

Acquirers' financial reporting preferences and accounting for intangibles in acquisitions

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Abstract

We test whether an impending change in the accounting for goodwill mitigates bias in the initial values that acquirers assign to intangible assets. Results of two experiments with experienced professional participants suggest that the new accounting alters, but does not eliminate, bias in acquisition-date fair values. Specifically, we provide the new insight that acquirers have a preference to minimize the value of recognized goodwill when the initial fair values assigned to intangibles do not affect future earnings, as under the planned accounting change. Further, this preference regarding the composition of the balance sheet appears to be specific to goodwill. Our research also complements previous archival evidence by providing causal evidence that acquirers are more likely to bias initial fair values when there is significant uncertainty in their private information about asset value. In contrast, a low level of uncertainty “psychologically ties acquirers’ hands” such that they do not bias their fair value estimates. Our theory and results provide important input to standard setters and practitioners regarding an unanticipated consequence of the impending change in accounting for intangible assets.

Keywords: intangible assets; goodwill; business combinations; mergers and acquisitions

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1. Introduction

Accounting for business combinations requires the acquiring company to recognize identifiable assets and liabilities acquired at their fair value, with any residual of the purchase price assigned to goodwill. Under current accounting standards, the acquisition-date valuations of intangible assets can impact the acquirer's future earnings due to differences in their subsequent accounting (amortization versus impairment-only). Prior research suggests that these subsequent accounting differences can lead to biased acquisition-date valuations when acquirers have strong incentives related to future earnings (e.g., Shalev et al. 2013; Zhang and Zhang 2017). Recently, the Financial Accounting Standards Board (FASB) announced their intention to discontinue the current impairment-only model for goodwill, and instead require that goodwill be amortized over a default period of ten years (FASB 2020). This change would eliminate the subsequent accounting differences that exist under current standards.

We conduct two experiments to provide causal evidence on whether this change in accounting for goodwill mitigates bias in acquisition-date values by eliminating the potential for reported earnings consequences associated with different initial valuations. We design our experiments to provide insights on the possibility that acquirers may have additional preferences—other than those associated with reported earnings—that influence their acquisition-date valuations of intangibles. Further, our experiments test whether another factor—namely, uncertainty—is a necessary condition for biased decision-making in this setting.

In our first experiment, accounting professionals with an average of 22 years of work experience are in the role of a CFO completing the accounting for a business combination. These participants determine the fair value of acquired developed software, with the residual amount of the purchase price assigned to goodwill. The experiment utilizes a 2×2 between-participants

design. Our first manipulation is the subsequent accounting for goodwill, which we manipulate as either annual amortization over ten years or periodic impairment testing only. In all conditions, the developed software is amortized over ten years. Thus, we create conditions in which acquirers' valuation decisions either do or do not have an impact on future reported earnings. This manipulation allows us to distinguish between acquirers' earnings-related preferences and other financial reporting preferences they may have.

Our second manipulation is the uncertainty in acquirers' *private* information about the intangibles' fair values, which we operationalize via a narrow or wide range of estimated fair values. Behavioral theory suggests acquirers are more likely to feel justified in considering their own financial reporting preferences when there is greater uncertainty in their private information about the fair value of intangible assets (Hsee 1995). In contrast, acquirers whose private information indicates low uncertainty about asset value will be unlikely to report biased valuations because this same theory suggests that the low uncertainty will "psychologically tie their hands." Notably, all participants in the experiment are told that because of the subjectivity inherent in the valuation, the outside auditor would not question any valuation within the wide range of estimated fair values (i.e., the implied assumptions for the wide range are reasonable). Thus, all participants are free to make valuation decisions that conform to their own reporting preferences without negative consequences from external monitors so long as their valuations fall within the wide range.

Results from our first experiment reveal that when there is high uncertainty, acquirers have two distinct preferences that affect their valuation decisions. First, acquirers use higher uncertainty to justify reducing the value of goodwill when there are no earnings consequences associated with their valuation decisions (i.e., when both goodwill and developed software are

amortized). This finding reveals the new insight that acquirers have a preference to minimize the value of recognized goodwill on the company's balance sheet, *ceteris paribus*. Second, acquirers whose private information indicates high uncertainty place a higher value on goodwill when doing so reduces amortization expense and increases earnings (i.e., when goodwill is subject to impairment testing, and not amortized) compared to when there are no earnings consequences. This latter result indicates that acquirers *also* prefer to avoid amortization expense when possible, consistent with prior research (e.g., Shalev et al. 2013).

