumstances where GAAP rules may permit delayed write-offs, assuming the decline in market value is permanent, conservative auditors are likely to encourage managers to take timely write-offs when $BTM > 1$. Motivated by this premise, Ramanna and Watts (2007) study the goodwill write-off decisions among firms with 1 full year of $BTM > 1$. They find the frequency of non-impairment in that sample is 71 %. Further, they find goodwill non-impairment is associated with several agency-theory based motives and with proxies for firms' ability to exploit the discretion in SFAS 142. They do not find evidence consistent with the private information hypothesis.

⁸ Firms that accelerated impairments into the adoption year to create write-off loss reserves are unlikely to be in our sample since we filter out firms without positive goodwill balances.

Cars likely do much more damage when their brakes fail at over 50 mph, so failures at this speed are likely to represent a large share of the costs of brake failure and thus be of interest to stewards of automobile safety. Similarly, evidence on the properties of SFAS 142 non-compliance among firms with two consecutive years of $BTM > 1$ is likely to be of interest to managers, investors, and regulators. SFAS 142 is an impairment standard and our sample represents firms whose goodwill is very likely impaired. This is where an effective impairment standard should work.

2.3 Motives to manage goodwill impairment losses

2.3.1 Managers' private information on positive future cash flows

Standard setters imply that the goodwill impairment test in SFAS 142 allows managers, on average, to convey private information on future cash flows. In explaining how SFAS 142 improves financial reporting, the FASB (2001, p. 7) argues the standard provides "users with a better understanding of the expectations about and changes in [goodwill and other intangible assets] over time." If this is the case, managers' failure to impair goodwill can be attributed to information asymmetries between managers and shareholders, in particular, situations in which managers have favorable private information on future cash flows. We identify firms whose managers are likely to have positive private information as those with either positive net share-repurchases or positive net insider buying as of the end of year t (i.e., the second full fiscal-year with $BTM > 1$). Both activities can be interpreted as rational responses by managers to situations where their stock is undervalued. We code firms with positive net share-repurchases using the indicator variable *Repurchase*, firms with positive net insider buying using the indicator variable *Inside*, and firms with either of these two activities using the indicator variable *InfoAsym*. In our tests, we examine the univariate association of non-impairment in our sample with *InfoAsym*, *Repurchase*, and *Inside* and examine in multivariate regressions the cross-sectional variation in impairment decisions with *InfoAsym*.

InfoAsym, *Repurchase*, and *Inside* are likely to be effective measures of managers' positive private information to the extent that managers are not so cash constrained that they cannot engage in share buying. Moreover, such share buying, if interpreted by the market as being caused by managers exploiting favorable private information, can result in increased stock returns such that a firm's BTM is no longer above 1. In this case, the firm will not be in our sample, and our tests using *InfoAsym* and associated proxies can be of low power. To investigate this concern, we look at firms eliminated by our sample selection procedure for evidence that this group has a higher incidence of positive private information (i.e., $InfoAsym = 1$). In particular, we analyze all firms with year " t " in the 2003 through 2006 period and with $BTM_{t-2} < 1$, $BTM_{t-1} > 1$, and $Goodwill_{t-1} > 0$. There are 382 such firms. Of these, 124 firms also have $BTM_t > 1$; these are the firms in our primary sample.⁹ We are interested in

⁹ The number of firms with $BTM_{t-1} > 1$ identified above, i.e., 382 firms, differs from that shown in Appendix 1, i.e., 425 firms, because the former is calculated with the additional restriction $Goodwill_{t-1} > 0$.

determining if, among the 382 firms, those with $BTM_t > 1$ have a lower frequency of $InfoAsym = 1$ than those with $BTM_t < 1$. Data on $InfoAsym$ are available for 366 of the 382 firms. The frequency of firms with $InfoAsym = 1$ among the $BTM_t > 1$ sample is 41.1 % (51 of 124 firms), which is higher than that among the $BTM_t < 1$ sample, 28.5 % (69 of 242 firms); the comparison is statistically significant ($\chi^2 p$ value is 0.015). Thus the data are inconsistent with the concern that our sample selection procedure excludes firms with positive private information.

In an additional series of tests of the private information hypothesis, we study sample firms' 1-year-ahead stock returns ($BHRet_{t+1}$). In particular, we investigate whether sample non-impairers are more likely to have, on average, higher 1-year-ahead stock returns than sample impairers. If this is the case, then non-impairment is consistent with managers having positive private information that is revealed publicly over the following 1 year. We report on the results of these tests in Sect. 3.

2.3.2 Incentives predicted by agency theory

Agency theory predicts that managers, all else equal, will on average use unverifiability in accounting judgment, such as that in SFAS 142 impairment tests, to opportunistically manage financial reports (Watts 2003, Ramanna 2008). Beatty and Weber (2006) study firms' agency-based motives to delay goodwill losses in the SFAS 142 transition period. They argue from prior literature that the decision to delay goodwill losses is based on debt and compensation contracts written on goodwill accounts (Watts and Zimmerman 1986), management reputation (Francis et al. 1996), and equity-asset-pricing concerns (i.e., the responsiveness of stock prices to goodwill-inclusive earnings, Fields et al. 2001). Beatty and Weber also hypothesize that exchange delisting concerns can affect the impairment loss recognition decision when delisting is triggered by goodwill-inclusive covenants. In empirical tests, they find support for all motives except equity-asset-pricing concerns. Our tests on the variation in goodwill impairment across agency-based motives are based on predictions in Beatty and Weber, with some important modifications to account for differences in incentives between the transition year and subsequent years, as noted below.

1. Contracting motives:

- (a) The costs of violating debt covenants ($CovDebt$): Our proxy for the cost of violating debt covenants is the product of the ratio of current period debt to prior period assets and an indicator if the firm has an outstanding net worth or net income based debt covenant. Net worth and net income based covenants are goodwill inclusive. Thus the existence of such covenants in a firm is likely to incent management decisions on goodwill write-offs. For firms with debt contracts written on accounting numbers, violating a covenant will be more costly, the greater its leverage. Thus we multiply the covenant indicator variable by leverage.¹⁰ Beatty and Weber measure

¹⁰ Dichev and Skinner (2002) find that leverage is a relatively noisy proxy for the probability of debt covenant violation; however, holding constant this probability, leverage is likely a good proxy for the cost

the debt-covenant incentives on write-off decisions using a firm-specific covenant slack variable that attempts to capture the significance of a firm's goodwill account balance to meeting its net worth covenant requirements. We cannot use a similar variable because numerical data on the net worth covenant requirements for our sample are not available. Beatty and Weber's sample is selected in part on the availability of these data; our sample is selected on market expectations of a goodwill write-off, resulting in smaller firms that are unlikely to disclose detailed covenant data. Our proxy on debt-covenant incentives is weaker than that in Beatty and Weber, potentially reducing the power of our tests.

- (b) Managers' accounting-based compensation (*Bonus*): Our proxy for managers' accounting-based compensation concerns is an indicator for whether a firm's CEO received a cash bonus during the year in question. Murphy (1999) reports that accounting-based compensation is usually paid out as a cash bonus and that accounting-based compensation contracts are usually written on net income (and so include the effect of goodwill write-offs). Thus we expect sample firms with $Bonus = 1$ to be less likely to take goodwill write-offs. In the case of compensation incentives as well, our prediction and proxy differ from that in Beatty and Weber. In their study, Beatty and Weber examine how the decision to accelerate goodwill write-offs to the SFAS 142 transition year depends on the presence of management compensation contracts that exclude special items (transition year goodwill write-offs are classified as a special item). Since we are interested in the role of management compensation incentives in write-offs *on an ongoing basis*, the exclusion of special items in compensation contracts is irrelevant to us.
- (c) The firm being traded on an exchange with accounting-based delisting requirements (*Delist*): Beatty and Weber report that firms listed on the NASDAQ and AMEX are subject to goodwill-inclusive accounting-based delisting requirements. OTC listed firms do not have such delisting requirements, while NYSE listed firms face delisting based on subjective criteria. To capture exchange delisting concerns, we create a dummy variable, *Delist*, set to one if the firm trades on NASDAQ or AMEX, zero otherwise. This variable is similar to that in the Beatty and Weber study.
2. Reputation motives—managers' interests in shielding their reputations from the implications of a goodwill write-off (*Tenure*): Beatty and Weber argue that, among firms with book goodwill, CEOs with longer tenures are more likely to have been involved in the acquisitions that generated that goodwill. To avoid reputation costs, such long-tenured CEOs are less likely to take goodwill write-offs. In our study, as in Beatty and Weber, CEO tenure is measured as the number of years the incumbent CEO has held that office.

Footnote 10 continued

of debt covenant violation (the more debt a firm has, the more costly it will be to renegotiate contracts once covenants are violated). Further, we expect the probability of covenant violation in our sample (firms with 2 years of $BTM > 1$) is relatively high.

3. Valuation motives—equity-asset-pricing concerns (*AsstPrc*): We use the earnings response coefficient (ERC) to measure the capitalization of earnings in returns. If equity-asset-pricing concerns affect managers' accounting decisions (e.g., Fields et al. 2001), including their impairment decisions, non-impairment is likely to increase in ERC. Following Beatty and Weber, we define ERC for a given firm-year as the coefficient from a regression of the firm's share price on its operating income using at least 16 and up to 20 quarters of data prior to the firm-year. Importantly, in our setting, in contrast to that in Beatty and Weber, the prediction on *AsstPrc*'s impact on write-off decisions is ambiguous. This is because we attempt to select our sample on market indications of impaired goodwill; if we are successful in this regard, our sample firms' stock prices will already reflect goodwill as impaired, mitigating incentives generated by asset-pricing concerns.

2.4 Financial characteristics that facilitate unverifiable discretion under SFAS 142

In the prior section, we discussed some of the potential motives for impairment management. In addition to having the *motives* to manage impairment losses, firms must have the *ability* to do so. In this section, we discuss how the rules in SFAS 142 can make it easier for firms with certain financial characteristics to manage impairment losses. From Ramanna (2008), below we identify two firm financial characteristics that increase firms' unverifiable discretion to determine impairment under SFAS 142: the number and size of reporting units and the unverifiable net assets in reporting units.

2.4.1 Number and size of reporting units

When a firm recognizes goodwill in an acquisition, SFAS 142 requires the firm allocate that goodwill among the reporting units that benefit from the acquisition. If the rents that goodwill represents are generated jointly by the units, any allocation is arbitrary and there is no way to meaningfully allocate goodwill: any one allocation scheme is as good as another (Watts 2003; Roychowdhury and Watts 2007). For a given firm, the larger the number of reporting units and the larger the size of those units relative to acquired goodwill, the greater the flexibility in allocating goodwill. This initial flexibility in goodwill allocation provides the opportunity to later avoid or overstate impairment losses. Goodwill can be allocated to units where subsequent impairment can be masked by the units' internally generated unrecognized gains or losses. Managers can allocate goodwill either to low growth units to accelerate impairment (a big bath), or to high growth units (with existing unrecorded internally generated growth options) to delay impairment. The larger and more numerous the reporting units, the greater is management's flexibility in determining future impairment losses.¹¹

¹¹ Once goodwill is allocated among reporting units, reallocation in future years is not permitted (SFAS 142, §34). Thus in principle, the "number and size of reporting units" provides flexibility only at the time

Empirical proxies for number and size of reporting units

ln(Seg): Empirical data on “the number and size of reporting units” are not readily available. SFAS 131, however, requires firms to disclose data on their business segments. We use the number of business segments as our proxy for the number and size of reporting units. Reporting units are at least as numerous as business segments (SFAS 142, §30). Thus using business segments as proxies understates the number of reporting units. This, in turn, biases against finding an association between impairment delays and the number of reporting units.

HHI: We also use a variant of the Herfindahl–Hirschman index (*HHI*) as a proxy for the number and size of reporting units. We calculate each firm’s *HHI* as follows.

$$HHI = \sum_{i=1}^n (s_i^2)$$

Above, n is the number of business segments in the firm, and s_i is the ratio of the i th business-segments’ sales to total firm sales. Thus *HHI* is an index of segment concentration within a firm. *HHI* ranges from zero to one. If a firm has only one segment, *HHI* is one; if a firm has several segments, but one of them is much larger than the others, *HHI* is close to one. As the number of segments increases, and as segments become of similar size, the firm’s *HHI* approaches zero. Thus an *HHI* close to zero indicates a firm with several equally sized segments, while an *HHI* close to one indicates a firm with a few disproportionately sized segments. In using *HHI* to proxy for the number and size of reporting units, note that low *HHI* (several equally sized segments) offers the greater flexibility associated with more and larger reporting units, while high *HHI* (few disproportionately sized segments) offers the lesser flexibility associated with fewer and smaller reporting units. Thus *HHI* is expected to be negatively associated with *ln(Seg)*.

2.4.2 Unverifiable net assets in reporting units

If a reporting unit fails step 1 of the impairment test (i.e., if the unit’s fair value to book value ratio is <1), management must estimate the fair value of the unit’s goodwill under step 2. That estimate is calculated as the difference between the unit’s total fair value (from step 1) and the fair value of the unit’s constituent net assets (excluding book goodwill). Thus in step 2, managers must obtain fair-value appraisals for all of the unit’s assets and liabilities. For units that have a larger proportion of net assets (excluding goodwill) without readily observable market values (hereafter, unverifiable net assets), assessing fair values of net assets introduces additional subjectivity in determining impairment losses. Subjectivity in appraising the fair values of net assets other than goodwill results in subjectivity in estimating the fair value of goodwill and consequently in estimating the amount of impairment loss. The subjectivity suggests that units with more unverifiable net assets have greater ability to manage goodwill impairment losses.

Footnote 11 continued

of acquisition. Firms, however, can reorganize their reporting structures in future years (SFAS 142, §36), effectively leading to a reallocation in acquired goodwill.

Empirical proxies for unverifiable net assets in reporting units

UNA: We compute the ratio of [cash + all investments and advances – debt – preferred equity] to [assets – liabilities]. The denominator in this ratio is total net assets, while the numerator is intended to proxy for that component of net assets whose fair-values are likely most verifiable (Richardson et al. 2005). Thus this ratio is intended to capture the verifiability of net assets (VNA). Items *excluded* from the numerator include plant and equipment, receivables, payables, inventories, advances, etc. Fair-value estimates of these items are likely less verifiable than cash, investments, debt, and preferred equity. Thus as the VNA ratio decreases, subjectivity in estimating the fair value of goodwill is expected to increase. To obtain a measure that increases in the subjectivity of estimating the fair value of goodwill, we multiply VNA by -1 . We then rank the resulting value in-sample and denote it *UNA*, where “UNA” refers to the unverifiability of net assets.¹²

IndLev: A potential problem with *UNA* is that it homogenizes the net assets considered unverifiable across all industries. Fabricant (1936) reports that in a sample of 208 large listed industrial US firms for the period 1925 through 1934, property, plant, and equipment write-ups were more numerous (70) than investment write-ups (43). Watts (2006, p. 54) argues the property, plant, and equipment written up were likely to be general, non-firm-specific assets for which market prices were more observable. If that is true, *UNA* measures unverifiability with error. Consequently, as an alternate proxy for the unverifiability of net assets, we also use the firm’s industry-average debt-to-assets.

Leverage can be a good proxy for non-firm-specific assets (Myers 1977; Smith and Watts 1992). Such assets are more likely to have verifiable fair-value estimates. At the firm level, leverage is a noisy measure of assets-in-place because it also proxies for distress (especially likely in our sample where all firms have $BTM > 1$). Industry mean leverage, however, can average out the firm-specific distress component of leverage, leaving us with a proxy for assets-in-place. The higher the industry’s average leverage, the more likely the nature of assets in a firm are such that they can be reliably valued and thus the less likely the unverifiability of net assets. We define “industry” as four-digit NAICS codes and rank all such industries by mean leverage. We use the industry mean leverage rank, *IndLev*, as a proxy for verifiability of firm assets. Thus we expect the subjectivity generated by unverifiable net assets to decrease in *IndLev*.

In addition to the two financial characteristics described above (i.e., the number and size of reporting units and the unverifiable net assets in reporting units), Ramanna (2008) describes a third firm attribute that can facilitate write-off management: the fair-value-to-book-value ratio (FTB) of reporting units. Under step 1 of SFAS 142, impairment losses are recognized only when the unit’s estimated fair value is less than the book value of its net assets. This step implicitly assigns all of the difference between a unit’s fair value and its book value to acquired goodwill.

¹² In unreported tests, we find the VNA ratio has high in-sample variance; we also find relatively high kurtosis in this variable, suggesting the high variance is due to a few extreme observations. To mitigate the effect of such observations (and to avoid trimming-induced data loss in what is a relatively small dataset), we use in-sample ranks in computing *UNA*.

However, at least two other factors can be responsible for this difference. First, internally generated growth options can increase the unit's fair value without increasing its book value. Second, the book value of the unit's recorded net assets can be below their market value. These two factors mean that the value implicitly allotted to acquire goodwill in step 1 of the SFAS 142 impairment test can be overstated. Units with high FTB ratios can avoid impairment of acquired goodwill even when that goodwill is impaired because internally generated rents and understatement of net assets can absorb any drop in goodwill value. We do not explicitly test this hypothesis. We cannot directly observe FTB ratios, and the best available proxy for FTB ratios—firm-wide market-to-book ratios—is used to select our sample. This suggests that the extent of non-impairment documented in this paper is a lower bound on the total avoidance occurring under SFAS 142.