In contrast, when there is low uncertainty in acquirers' private information, their acquisition-date valuations of intangibles are unaffected by differences in subsequent accounting. This result is consistent with low uncertainty constraining acquirers' propensity to respond to their reporting preferences. Thus, consistent with behavioral theory, acquirers' reporting choices are influenced not only by their economic incentives, but also by their own internal beliefs about the justifiability of those choices.

To understand whether the preference to minimize the value of goodwill also exists for other intangible assets that are currently classified as indefinite-lived, we conduct a second experiment with another group of highly experienced accounting professionals. The second experiment is almost identical to the first with the exception that participants complete the accounting for the acquisition by determining the fair values of developed software and a trademark (rather than goodwill, as in experiment one). In this experiment, we find evidence of mixed preferences regarding earnings—some participants prefer to minimize future amortization expense and others prefer to minimize the risk of future impairment losses. However, the key result is that we do *not* observe any preference related to the balance sheet reporting of the two intangible assets. That is, the valuations of the trademark do not differ in the absence of earnings consequences. This result

suggests the preference to minimize goodwill under an amortization regime is likely unique to goodwill. As evidence of one potential reason for this preference, experiment two participants indicate that they believe investors view goodwill less favorably than other intangible assets.

Our study provides several new insights. First, our results suggest that the FASB's plan to discontinue the impairment model for goodwill is unlikely to fully mitigate bias in acquisition-date valuation decisions because acquirers' financial reporting preferences are not limited to the consequences for reported earnings. They also have preferences about the composition of the balance sheet, particularly as it relates to goodwill, suggesting an unintended consequence of the impending change in goodwill accounting. This finding is also arguably economically important given that intangibles now comprise over 70 percent of the assets in business acquisitions, with just over half of that amount allocated to goodwill (Griffin et al. 2017). Second, prior research exclusively focuses on the role that economic incentives play in affecting acquirers' initial valuations in a business acquisition. We add to this literature by showing that, holding constant economic incentives, high uncertainty in acquirers' private information about an asset's value is a necessary condition in affecting whether acquirers' respond to their preferences in determining acquisition-date intangible valuations.

2. Background and hypothesis development

2.1. Accounting for business combinations and related research

In a business combination, accounting standards require that the acquiring firm's management identify and determine the fair value of all acquired assets and liabilities, which are recognized at their fair values on the acquiring firm's balance sheet (ASC 805, FASB 2021; Kimbrough 2009). Any difference between the fair value of the net identifiable assets and the purchase price is recognized as goodwill. The valuation of these intangible assets can be

complex and subjective as there is typically no active market for identical or similar assets (ASC 820).

Following initial recognition, current accounting standards for public companies require different accounting treatments for certain types of intangible assets (ASC 350). Goodwill and other indefinite-lived intangible assets are tested for impairment at least annually. An impairment loss is recorded only when there is evidence that the carrying amount exceeds the asset's fair value, in which case the asset is written down to its fair value. In contrast, definite-lived intangible assets are subject to systematic amortization, reducing future net income by a predictable amount of amortization expense over the asset's useful life.

Prior research suggests that the different accounting treatments for intangible assets may introduce bias into acquirers' initial fair value estimates. Specifically, archival studies document that acquirers' earnings-based incentives are associated with acquisition-date fair values. For instance, CEOs who are closer to retirement and who have a higher proportion of their compensation tied to bonuses assign a greater proportion of an acquisition's purchase price to goodwill when it is subject to impairment testing (Shalev et al. 2013; Zhang and Zhang 2017). These studies assume that differences in the accounting for intangible assets affect acquisition-date fair values because CEOs with greater bonus intensity are more likely to prefer avoiding earnings-reducing amortization charges. Similarly, CEOs closer to retirement are less likely to be concerned about future impairment losses, which investors perceive as a negative signal of a firm's outlook (e.g., Li et al. 2011).