2.5 Research design

To examine the determinants of goodwill non-impairment in the sample in a multivariate setting, we estimate the following regression for all firm-years “*i*.”

$$\begin{aligned} Imp_i = & \text{Intercept} + \beta_k \times (\text{Private information motives}_i) \\ & + \beta_l \times (\text{Contracting motives}_i) + \beta_m \times (\text{Reputation motives}_i) \\ & + \beta_n \times (\text{Valuation motives}_i) + \beta_o \times (\text{Reporting flexibility}_i) \\ & + \beta_p \times (\text{Control variables}_i) + \varepsilon_i \dots \end{aligned} \quad (1)$$

In the above equation, Imp_i measures a firm's goodwill impairment at the end of year t (i.e., the second full fiscal-year with $BTM > 1$), scaled by beginning-of-period assets. If impairments are not reported on COMPUSTAT (i.e., if impairments are coded as “missing” or “combined” with other data), we assume impairments are zero.¹³ The set of “private information motives” is either *InfoAsym* alone or (in a separate regression) *InfoAsym* and $BHRet_t + 1$. The 1-year-ahead returns are excluded from the first regression because they are only available for firms that survived into the following year.

The set of “contracting motives” is *CovDebt*, *Bonus*, and *Delist*; “reputation motives” is *Tenure* and “valuation motives” is *AsstPrc*. *AsstPrc* cannot be estimated for 38 of the 124 sample firms due to data restrictions and so is excluded from the primary regression specification. The set of “reporting flexibility” proxies is each of four combinations (estimated across four separate regressions) of a goodwill allocation variable [i.e., $\ln(Seg)$ or *HHI*] and an unverifiability variable (i.e., *UNA* or *IndLev*). The control variables from Eq. (1) are as follows.

- Size*: The natural log of beginning-of-period assets.
- PropGw*: The ratio of beginning-of-period goodwill to prior year assets.
- BHRet*: The “year t ” buy-and-hold return.
- NumQtrBTM > 1*: The number of quarters in “year t ” with $BTM > 1$.

¹³ We tested this assumption for a random sample of ten firms by searching 10-K filings for impairments data. We found no instance where our assumption was inconsistent with data in the 10-K.

Size and *PropGw* are likely proxies for the magnitude of goodwill write-offs, while *BHRet* and *NumQtrBTM* > 1 are likely proxies for the economic necessity of a write-off. Unless otherwise mentioned, all variables in our analyses are measured at the end of “year t .” See Appendix 2 for a consolidated description of all variables. Parameter estimates in the multivariate regression are computed using ordinary least squares and standard errors are adjusted for heteroskedasticity as suggested by White (1980).

3 Results

3.1 Sample descriptive statistics

Table 1 reports summary statistics for all variables in our analyses. The median impairment (*Imp*) in our sample is zero, while the mean is 4.7 % of beginning-of-period assets. About 24 % of sample firms engage in net share repurchases in year t , while about 21 % engage in net insider buying. The mean value of *InfoAsym* is 0.4113 (i.e., about 41 % of the sample engage in either repurchases or insider buying). Mean *BHRet* $_t + 1$ is 34.97 %, although this statistic appears to be driven by outliers: the median is 13.41 %, and the standard deviation is 145.67 %.

Turning to the agency-theory based proxies, the median firm’s *CovDebt* is 0.1341. Nearly 52 % of CEOs of sample firms received a bonus in year t , and the median (mean) CEO was in office for 4 years (5.5 years) by the end of year t . Over 51 % of sample firms have delisting-based incentives to avoid impairments.

The median value of *ln(Seg)* is 0.693, suggesting that the median firm in our sample has two business segments. The median *HHI* in the sample 0.768, suggesting that most firms in the sample are not concentrated in one segment. The median industry-leverage rank for firms in the sample is 1,192 (the highest possible rank in COMPUSTAT is 2133). The median value of *UNA* is 63 by construction.

The median (mean) firm in our sample has \$210 million (\$273 million) in assets and 14.1 % (25.6 %) of its assets in goodwill. Sample firms experience a median (mean) year- t buy-and-hold return of -7.2 % (5.1 %). The median firm closed each of its four quarters in year t with *BTM* > 1 , while on average, firms in the sample experienced 3.49 quarters of *BTM* > 1 in year t .

3.2 Association of sample non-impairment with private information

Table 2 reports the results of univariate frequency tests of association between goodwill non-impairment and the proxies for managers’ private information on positive future cash flows. As noted earlier, there are 124 firms in COMPUSTAT meeting our sample criteria. Of these, 31 % (38 firms) record goodwill impairments in year t , the second full fiscal-year with *BTM* > 1 ; 69 % (86 firms) do not. Managers may avoid goodwill write-offs due to private information on positive future cash flows. To test this explanation, we examine whether non-impairment firms are more likely to show evidence of net repurchases or insider buying (i.e., *InfoAsym* = 1). Panel A of Table 2 reports that the frequency of firms with

Table 1 Summary statistics for all variables in the sample

Type	Variable	<i>N</i>	Median	Mean	SD
<i>Dependent variable</i>	<i>Imp</i>	124	0	0.0467	0.1219
<i>Private information motive</i>	<i>InfoAsym</i>	124	0	0.4113	0.4941
	<i>Repurchase</i>	124	0	0.2419	0.4300
	<i>Inside</i>	124	0	0.2097	0.4087
	<i>BHRet_t + 1</i>	111	0.1283	0.3497	1.4567
	<i>CovDebt</i>	124	0.1341	0.1778	0.1863
<i>Contracting motives</i>	<i>Bonus</i>	124	1	0.5161	0.5018
	<i>Delist</i>	124	1	0.5161	0.5018
	<i>Tenure</i>	124	4	5.5262	5.6349
<i>Reputation motive</i>	<i>Tenure</i>	124	4	5.5262	5.6349
<i>Valuation motive</i>	<i>AsstPrc</i>	91	5.7645	11.6929	16.2306
<i>Goodwill reporting flexibility</i>	<i>ln(Seg)</i>	123	0.6931	0.7075	0.6632
	<i>HHI</i>	123	0.7679	0.7459	0.2564
	<i>IndLev</i>	124	1,192	1,163	636
	<i>UNA</i>	124	63	63	36
	<i>Size</i>	124	5.3504	5.6107	2.0851
<i>Control variables</i>	<i>PropGw</i>	124	0.1409	0.2562	0.4639
	<i>BHRet</i>	124	-0.0720	0.0505	0.6273
	<i>NumQtrBTM > 1</i>	124	4	3.4919	0.8014

The sample is the 124 firms on COMPUSTAT with fiscal year “*t*” from 2003 through 2006 that have goodwill >\$1 m in year *t* - 2, equity-book-value < equity-market-value in year *t* - 2, BTM > 1 in year *t* - 1, BTM > 1 in year *t*, and goodwill >0 at the beginning of year *t*. BTM is the ratio of equity-book-value plus goodwill impairment (if any) to equity-market-value. *Imp* is goodwill impairment (*t*) ÷ assets (*t* - 1). *InfoAsym* is a dummy variable set to one if the firm exhibits positive net share repurchases or positive net insider buying in year *t*. *Repurchase* is a dummy variable set to one if the firm exhibits positive net share repurchases in year *t*. *Inside* is a dummy variable set to one if the firm exhibits positive net insider buying in year *t*. *BHRet_t + 1* is the *buy-and-hold return* over year *t* + 1 for firms still actively traded. *CovDebt* is the product of debt (*t*) ÷ assets (*t* - 1) and an indicator if the firm has an accounting-based debt covenant. *Bonus* is a dummy variable set to one if the firm’s CEO received a cash bonus in year *t*. *Delist* is a dummy variable set to one if the firm trades on the NASDAQ or AMEX. *Tenure* is the tenure in years of the CEO in year *t*. *AsstPrc* is the coefficient from regressing a firm’s price on its operating income using at least 16 and up to 20 quarters of data prior to year *t*. *ln(Seg)* is the natural log of the number of business segments. *HHI* is the firm’s Herfindahl–Hirschman index, calculated as the sum of the square of the ratios of segment sales to total firm sales. *IndLev* is the ranked mean leverage of the firm’s industry (using 4-digit NAICS codes). *UNA* is the in-sample rank of -1* [cash + all investments and advances - debt - preferred equity] ÷ [assets - liabilities]. *Size* is log [assets (*t* - 1)]. *PropGw* is goodwill (*t* - 1) ÷ assets (*t* - 2). *BHRet* is the buy-and-hold return over year *t*. *NumQtrBTM > 1* is number of quarters in year *t* with BTM > 1

InfoAsym = 1 among non-impairers (42 %) is statistically indistinguishable from that among impairers (39 %). The χ^2 statistic for the 2 × 2 comparison has a *p* value of 0.8034.