Recently, the FASB announced its intention to change the accounting for goodwill (FASB 2020) and is considering a similar change for all indefinite-lived intangible assets (FASB 2019). The plan would largely eliminate the differences in accounting for different types of intangible

assets, with all intangibles being amortized to expense in subsequent periods. Without differences in the subsequent accounting treatment, acquirers' ability to influence future earnings by adjusting acquisition-date fair values is significantly reduced. Our study tests how this change in subsequent accounting is likely to affect the valuation of goodwill, and potentially other intangibles, in future business combinations. The subsequent accounting change should help mitigate bias in intangible asset valuations if acquirers' only reporting preferences in this setting pertain to future earnings.¹

Our experimental approach complements related archival evidence in several ways. First, we hold constant the economic characteristics of the acquisition and acquirers' incentives to isolate the effect of differences in the subsequent accounting of intangible assets on acquisition-date fair values.² Second, we exogenously introduce a factor suggested by behavioral theory—uncertainty in acquirers' private information—to create conditions under which we hypothesize that we will observe the effect of acquirers' financial reporting preferences on their acquisition-date valuation decisions. Third, we can observe how acquirers make decisions rather than observing the outcomes of their decisions and making inferences about the process by which they arrived at that outcome (Libby et al. 2002).

2.2. Theory and hypothesis development

To develop our hypothesis, we draw on a family of psychology theories related to motivated information processing (e.g., Kunda 1990; Hsee 1995; Epley and Gilovich 2016). A key

¹ Other evidence suggests that in taxable business combinations, acquirers with relatively strong tax incentives (compared to financial reporting incentives) will assign a greater proportion of the purchase price to shorter-lived assets than indefinite-lived intangibles or goodwill to yield the tax savings from the additional depreciation deduction (Lynch et al., 2019). We hold constant the tax incentives in our setting, but this evidence points to potentially more complex preferences in accounting for taxable business combinations.

² Although Zhang and Zhang (2017) examine changes in allocations around the adoption of SFAS 142, this timing also coincided with the elimination of the pooling-of-interests method of accounting for business combinations. In this previous regime, acquirers could also avoid future earnings charges by electing the pooling-of-interests method of accounting.

prediction from these theories is that decision-makers are more likely to bias decisions to accommodate their preferences when there is significant uncertainty about the normatively relevant inputs to those decisions. This uncertainty allows individuals to justify to themselves relying on their preferences in arriving at a decision (Hsee 1995, 1996). In contrast, when there is little uncertainty about the normatively relevant inputs, the low uncertainty “psychologically ties decision-makers’ hands” and does not allow them to justify considering their preferences.

Applying this idea to the context of valuing intangible assets in business combinations, we predict the circumstances under which acquirers are likely to deviate from unbiased estimates of fair value. Specifically, we expect acquisition-date fair values are more likely to be biased when (1) acquirers have preferences for financial reporting outcomes that they can achieve by adjusting their acquisition-date fair value decisions, and (2) there is sufficient uncertainty about the fair value of the assets being valued. This combination of factors arises frequently in the context of valuing intangible assets in business combinations.

Acquirers likely have preferences for financial reporting outcomes that they would like to consider in their valuation decisions. These preferences are not formally relevant in determining fair value, but are tempting for acquirers because of potential consequences of their decision at the firm or market level (e.g., higher income, signals about managers’ decision-making or the firm’s outlook). For example, if acquirers prefer to recognize higher earnings in the short-term, then under current accounting standards acquirers can assign a higher fair value to the non-amortized assets to reduce future amortization expense and report higher earnings.

Determining the fair value of acquired intangible assets involves substantial uncertainty because liquid markets for intangible assets acquired in business combinations are unlikely to exist. Therefore, acquirers must estimate fair value based on unobservable and uncertain inputs

that often represent their private information (Ramanna 2008). Furthermore, because assets recognized in a business combination can include intangible assets that were not previously recognized on the target firm's balance sheet, acquirers often have no reference point for the fair value of the acquired assets.

Based on these ideas, we predict that acquirers' preferences for financial reporting outcomes will have a greater effect on their acquisition-date fair value decisions when their private information about the fair value of intangible assets is more uncertain.

3. Experiment One

3.1. Task and participants

Experiment one participants assume the role of a Chief Financial Officer and complete the accounting for an acquisition. Participants learn that their team has already valued the tangible assets and liabilities acquired, after which there remains \$50 million of the purchase price to be assigned. Their task is to value an intangible asset—developed software—with the remainder of the \$50 million to be assigned to goodwill.

Given the complex nature of accounting for business combinations, we recruit appropriate participants by sampling experienced professionals from the alumni database of a highly rated business school at a large public university in the United States (Libby et al. 2002). We identify all individuals who graduated with a degree in accounting at least ten years prior to the experiment. These participants are likely to understand the impact of the acquisition-date valuations on the balance sheet and income statement. From this population, we randomly select 300 individuals and mail them a participation letter with a link to complete the experiment via an online survey link. We also send two follow-up emails with requests to complete the survey. We receive 89 responses for a 30 percent response rate.