In Panel B of Table 2, we report on the association of non-impairment with *InfoAsym* among sample firms with only one business segment. Earlier, we argued that firms with large numbers of, and large-sized, reporting units are more likely to be able to avoid impairments by strategically allocating goodwill to units with internally generated rents. If this is the case, it is useful to determine if, in single-

Table 2 Association of goodwill impairment with private information proxies

	No impairment	Impairment	Total
<i>Panel A: goodwill impairments in year t^a</i>			
<i>InfoAsym</i> = 0	50	23	73
<i>InfoAsym</i> = 1	36	15	51
<i>Total</i>	86	38	124
<i>% with positive private information</i>	42 %	39 %	41 %
	No impairment	Impairment	Total
<i>Panel B: goodwill impairments in year t among firms with only one business segment^b</i>			
<i>InfoAsym</i> = 0	22	11	33
<i>InfoAsym</i> = 1	14	5	19
<i>Total</i>	36	16	52
<i>% with positive private information</i>	39 %	31 %	37 %
	No impairment	Impairment	Total
<i>Panel C: goodwill impairments in year t when private information is measured using positive net share repurchases^c</i>			
<i>Repurchase</i> = 0	65	29	94
<i>Repurchase</i> = 1	21	9	30
<i>Total</i>	86	38	124
<i>% with positive repurchases</i>	24 %	24 %	24 %
	No impairment	Impairment	Total
<i>Panel D: goodwill impairments in year t when private information is measured using positive net insider buying^d</i>			
<i>Inside</i> = 0	67	31	98
<i>Inside</i> = 1	19	7	26
<i>Total</i>	86	38	124
<i>% with positive repurchases</i>	22 %	18 %	21 %

The sample is the 124 firms on COMPUSTAT with fiscal year “ t ” from 2003 through 2006 that have goodwill >\$1 m in year $t - 2$, equity-book-value < equity-market-value in year $t - 2$, BTM > 1 in year $t - 1$, BTM > 1 in year t , and goodwill >0 at the beginning of year t . BTM is the ratio of equity-book-value plus goodwill impairment (if any) to equity-market-value. *InfoAsym* is a dummy variable set to one if the firm exhibits positive net share repurchases or positive net insider buying in year t . *Repurchase* is a dummy variable set to one if the firm exhibits positive net share repurchases in year t . *Inside* is a dummy variable set to one if the firm exhibits positive net insider buying in year t .

^a The χ^2 statistic for the table has a p value of 0.8034

^b The χ^2 statistic for the table has a p value of 0.5975

^c The χ^2 statistic for the table has a p value of 0.9298

^d The χ^2 statistic for the table has a p value of 0.6430

segment firms, unverifiability in net assets provides adequate discretion to avoid write-offs. Panel B reports the year- t frequency of non-impairment among single-segment sample firms is 69 % (36 of 52 firms), the same as the frequency of

non-impairment among all sample firms. Further, among single-segment firms, the frequency of firms with $InfoAsym = 1$ among non-impairers (39 %) is statistically indistinguishable from that among impairers (31 %); p value is 0.5975. Thus non-impairment does not appear to be limited to multi-segment firms, nor does the evidence confirm that non-impairment in single-segment firms is motivated by managers' private information on future cash flows.

Positive net insider buying is arguably a stronger measure of favorable information asymmetry (between managers and shareholders) than $InfoAsym$, where $InfoAsym$ is firms with either positive net share repurchases or positive net insider buying. We thus test whether goodwill non-impairment frequency is associated with favorable information asymmetry when the latter is defined only by positive net share repurchase (*Repurchase*) or by positive net insider buying (*Inside*). The results are reported in Panels C and D of Table 2. We find: (1) the frequency of firms with $Repurchase = 1$ among non-impairers (24 %) is statistically indistinguishable from that among impairers (24 %); (2) the frequency of firms with $Inside = 1$ among non-impairers (22 %) is statistically indistinguishable from that among impairers (18 %). The p values for the comparisons are 0.9298 and 0.6430, respectively. Overall, the data cannot confirm that non-impairment in the sample is due to management's possession of favorable private information, at least as based on share repurchases and insider buying.

We also investigate whether sample non-impairers have, on average, higher 1-year-ahead stock returns than sample impairers.¹⁴ If this is the case, then non-impairment is consistent with managers having positive private information that is revealed publicly, and incorporated into stock prices, over the following 1 year. The results of tests based on 1-year-ahead stock returns are presented in Table 3. For the 124 firms in our sample, stock returns data over the following 12 months continue to be available on CRSP for 96 firms. These firms are classified as "Active, CRSP" in Table 3. Sixty-four of these 96 firms are identified as non-impairers in our sample year; the other 32 are impairers. As the data in Panel A of the table show, the mean 1-year-ahead return for "Active, CRSP" firms not taking goodwill impairment ($n = 64$) is higher than that for such firms who take goodwill impairment ($n = 32$). However, the opposite is true when comparing the medians across the two groups. Neither comparison is statistically significant. Thus we cannot reject the null that there is no difference in 1-year-ahead returns between goodwill impairers and non-impairers. These data are inconsistent with the proposition that goodwill non-impairment in the sample year is due to managers' private information, information that subsequently (over 1 year) becomes public and is incorporated into stock prices.

For the remaining 28 sample firms without 1-year-ahead returns data on CRSP (i.e., 124 minus 96), we attempt to gather the returns data from Thomson One Banker. Fifteen of the 28 firms have 12-month-ahead stock price information available on Thomson. From this price information, we compute the 12-month-ahead stock returns; these firms are classified as "Active, not CRSP" in Table 3. We

¹⁴ Throughout the paper, inferences based on raw returns are unchanged when using size-adjusted returns.

Table 3 Analysis of 1-year-ahead stock returns by sample firms' impairment status

Category	Non-impairers			Impairers						
	N	Mean	Median	N	Mean	Median				
<i>Panel A: summary statistics for BHR_{t,t+1}</i>										
Active, CRSP	64	0.2293	0.1239	32	0.1721	0.1331				
Active, not CRSP	12	1.6588	0.4113	3	-0.4229	-0.24				
Inactive	5	0.5395	0.6434	1	0.4688	0.4688				
No data	5	-	-	2	-	-				
Category	BTM _t			Size			PropGw			
	N	Mean	Median	N	Mean	Median	N	Mean	Median	
<i>Panel B: summary statistics for select sub-sample characteristics</i>										
Active, CRSP	96	1.4409	1.2590	96	0.4479	0	96	5.8196	5.4803	0.1524
Active, not CRSP	15	2.3330	2.2259	15	0.2667	0	15	3.5960	3.4254	0.1636
Inactive	6	1.1977	1.1504	6	0.3333	0	6	5.4875	5.8064	0.0761
No data	7	2.0440	1.5039	7	0.2857	0	7	7.1685	5.4070	0.1367

The sample is the 124 firms on COMPUSTAT with fiscal year "t" from 2003 through 2006 that have goodwill >\$1 m in year t - 2, equity-book-value < equity-market-value in year t - 2, BTM > 1 in year t - 1, BTM > 1 in year t, and goodwill >0 at the beginning of year t. BTM is the ratio of equity-book-value plus goodwill impairment (if any) to equity-market-value. "Active, CRSP" refers to firms that continue to have stock returns data on CRSP 1 year past the sample year. "Active, Not CRSP" refers to firms that are dropped from CRSP in the post sample-year but that have 1-year-ahead stock prices available on Thomson One Banker. "Inactive" are firms that are acquired or delisted in the post sample-year, as inferred from price data on Thomson. "No data" refers to firms without any stock price coverage in CRSP or Thomson in the post sample-year. $BHR_{t,t+1}$ is the buy-and-hold return over year t + 1 for firms still actively traded. $Size$ is $\log [assets (t - 1)]$. $PropGw$ is goodwill $(t - 1) \div assets (t - 2)$

are not certain why these firms, previously covered by CRSP, are dropped in the year ahead. Irregular price reporting and low-volume trades, as reported in Thomson, suggest that these firms are thinly traded during the year ahead. Twelve of the 15 firms are identified as non-impairers in our sample year; the other three are impairers. Among “Active, not CRSP” firms, the mean and median 1-year-ahead returns for firms not taking goodwill impairment ($n = 12$) are higher than those for firms taking goodwill impairment ($n = 3$). However, the comparisons are not statistically significant, and the number of observations among impairers in this group ($n = 3$) is too small to facilitate reliable statistical inferences.

A further six of the 28 firms without 1-year-ahead returns data on CRSP have stock price data available on Thomson for some period less than the following 12 months: these firms are either delisted or acquired over the 12 month period. For these firms, returns are calculated from the sample fiscal-year-end date to the date of the last reported stock trade. Since these firms do not trade for a full 12 months after the sample fiscal-year-end, they are referred to as “Inactive” in the table below. Five of the “Inactive” firms are identified as non-impairers in our sample year; the other one firm impaired goodwill in the sample year.

Finally, seven firms of our sample of 124 have no year-ahead stock returns data on either Thomson One Banker or CRSP. Of these seven, we identify four as being acquired over the year following the sample year and another one as being delisted. No further data on the other two are available. Five of the seven firms are identified as non-impairers in our sample year; the other two are impairers. A more detailed analysis of the year “ t ” properties of firms classified as “Active, CRSP,” “Active, not CRSP,” and “Inactive” is available in Panel B of Table 3. Of interest, the data in Panel B show that “active” firms dropped from CRSP are smaller and have higher BTM ratios than “active” firms that continue to be covered by CRSP (both comparisons are statistically significant at the 95 % confidence level).

3.3 Association of sample non-impairment with agency-theory predictions

In Table 4, we report on univariate frequency tests of association between goodwill non-impairment and the three contracting-based motives described in Sect. 2.3.2, specifically, *CovDebt*, *Bonus*, and *Delist*. Since *CovDebt* is not a binary variable, we define an indicator *DCovDebt* for use in the frequency tests; *DCovDebt* is set to one if the firm has an outstanding net-income or net-worth based covenant.

Panel A of Table 4 reports a statistically higher proportion of firms with *DCovDebt* = 1 among sample non-impairers (78 %) than among sample impairers (63 %). The p value for this comparison is 0.0867. The proportion of non-impairing sample firms whose CEOs are likely to have goodwill-inclusive compensation contracts (*Bonus* = 1) is reported in Panel B of Table 4. This proportion (57 %) is statistically higher than that of impairing sample firms (39 %); the p value is 0.0722. The association of goodwill non-impairment and *Delist* is tested in Panel C of Table 4. We find that the proportion of firms with *Delist* = 1 among non-impairers in the sample (51 %) is statistically indistinguishable from that among sample impairers (53 %); the p value is 0.8801. Thus overall, there is evidence that goodwill non-impairment in the sample is associated with debt and CEO compensation

Table 4 Association of goodwill impairment with agency-related proxies

	No impairment	Impairment	Total
<i>Panel A: by presence of accounting based debt covenants^a</i>			
<i>DCovDebt = 0</i>	19	14	33
<i>DCovDebt = 1</i>	67	24	91
<i>Total</i>	86	38	124
<i>% with debt covenant incentives</i>	78 %	63 %	73 %
	No impairment	Impairment	Total
<i>Panel B: by CEO's receipt of an accounting-based bonus^b</i>			
<i>Bonus = 0</i>	37	23	60
<i>Bonus = 1</i>	49	15	64
<i>Total</i>	86	38	124
<i>% with compensation incentives</i>	57 %	39 %	52 %
	No impairment	Impairment	Total
<i>Panel C: by accounting-based delisting requirements^c</i>			
<i>Delist = 0</i>	42	18	60
<i>Delist = 1</i>	44	20	64
<i>Total</i>	86	38	124
<i>% with delisting incentives</i>	51 %	53 %	52 %

The sample is the 124 firms on COMPUSTAT with fiscal year “ t ” from 2003 through 2006 that have goodwill $> \$1$ m in year $t - 2$, equity-book-value $<$ equity-market-value in year $t - 2$, $BTM > 1$ in year $t - 1$, $BTM > 1$ in year t , and goodwill > 0 at the beginning of year t . BTM is the ratio of equity-book-value plus goodwill impairment (if any) to equity-market-value. $DCovDebt$ is an indicator if the firm has an accounting-based debt covenant. $Bonus$ is a dummy variable set to one if the firm’s CEO received a cash bonus in year t . $Delist$ is a dummy variable set to one if the firm trades on the NASDAQ or AMEX

^a The χ^2 statistic for the table has a p value of 0.0867

^b The χ^2 statistic for the table has a p value of 0.0722

^c The χ^2 statistic for the table has a p value of 0.8801

contracting concerns, while we cannot confirm that non-impairment is associated with delisting-based concerns.

We cannot perform similar univariate frequency tests on the other two agency-theory-based variables described in Sect. 2.3.2, *Tenure* and *AsstPrc*, since these variables are continuous in nature. We test for their association with goodwill non-impairment in multivariate regressions.

3.4 Validating empirical constructs of managers’ private information

In Table 2, the hypothesis that managers’ private information is positively associated with sample non-impairment is not confirmed for either of the proxies used. The lack of statistical association can be driven by noise in the proxies. To assess the validity of the proxies, we attempt to test for their association with non-impairment in a similarly constructed sample (i.e., firms with market indications of

impaired goodwill) under SFAS 121, the standard that preceded SFAS 142.¹⁵ In untabulated tests, we find that the frequency of non-impairing firms with positive net repurchases (36 %) is statistically higher than that of impairing firms (22 %); p value is 0.0256. We cannot estimate *Inside*, and consequently *InfoAsym*, in the SFAS 121 sample due to limitations in obtaining reliable insider-buying data from this period.¹⁶ Thus overall, we can conclude that non-impairment in the SFAS 121 sample appears to be related to managers' private information as proxied by share repurchases, suggesting that *Repurchase* has construct validity as a proxy for managers' private information.

As noted earlier, the nature of goodwill recognition and impairment rules under SFAS 121 differ significantly from those under SFAS 142. Specifically, when SFAS 121 was in effect: (1) firms had the option to use the pooling-of-interests method to account for acquisitions, thus avoiding goodwill recognition altogether, and (2) goodwill, if recognized, was subject to amortization. These conditions imply that the base of book goodwill available for impairment at a given point was likely to be lower when SFAS 121 was in effect. A lower magnitude of impairment can affect incentives to avoid write-offs. Moreover, if, as the SEC suggested, firms engaged in pooling acquisitions to manage earnings (Turner 1999), the sample of firms with book goodwill under the SFAS 121 regime can contain companies less prone to earnings management.¹⁷ Accordingly, one can construct hypotheses to explain why goodwill non-impairments under SFAS 121 are more likely to be associated with positive private information, as we find. We do not explore explanations for our findings on the SFAS 121 sample since they are outside the scope of our study.

3.5 Pearson correlations between explanatory variables

The conclusion from the univariate tests described through Table 4 is that goodwill non-impairment in the sample of firms under SFAS 142 is associated with proxies for debt and compensation contracting concerns but not with exchange delisting concerns or with proxies for managers' private information. In subsequent tests, we examine the determinants of goodwill non-impairment under SFAS 142 in a multivariate setting. Before describing the multivariate results, in this sub-section, we report Pearson correlations between the continuous explanatory variables in the multivariate regressions (Table 5).¹⁸ Size is significantly positively associated with

¹⁵ Specifically, the SFAS 121 sample consists of firms with fiscal years " t " ending between December 1996 and December 2000 that have (1) book goodwill, (2) equity-market-values greater than equity-book-values in $t - 2$, (3) $BTM > 1$ in $t - 1$, and (4) $BTM > 1$ in t , where BTM is calculated after accounting for all non goodwill write-offs, but before any goodwill write-off.

¹⁶ Brochet (2010) reports that the informativeness of Form 4 insider-trading filings increases after the SEC mandated timelier filings (since August 2002) and electronic filing (since June 2003).

¹⁷ The academic evidence on the governance characteristics of pooling versus purchase method acquirers and on the consequences of pooling versus purchase method acquisitions is consistent with the SEC's claim (e.g., Martinez-Jerez 2008).

¹⁸ In untabulated frequency tests, we find none of the discrete explanatory variables used in the multivariate regressions (e.g., *Bonus*, *Delist*, *InfoAsym*, etc.) are significantly associated with each other.

CovDebt and the number of business segments and significantly negatively associated with *HHI* and industry leverage rank (*IndLev*). *IndLev* is also significantly positively associated with *HHI*. The absolute value of the correlation between the two proxies for goodwill allocation flexibility across reporting units, *ln(Seg)* and *HHI* is 0.8933, consistent with the variables measuring a conceptually similar construct (the correlation is negative because allocation flexibility is expected to increase in the number of segments and decrease in segment concentration, *HHI*). Finally, *UNA* is positively associated with *CovDebt*, suggesting *firm* leverage in the sample is not a good proxy for verifiable assets-in-place (and thereby supporting the use of *industry* leverage, *IndLev*, as a proxy for assets-in-place).

3.6 Multivariate results

Table 6 reports on multivariate tests of the determinants of non-impairment in the SFAS 142 sample. The specification for the multivariate regressions is provided in Sect. 2.5. Since we do not have data to compute *AsstPrc* for all the observations in our sample (see Table 1) and since we can only use *BHRet_t + 1* for firms that survived into the following year (these are the “Active, CRSP” and “Active, not CRSP” firms in Table 3), we report the results both with and without these variables. There are two panels to Table 6, each panel with a different explanatory variable representing flexibility in estimating the fair value of reporting units’ net assets: *UNA* in Panel A and *IndLev* in Panel B. Within each panel, there are four regressions that cover the inclusion and exclusion of two sets of explanatory variables: first, *AsstPrc* and *BHRet_t + 1* and, second, one proxy for goodwill allocation flexibility across reporting units, that is, *ln(Seg)* or *HHI*.