Participants report an average of 22 years of work experience, and 93 percent have experience as acquirers and/or auditors. Approximately half (54 percent) of participants have direct experience with assigning fair values to assets and liabilities in an acquisition.³ Participants also report being familiar with accounting for intangible assets, reporting an average of 65 on a scale of 0 to 100, with higher scores reflecting more familiarity. We randomly assign participants to one of the four experimental conditions in each experiment.

3.2. Manipulations and dependent variables

Experiment one has a 2×2 design, with two between-participant manipulations. We manipulate the subsequent accounting for goodwill by indicating that goodwill is either amortized to expense over ten years or only tested for impairment in subsequent periods. The accounting for the developed software is held constant; it is always amortized to expense over ten years. By holding constant the accounting for the developed software and varying the accounting for goodwill, we create conditions in which participants' valuation decisions either have or do not have consequences for future earnings. This design ensures that we can observe whether participants' financial reporting preferences affect their fair value decisions only when they affect future earnings or whether they also have preferences for financial reporting outcomes that influence their fair value decisions when there are no future earnings consequences. This distinction is important to understand because the planned change to accounting standards will eliminate differences in the subsequent accounting treatment of acquired intangible assets.

We also manipulate the uncertainty of participants' private information about the value of the developed software. We do so by telling participants in low uncertainty (high uncertainty)

³ Participants' experience does not interact with our manipulations.

conditions that their own professional estimate of the fair value is in the range of \$19-21 million (\$15-25 million).⁴ Because the amount from the acquisition yet to be allocated is \$50 million, these amounts imply low (high) uncertainty ranges of \$29-\$31 million (\$25-\$35 million) for goodwill. We select these ranges so that the midpoints are the same across conditions (\$20 million for the software and \$30 million for the trademark or goodwill).

We hold constant two important features in the empirical design. First, we tell all participants to assume their annual bonus is based on net income, creating a setting in which acquirers are likely to have a preference for avoiding amortization expense in order to increase future earnings (e.g., Shalev et al. 2013) in addition to any preferences they may have regarding the composition of the balance sheet. Second, all participants are told the firm's outside auditor would not question any valuation that falls within the wider range (i.e., \$15-\$25 million for the developed software and \$25-\$35 million for goodwill). Thus, all participants face the same level of *external* scrutiny and only uncertainty in their *private* information varies across conditions.

Our primary dependent measure asks participants how they would value the two intangible assets. Participants provide their valuation of the developed software, with the remainder of the \$50 million being assigned to goodwill. After providing their valuations, we ask participants about the justifiability of valuations at the low- and high-endpoints of the wide range that would be deemed acceptable by the auditor. We use a 101-point scale with endpoints of 0 (100) representing not at all (highly) justifiable.

⁴ Although the uncertainty in intangibles valuations is on average high, there is likely significant variation in the uncertainty. For example, consider the acquisition of a drug therapy. If acquired early in the drug development and approval process, there would be high uncertainty about its fair value. If, in contrast, it is acquired later in the process, there is still some uncertainty about future benefits, but arguably less so at this stage.

3.3. Results

3.3.1. Manipulation and comprehension checks

To confirm that our manipulations are successful, we first ask participants whether their own professional estimate of the value of the developed software is between \$19-21 or \$15-25 million. We then ask participants to indicate whether goodwill reduces earnings each year through amortization expense or whether any reductions in earnings would arise from impairment testing only if events or circumstances indicate a decline in the value of goodwill. All participants respond correctly to both questions, indicating successful manipulations.

We also confirm that participants understand the distinction between their own private information and the range of estimates that would be acceptable to the auditor. All participants correctly respond that the outside auditor would *not* question an allocation in the wider range. This response is important as it ensures that if participants facing low uncertainty do not go outside the narrow range of their private information to act on their reporting preferences, it suggests the low uncertainty psychologically constrains their reporting choices, consistent with theory.

3.3.2. Goodwill valuations

Recall that our main dependent measure asks participants to provide a value for the developed software, with the remainder of the \$50 million being allocated to goodwill. Because our focus is on the effect of subsequent accounting for goodwill, we present results for the goodwill valuations. Table 1 shows the mean valuations for goodwill by condition, with Figure 1 depicting them graphically. The ANOVA shown in Panel B of Table 1 indicates a significant main effect of accounting for goodwill ($F_{1,85} = 4.13, p = 0.045$) and a significant main effect of uncertainty on participants' valuation decisions ($F_{1,85} = 4.30, p = 0.041$). We also observe a

significant interaction between the accounting for goodwill and the uncertainty of acquirers' private information ($F_{1,85} = 3.78, p = 0.055$), consistent with theory.