Across all eight regressions in Table 6, neither of the proxies for managers’ private information (i.e., *InfoAsym* and *BHRet_t + 1*) is statistically significant; in all tests, statistical significance is inferred at least at the two-tail 90 % confidence level. Thus based on the private-information proxies employed, the multivariate tests cannot confirm the hypothesis that goodwill non-impairment under SFAS 142 is associated with managers’ favorable private information on future cash flows.

Among the contracting-based motives for non-impairment, *CovDebt*, a measure of the cost of debt covenant violations, is a negative and statistically significant predictor of impairment in the two regressions that use *IndLev*, *AsstPrc*, and *BHRet_t + 1*. The relation between *CovDebt* and non-impairment is likely due to managers’ desire to avoid covenant renegotiation. Avoiding renegotiation facilitates wealth transfers from debt holders to shareholders but can also be motivated by management reputation concerns (since failure to do so can be perceived as managerial incompetence). Further, *Bonus*, the proxy for CEO’s compensation concerns, is a negative and statistically significant predictor of impairment in all four regressions that include *AsstPrc* and *BHRet_t + 1*. In contrast, we do not find any evidence to suggest that delisting based concerns are associated with firms’ decisions on goodwill write-offs.

Table 5 Pearson correlations of continuous explanatory variables (*p* values in parentheses)

	<i>CovDebt</i>	<i>Tenure</i>	<i>AsstPr</i>	<i>ln(Seg)</i>	<i>HHI</i>	<i>IndLev</i>	<i>UNA</i>	<i>Size</i>	<i>PropGw</i>	<i>BHRet</i>
<i>Tenure</i>	-0.0378 (0.6770)									
<i>AsstPr</i>	0.0793 (0.4553)	0.1303 (0.2185)								
<i>ln(Seg)</i>	0.0541 (0.5523)	-0.0561 (0.5381)	-0.1137 (0.2858)							
<i>HHI</i>	-0.0503 (0.5808)	0.0595 (0.5132)	0.1069 (0.3161)	-0.8933 (<0.0001)						
<i>IndLev</i>	-0.0027 (0.9764)	0.0518 (0.5680)	0.0169 (0.8736)	-0.1792 (0.0474)	0.2183 (0.0153)					
<i>UNA</i>	0.6215 (<0.0001)	-0.0298 (0.7425)	0.0546 (0.6072)	-0.0704 (0.4391)	0.0575 (0.5278)	0.0029 (0.9741)				
<i>Size</i>	0.2421 (0.0068)	-0.0872 (0.3357)	-0.0178 (0.8673)	0.2222 (0.0135)	-0.2469 (0.0059)	-0.3488 (0.0001)	0.0691 (0.4458)			
<i>PropGw</i>	-0.0602 (0.5065)	-0.0945 (0.2967)	-0.0185 (0.8616)	-0.0634 (0.4862)	0.0767 (0.3990)	0.1335 (0.1393)	-0.0145 (0.8733)	-0.0732 (0.4192)		
<i>BHRet</i>	-0.0963 (0.2873)	-0.0330 (0.7159)	-0.1265 (0.2323)	-0.0206 (0.8213)	-0.0272 (0.7656)	0.0687 (0.4482)	-0.1338 (0.1386)	-0.1735 (0.0539)	-0.0271 (0.7655)	
<i>NumQtrBTM > 1</i>	0.0321 (0.7231)	0.0363 (0.6891)	0.0957 (0.3668)	0.1214 (0.181)	-0.1188 (0.1906)	-0.0510 (0.5737)	0.0464 (0.6086)	0.1011 (0.2638)	-0.1153 (0.2024)	-0.0547 (0.5462)

The sample is the 124 firms on COMPUSTAT with fiscal year “*t*” from 2003 through 2006 that have goodwill >\$1 m in year *t* - 2, equity-book-value < equity-market-value in year *t* - 2, BTM > 1 in year *t* - 1, BTM > 1 in year *t*, and goodwill >0 at the beginning of year *t*. BTM is the ratio of equity-book-value plus goodwill impairment (if any) to equity-market-value. *CovDebt* is the product of debt (*t*) ÷ assets (*t* - 1) and an indicator if the firm has an accounting-based debt covenant. *Tenure* is the tenure in years of the CEO in year *t*. *AsstPr* is the coefficient from regressing a firm’s price on its operating income using at least 16 and up to 20 quarters of data prior to year *t*. *ln(Seg)* is the natural log of the number of business segments. *HHI* is the firm’s Herfindahl/Hirschman Index, calculated as the sum of the square of the ratios of segment sales to total firm sales. *IndLev* is the ranked mean leverage of the firm’s industry (using 4-digit NAICS codes). *UNA* is the in-sample rank of -1* [cash + all investments and advances - debt - preferred equity] ÷ [assets - liabilities]. *Size* is log [assets (*t* - 1)]. *PropGw* is goodwill (*t* - 1) ÷ assets (*t* - 2). *BHRet* is the buy-and-hold return over year *t*. *NumQtrBTM > 1* is number of quarters in year *t* with BTM > 1

Table 6 Multivariate regression of goodwill impairment on the hypothesized determinants

Effect	Parameter	Est. (SE) (1)	Est. (SE) (2)	Est. (SE) (3)	Est. (SE) (4)
<i>Panel A: unverifiability of net assets measured with UNA</i>					
	<i>Intercept</i>	0.2853*** (0.0992)	0.1654** (0.0685)	0.2046** (0.0911)	0.1154* (0.0627)
Private info. motive	<i>InfoAsym</i> –	–0.0213 (0.0198)	–0.0095 (0.0160)	–0.0231 (0.0203)	–0.0115 (0.0164)
	<i>BHRet_t + 1</i> –		–0.0029 (0.0065)		–0.0040 (0.0067)
Contract. motives	<i>CovDebt</i> –	0.0263 (0.0492)	0.0175 (0.0389)	0.0224 (0.0494)	0.0169 (0.0402)
	<i>Bonus</i> –	–0.0190 (0.0223)	–0.0362** (0.0171)	–0.0175 (0.0226)	–0.0350** (0.0171)
	<i>Delist</i> –	–0.0340 (0.0341)	–0.0110 (0.0175)	–0.0321 (0.0343)	–0.0091 (0.0174)
Reputation motive	<i>Tenure</i> –	–0.0025* (0.0014)	–0.0029** (0.0012)	–0.0025* (0.0014)	–0.0029** (0.0012)
Valuation motive	<i>AsstPrc</i> –		0.0001 (0.0005)		0.0001 (0.0005)
Goodwill reporting flexibility	<i>ln(Seg)</i> –	–0.0301* (0.0155)	–0.0169 (0.0126)		
	<i>HHI</i> +			0.0742** (0.0367)	0.0464 (0.0311)
	<i>UNA1</i> –	–0.0008** (0.0004)	–0.0008** (0.0002)	–0.0008** (0.0004)	–0.0008** (0.0002)
Control variables	<i>Size</i>	–0.0084 (0.0059)	–0.0043 (0.0049)	–0.0081 (0.0060)	–0.0038 (0.0049)
	<i>PropGw</i>	0.0346 (0.0276)	0.1586** (0.0385)	0.0341 (0.269)	0.1566** (0.0387)
	<i>BHRet</i>	–0.0537* (0.0273)	0.0078 (0.0202)	–0.0522* (0.0272)	0.0100 (0.0199)
	<i>Num QtrBTM > 1</i>	–0.0227 (0.0150)	–0.0098 (0.0121)	–0.0228 (0.0150)	–0.0101 (0.0117)
	Adj. <i>R</i> ²	0.1296	0.3101	0.1267	0.3133
	<i>N</i>	124	83	124	83
Effect	Parameter	Est. (SE) (1)	Est. (SE) (2)	Est. (SE) (3)	Est. (SE) (4)
<i>Panel B: unverifiability of net assets measured with IndLEv</i>					
	<i>Intercept</i>	0.1838** (0.0848)	0.0433 (0.0550)	0.1217 (0.0791)	0.0076 (0.0558)
Private info. motive	<i>InfoAsym</i> –	–0.0183 (0.0192)	–0.0029 (0.0157)	–0.0198 (0.0196)	–0.0045 (0.0161)
	<i>BHRet_t + 1</i> –		0.0026 (0.0069)		0.0009 (0.0069)