< Table 1 and Figure 1 here >

Follow-up simple effect tests offer more specific insights into acquirers' financial reporting preferences. Turning first to the two subsequent accounting conditions, we see that in the amortization conditions, the mean valuation for goodwill is significantly lower when there is high uncertainty (mean of \$27.50) compared to low uncertainty (mean of \$29.90) ($F = 7.49, p = 0.008$). Thus, without future earnings consequences of their acquisition-date valuations, acquirers use greater uncertainty to justify a preferred lower value for goodwill on the balance sheet. In contrast, in the impairment conditions, the mean valuation for goodwill is not significantly different under high uncertainty (mean of \$29.88) than under low uncertainty (mean of \$29.96) ($F_{1,85} = 0.01, p = 0.925$). Given that valuations in these conditions have consequences for both future earnings and the composition of the balance sheet, this result is consistent with acquirers trading off preferences for lower amortization expense (achieved by assigning a higher value to goodwill) and less goodwill on the balance sheet (achieved by assigning a lower value to goodwill).

Turning next to the two uncertainty conditions, we see that for the high uncertainty conditions, the simple main effect test shows that the mean valuation for goodwill is higher under an impairment-only accounting model (mean of \$29.88) than an amortization model (mean of \$27.50) ($F_{1,85} = 7.96, p = 0.006$). This result supports the prediction that when there is high uncertainty in their private information, acquirers feel justified relying on their financial reporting preferences to make their acquisition-date valuations.⁵ For the low uncertainty

⁵ Additional measures collected from study participants confirm this conclusion about justifiability. Specifically, participants view the low point of the goodwill valuation range as being more justifiable when uncertainty is high

conditions, we observe no significant effect of subsequent accounting (means of \$29.90 in the amortization condition and \$29.96 in the impairment condition) ($F_{1,85} = 0.00$, $p = 0.952$). This result is consistent with our expectations, because the narrow range of acquirers' private information psychologically ties their hands and does not allow them to justify considering their financial reporting preferences when assigning fair values. Acquirers make these choices even knowing that the outside auditor is comfortable with any amount within the wider range of values (\$25-\$35 million). Thus, high uncertainty appears to be a necessary condition for acquirers to make decisions that conform with their reporting preferences (holding constant economic incentives). This finding contributes to existing literature by demonstrating conditions under which subsequent accounting differences influence acquisition-date fair value estimates.

In sum, results of experiment one support the prediction that acquirers consider their preferences for financial reporting outcomes, but only when high uncertainty allows them to feel justified doing so. These preferences include recognizing less goodwill on the balance sheet and achieving higher future earnings by minimizing amortization expense.

4. Experiment Two

4.1. Overview and participants

Experiment two is designed to test whether the new insight from experiment one regarding acquirers' preference to minimize the value of goodwill generalizes to other indefinite-lived intangible assets. This question is important because, in addition to reintroducing an amortization model for goodwill, the FASB is also considering extending the amortization model to all intangibles (FASB 2019).

than when it is low (77.09 versus 58.08; $F_{1,85} = 13.90$, $p < 0.001$). In contrast, uncertainty does not affect participants' judgments of the justifiability of the high-point of the goodwill valuation range (72.56 versus 65.72; $F_{1,85} = 1.49$, $p = 0.225$). Combined, these results are consistent with participants using high uncertainty to justify *lower*, but not *higher*, goodwill values.

The design of experiment two is the same as experiment one, with the following exceptions. First, the task in experiment two is to value developed software and a trademark (instead of goodwill), with these two values summing to \$50 million. Second, in experiment two we include an open-ended question in which we ask participants to provide additional information about factors that influenced their valuation decisions. Third, in post-experimental questions, we elicit participants' perceptions of how favorably they believe investors view goodwill and other indefinite-lived intangibles, and also give participants the option to reassign some of the purchase price to goodwill.

To recruit participants for experiment two, we follow the same procedure as experiment one, drawing from the same population of individuals who have a degree in accounting from a top-rated program in the United States and graduated at least ten years prior to the experiment. We randomly select a different set of 300 individuals and mail them a participation letter with a link to complete the experimental materials through an online survey, as well as follow-up emails with the same information. We receive 113 responses for a 38% response rate. Experiment two participants exhibit experience and demographic characteristics that are very similar to experiment one participants.