Table 6 continued

Effect	Parameter	Est.(SE) (1)	Est.(SE) (2)	Est.(SE) (3)	Est.(SE) (4)
Contract. motives	<i>CovDebt</i> −	−0.0772 (0.049)	−0.0804* (0.0425)	−0.0771 (0.0491)	−0.0796* (0.0426)
	<i>Bonus</i> −	−0.0245 (0.0234)	−0.0438** (0.0193)	−0.0231 (0.0238)	−0.0422** (0.0194)
	<i>Delist</i> −	−0.0130 (0.0295)	0.0069 (0.0180)	−0.0121 (0.0297)	0.0082 (0.0179)
Reputation motive	<i>Tenure</i> −	−0.0027* (0.0014)	−0.0030** (0.0014)	−0.0027* (0.0014)	−0.0030** (0.0014)
Valuation motive	<i>AsstPrc</i> −		0.0002 (0.0005)		0.0002 (0.0005)
Goodwill reporting flexibility	<i>ln(Seg)</i> −	−0.0241* (0.0149)	−0.0156 (0.0119)		
	<i>HHI</i> +			0.0602** (0.0361)	0.0365 (0.0305)
	<i>IndLev</i> +	2.60E − 05* (0.0000)	3.20E − 05** (0.0000)	2.50E − 05* (0.0000)	3.00E − 05* (0.0000)
Control variables	<i>Size</i>	−0.0029 (0.0051)	−0.0017 (0.0049)	−0.0028 (0.0052)	0.0017 (0.0049)
	<i>PropGw</i>	0.0282 (0.0265)	0.1416*** (0.0396)	0.0279 (0.260)	0.1400*** (0.0401)
	<i>BHRet</i>	−0.0458* (0.0274)	0.0163 (0.0229)	−0.0448* (0.0273)	0.0181 (0.0227)
	<i>Num QtrBTM > 1</i>	−0.0235 (0.0153)	−0.0065 (0.0113)	−0.0236 (0.0153)	−0.0070 (0.0111)
	Adj. R^2	0.1114	0.2848	0.1097	0.2828
	<i>N</i>	124	83	124	83

The sample is the 124 firms on COMPUSTAT with fiscal year “ t ” from 2003 through 2006 that have goodwill $> \$1$ m in year $t - 2$, equity-book-value $<$ equity-market-value in year $t - 2$, $BTM > 1$ in year $t - 1$, $BTM > 1$ in year t , and goodwill > 0 at the beginning of year t . BTM is the ratio of equity-book-value plus goodwill impairment (if any) to equity-market-value. Imp is goodwill impairment (t) \div assets ($t - 1$). $InfoAsym$ is a dummy variable set to one if the firm exhibits positive net share repurchases or positive net insider buying in year t . $BHRet_{t+1}$ is the buy-and-hold return over year $t + 1$ for firms still actively traded. $CovDebt$ is the product of debt (t) \div assets ($t - 1$) and an indicator if the firm has an accounting-based debt covenant. $Bonus$ is a dummy variable set to one if the firm’s CEO received a cash bonus in year t . $Delist$ is a dummy variable set to one if the firm trades on the NASDAQ or AMEX. $Tenure$ is the tenure in years of the CEO in year t . $AsstPrc$ is the coefficient from regressing a firm’s price on its operating income using at least 16 and up to 20 quarters of data prior to year t . $ln(Seg)$ is the natural log of the number of business segments. HHI is the firm’s Herfindahl Hirschman Index, calculated as the sum of the square of the ratios of segment sales to total firm sales. $IndLev$ is the ranked mean leverage of the firm’s industry (using 4-digit NAICS codes). UNA is the in-sample rank of -1^* [cash + all investments and advances − debt − preferred equity] \div [assets − liabilities]. $Size$ is \log [assets ($t - 1$)]. $PropGw$ is goodwill ($t - 1$) \div assets ($t - 2$). $BHRet$ is the buy-and-hold return over year t . $NumQtrBTM > 1$ is number of quarters in year t with $BTM > 1$. All standard errors are robust to White’s correction. *, **, *** denote statistical significance at the 90, 95, and 99 % confidence level, respectively

Tenure, the measure of CEOs’ concerns on reputational loss from the implications of a goodwill write-off, is a negative and statistically significant predictor of impairment in all specifications of Table 6. The interpretation—that CEO-reputation concerns mitigate the likelihood of goodwill write-offs—is

consistent with predictions from agency theory and findings in Beatty and Weber (2006). Interpreting the magnitude of the coefficient from column (1) of Panel A, Table 6, a one standard deviation increase in *Tenure* is associated with a 5.5 % decrease in the magnitude of impairment (as a fraction of recorded goodwill).¹⁹ The proxy for managers' concerns over the equity-asset-pricing impact of goodwill impairment, *AsstPrc*, is insignificant in all four regressions in which it appears. Since we attempted to select our sample on market indications of impaired goodwill, our sample firms' stock prices likely already reflect goodwill as impaired, mitigating the incentives generated by *AsstPrc*.

Among the characteristics predicted by Ramanna (2008) to affect the ability to avoid goodwill impairment under SFAS 142, *HHI*—a proxy for goodwill allocation flexibility across reporting units—is significant with the predicted sign in two of four regressions in which it appears, specifically, the regressions on the full sample of 124 firms. In contrast, *ln(Seg)* is only significant in one of four regressions in which it appears, column (1) of Panel A. Further, the proxies representing flexibility in estimating the fair value of reporting units' net assets, *UNA* and *IndLev*, are significant in all of the Table 6 regressions in which they appear. To interpret the economic significance of the reporting flexibility variables on impairment decisions, consider column (1) of Panel A as an example. Here, a one standard deviation increase in *ln(Seg)* decreases the proportion of goodwill impaired (as a fraction of beginning-of-period assets) by about 2 %. Since the mean sample firm has about 25 % of its assets in goodwill, a one standard deviation increase in *ln(Seg)* decreases the magnitude of impairment by about 8 % of recorded goodwill. Similarly, a one standard deviation increase in *UNA* decreases the proportion of goodwill impaired by about 2.8 % of beginning-of-period assets, or about 11.24 % of recorded goodwill. The interpretation is that impairments decrease with the number and size of reporting units and increase with the VNA within the unit.

Turning to economic-fundamental variables in the sample, we find the 1-year buy-and-hold return (*BHRet*) is a negative predictor of impairments, though this relation is not statistically significant in all specifications of Table 6. When we estimate the regression specification across the limited sample for which *AsstPrc* data are also available, *BHRet* loses its statistical significance.

To summarize the multivariate results, we find: (1) *Tenure*—the measure of CEOs' concerns on reputational loss from the implications of a goodwill write-off—and proxies representing flexibility in estimating the fair value of reporting units' net assets—*UNA* and *IndLev*—are reliable predictors of non-impairment; (2) *CovDebt*—a measure of the cost of debt covenant violations, *Bonus*—the proxy for CEO's compensation concerns, and the proxies for goodwill allocation flexibility across reporting units, that is, *ln(Seg)* and *HHI*, are significantly associated with non-impairment in only some specifications; and (3) none of the

¹⁹ To investigate whether the negative association between *Imp* and *Tenure* is driven by firms with new CEOs (assuming new CEOs are more likely to take goodwill write-offs as part of a big bath), we re-run the regressions replacing *Tenure* with an indicator variable set to one when firm-CEOs have been in office <1 year. The indicator variable is not statistically significant, suggesting that the reported results on *Tenure* are unlikely to be driven by new-management induced big baths.

proxies for managers' private information are significantly associated with non-impairment.

4 Conclusion and implications

We investigate the implementation of SFAS 142, an innovative standard that requires managers to estimate the current fair value of goodwill to determine goodwill write-offs. Estimates of the current fair value of goodwill rely on unverifiable assumptions such as expectations of value to be generated by managers' future actions. Standard setters imply that the fair-value estimates will, on average, allow managers to convey private information on future cash flows, while agency theory predicts managers (all else equal) will, on average, use the unverifiability in goodwill accounting rules to manage financial reports opportunistically. We test these arguments in the paper.

In a sample of firms with market indications of goodwill impairment (firms with book goodwill and two successive years of book-to-market ratios above one), we find the frequency of goodwill non-impairment is 69 %. We test whether the goodwill non-impairment can be attributed to managers' private information on positive future cash flows, but we find no evidence to confirm this story. We also investigate whether non-impairment in the sample under SFAS 142 is associated with motives predicted by agency theory to affect management choice. We find some evidence of association between goodwill non-impairment and CEO compensation, CEO reputation, and debt-covenant violation concerns. Finally, we test whether goodwill non-impairment in the sample can be explained by factors predicted in prior literature to afford managers greater flexibility under the SFAS 142 write-off rules. We find some evidence to this effect.

Our results are subject to important caveats related to noise in our empirical proxies and the selection of our sample. These caveats are discussed more fully in Sect. 2 of the paper. With these caveats in perspective, we conclude that the paper provides evidence of managers, on average, using the unverifiable discretion in SFAS 142 to avoid timely goodwill write-offs in circumstances where they have agency-based motives to do so (Kothari et al. 2010). The results in the paper highlight the potential costs of unverifiable fair values in SFAS 142. The standard may be net beneficial, but we do not find any evidence to this effect in our study, nor are we aware of any other formal evidence consistent with this possibility.

Future research can investigate the implementation of SFAS 142 and the incidence of goodwill write-offs over a more recent sample period encompassing the 2008 through 2009 financial crisis. That crisis dramatically altered the capital market environment in the US and abroad. A study of goodwill impairment decisions through and after the crisis is likely to be interesting and important to academics and practitioners alike.

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Appendix 1

Antecedents to the final sample

There are 7,363 year “ $t - 2$ ” antecedents to our final year “ t ” sample of 124 firms. That is, there are 7,363 year “ $t - 2$ ” observations where $Gw_{t-2} > \$1$ million and $0 \leq BV_{t-2} \leq MV_{t-2}$. Of these, 425 firms end year “ $t - 1$ ” with $BTM > 1$ (where BTM is calculated *before* the effect of goodwill write-offs) and 548 firms take goodwill write-offs in year “ $t - 1$ ”. The intersection set of these firms (i.e., firms with *both* $BTM_{t-1} > 1$ and goodwill write-offs) is 113 firms. See the box below.

	$BTM_{t-1} \leq 1$	$BTM_{t-1} > 1$	Total
Goodwill write-off $_{t-1} = 0$	6,503	312	6,815
Goodwill write-off $_{t-1} > 0$	435	113	548
Total	6,938	425	7,363

There are several other interesting observations from the box above.

1. Of firms taking goodwill write-offs, nearly four times as many are in the sub-sample with $BTM \leq 1$ than in the sub-sample with $BTM > 1$ (i.e., 435/113 or 3.85). This suggests that most goodwill write-offs are not on-the-margin decisions vis-à-vis a firm’s year-end book-value to market-value ratio. This can happen for a variety of reasons including (1) the firm has growth options unrelated to the write-off, or (2) the firm has understated non goodwill net assets.
2. The proportion of firms taking goodwill write-offs is higher among firms with $BTM > 1$ (113/425 or 26.6 %) than among firms with $BTM \leq 1$ (435/6,938 or 6.3 %). Further, the proportion of firms with $BTM > 1$ is higher among firms taking goodwill write-offs (113/548 or 20.6 %) than among firms not taking such write-offs (312/6,815 or 4.6 %). These data suggest that, *ceteris paribus*, goodwill write-offs are *relatively* more likely when $BTM > 1$.
3. Finally, of firms with $BTM > 1$, nearly three times as many are in the sub-sample not taking goodwill write-offs than in the sub-sample doing so (i.e., 312/113 or 2.76). These data suggest that most firms with $BTM > 1$ refrain from taking goodwill write-offs.

Appendix 2

Sample description and variable definitions

Type	Variable	Definition
<i>Dependent variable</i>	<i>Imp</i>	Goodwill impairment (t) \div assets ($t - 1$)
<i>Private Information motive</i>	<i>InfoAsym</i>	Dummy variable set to one if the firm exhibits positive net share repurchases or positive net insider buying in year t
	<i>Repurchase</i>	Dummy variable set to one if the firm exhibits positive net share repurchases in year t
	<i>Inside</i>	Dummy variable set to one if the firm exhibits positive net insider buying in year t
<i>Contracting motives</i>	<i>BHRet_{t+1}</i>	Buy-and-hold return over year $t + 1$ for firms still actively traded.
	<i>CovDebt</i>	Product of debt (t) \div assets ($t - 1$) and an indicator if the firm has an accounting-based debt covenant
	<i>Bonus</i>	Dummy variable set to one if the firm's CEO received a cash bonus in year t
<i>Reputation motive</i>	<i>Delist</i>	Dummy variable set to one if the firm trades on the NASDAQ or AMEX
	<i>Tenure</i>	Tenure in years of the CEO in year t
<i>Valuation motive</i>	<i>AsstPrc</i>	The coefficient from regressing a firm's price on its operating income using at least 16 and up to 20 quarters of data prior to year t
<i>Goodwill reporting flexibility</i>	<i>ln(Seg)</i>	Natural log of the number of business segments
	<i>HHI</i>	The firm's Herfindahl Hirschman index, calculated as the sum of the square of the ratios of segment sales to total firm sales
	<i>IndLev</i>	<i>Ind.Lev</i> is the ranked mean leverage of the firm's industry (using 4-digit NAICS codes)
	<i>UNA</i>	The in-sample rank of $-1 * [\text{cash} + \text{all investments and advances} - \text{debt} - \text{preferred equity}] \div [\text{assets} - \text{liabilities}]$
<i>Control variables</i>	<i>Size</i>	Log [assets ($t - 1$)]
	<i>PropGw</i>	Goodwill ($t - 1$) \div assets ($t - 2$)
	<i>BHRet</i>	Buy-and-hold return over year t
	<i>NumQtrBTM > 1</i>	Number of quarters in year t with $\text{BTM} > 1$

The sample is the 124 firms on COMPUSTAT with fiscal year "t" from 2003 through 2006 that have goodwill $> \$1$ m in year $t - 2$, equity-book-value $<$ equity-market-value in year $t - 2$, $\text{BTM} > 1$ in year $t - 1$, $\text{BTM} > 1$ in year t , and goodwill > 0 at the beginning of year t . BTM is the ratio of equity-book-value plus goodwill impairment (if any) to equity-market-value

References

American Institute of Certified Public Accountants (AICPA). (1970). *Accounting principles board opinion no. 17 intangible assets*. New York: AICPA.

- Beatty, A., & Weber, J. (2006). Accounting discretion in fair value estimates: An examination of SFAS 142 goodwill impairments. *Journal of Accounting Research*, 44, 257–288.
- Brochet, F. (2010). Information content of insider trades before and after the Sarbanes–Oxley act. *The Accounting Review*, 85, 416–446.
- Dichev, I., & Skinner, D. (2002). Large sample evidence on the debt covenant hypothesis. *Journal of Accounting Research*, 40, 1091–1123.
- Elliott, J., & Shaw, W. (1988). Write-offs as accounting procedures to manage perceptions. *Journal of Accounting Research*, 40, 91–119.
- Fabricant, S. (1936). *Revaluations of fixed assets, 1925–1934*. USA: National Bureau of Economic Research.
- Fields, T., Lys, T., & Vincent, L. (2001). Empirical research on accounting choice. *Journal of Accounting and Economics*, 31, 255–307.
- Financial Accounting Standards Board (FASB). (1995). Statement of financial accounting standards no. 121. *Accounting for the impairment of long-lived assets and for long-lived assets to be disposed of*. Norwalk, CT: FASB.
- Financial Accounting Standards Board (FASB). 2001. Statement of financial accounting standards no. 142. *Goodwill and other intangible assets*. Norwalk, CT: FASB.
- Francis, J., Hanna, J., & Vincent, L. (1996). Causes and effects of discretionary asset write-offs. *Journal of Accounting Research*, 34, 117–134.
- Kothari, S., Ramanna, K., & Skinner, D. (2010). Implications for GAAP from an analysis of positive research in accounting. *Journal of Accounting and Economics*, 50, 246–286.
- Martinez-Jerez, F. (2008). Governance and merger accounting: Evidence from stock price reactions to purchase versus pooling. *European Accounting Review*, 17, 5–35.
- Murphy, K. (1999). Executive compensation. In O. Ashenfelter & D. Carl (Eds.), *Handbook of labor economics* (Vol. 1, pp. 2485–2563). Amsterdam: North Holland.
- Myers, S. (1977). Determinants of corporate borrowing. *Journal of Financial Economics*, 5, 147–175.
- Ramanna, K. (2008). The implications of unverifiable fair-value accounting: Evidence from the political economy of goodwill accounting. *Journal of Accounting and Economics*, 45, 253–281.
- Ramanna, K., & Watts, R. (2007). *Evidence on the effects of unverifiable fair-value accounting*. Harvard Business School working paper no. 08-014.
- Richardson, S., Sloan, R., Soliman, M., & Tuna, I. (2005). Accrual reliability, earnings persistence and stock prices. *Journal of Accounting and Economics*, 39, 437–485.
- Roychowdhury, S., & Watts, R. (2007). Asymmetric timeliness of earnings, market-to-book, and conservatism in financial reporting. *Journal of Accounting and Economics*, 44, 2–31.
- Smith, C., & Watts, R. (1992). The investment opportunity set and corporate financing, dividend, and compensation policies. *Journal of Financial Economics*, 32, 263–292.
- Turner, L. (1999). *Initiatives for improving the quality of financial reporting, remarks of the Chief Accountant to the New York Society of security analysts*. Washington, DC: U.S. Securities and Exchange Commission.
- Watts, R. (2003). Conservatism in accounting part I: Explanations and implications. *Accounting Horizons*, 17, 207–221.
- Watts, R. (2006). What has the invisible hand achieved? *Accounting and Business Research*, 36, 51–61.
- Watts, R., & Zimmerman, J. (1986). *Positive accounting theory*. Edgewood Cliff, NJ: Prentice Hall.
- White, H. (1980). A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. *Econometrica*, 48, 817–838.
- Zeff, S. (2005). The evolution of U.S. GAAP: The political forces behind professional standards, part 1. *CPA Journal*, 75, 18–27.