4.2. Results

4.2.1. Mean valuations

We report participants' mean valuations for the trademark in Table 2 and graphically present those means in Figure 2. The ANOVA reveals no significant differences in the mean valuations for the trademark across the four conditions (all p -values > 0.18). Follow-up simple effects also reveal no significant differences between conditions. Most notable are the lack of differences in the high uncertainty conditions (means of 30.25 and 30.48; $F = 0.17$, $p = 0.682$) and in the

amortization conditions (means of 29.93 and 30.25; $F = 0.32$, $p = 0.575$), both of which differed significantly for the goodwill valuations in experiment one. These results suggest that acquirers' preference to minimize the value of goodwill does not extend to other intangible assets that are currently classified as indefinite-lived.

< Table 2 and Figure 2 here >

Given that experiment two participants do not exhibit preferences regarding the composition of the balance sheet, it is perhaps surprising that they do not appear to leverage greater uncertainty to accommodate earnings-related preferences when the trademark is subject to impairment testing. That is, participants could assign a higher valuation to the trademark when it is subject to impairment testing, which would lead to lower amortization expense and, thus, higher earnings. Participants' written explanations for their valuations, which we explore in the following section, suggest that mixed financial reporting preferences among participants cause this on-average null result.

4.2.2. Written explanations

Three coders who are blind to the experimental conditions independently code responses into one of four categories: (1) factors related to the ranges of values provided in the materials, (2) earnings-related factors, (3) impairment-related factors, or (4) other factors. The coders agree on 87 percent of initial classifications and resolve the remaining conflicts through discussion.

As one might expect, a majority (58 percent) of participants note the ranges of values in their private information as the basis for their valuation. What is particularly interesting, though, is that 45 percent of participants in the high uncertainty / impairment condition note factors related to the income statement consequences of their decision (i.e., category (2) or (3) from above). This percentage in the high uncertainty / impairment condition is significantly greater than the

percentages in the other three conditions, which range from 0 to 12 percent ($\chi^2_{(1)} = 7.09$ $p = 0.008$).

While the larger number of comments referencing income statement factors in the high uncertainty / impairment condition is consistent with theory, there is a lack of uniformity in the comments in this condition. Some participants prefer to minimize amortization expense, whereas others seek to minimize the risk of future impairment losses.⁶ This non-uniformity in preferences implies offsetting directional effects on valuation judgments, which likely explains why, on average, participants do not leverage high uncertainty to assign a higher valuation to the trademark when it is subject to impairment testing.

4.2.3. Additional evidence related to goodwill

Although experiment two did not involve goodwill as one of the two intangible assets, we nevertheless asked several post-experimental questions of our participants regarding goodwill to shed additional light on acquirers' goodwill-related preferences. First, participants believe that investors view goodwill (mean = 39.20 out of 100) less favorably than other indefinite-lived intangibles (mean = 48.33 out of 100) ($t_{110} = 4.38$, $p < 0.001$). Another question reminds participants of their original valuations for the trademark and developed software, and asks if they would change their initial valuations by assigning part of the purchase price to goodwill. When given the option to change their valuations and assign some of the \$50 million to goodwill, participants value goodwill at just \$4.59 million on average, or 9% of the \$50 million, and just over half of participants (57 of 113) choose not to assign any value to goodwill. Together, these results suggest a negative view of goodwill, helping explain experiment one

⁶ In untabulated analyses, we find that impairment condition participants' valuation decisions are significantly more likely to deviate in either direction outside of \$19-\$21 million (i.e., the narrow range) when uncertainty is high than when it is low, consistent with theory and the notion that offsetting preferences drive the observed similarities in mean valuations.

participants' preference to minimize the value of goodwill in the absence of future earnings consequences of their valuations.

5. Conclusion

Two experiments with experienced professionals as participants test the effect of a planned change to the subsequent period accounting for goodwill and, potentially, other intangible assets. The change would largely eliminate differences in the subsequent accounting for intangible assets, requiring that goodwill be amortized, similar to definite-lived intangible assets. We test the effect of subsequent period accounting on acquisition-date fair value decisions and document an unintended consequence of a goodwill amortization model. Specifically, absent differences in the income-statement consequences of their valuation decisions, acquirers bias their fair value estimates to minimize the value of recognized goodwill. There are, of course, advantages and disadvantages to alternative subsequent accounting models that we do not consider (cf. Linsmeier and Wheeler 2020). Whether the benefits of an amortization model for goodwill outweigh the costs is a subjective question for standard setters. Nonetheless, our research should provide relevant information as standard setters consider the important issue of accounting for intangible assets.

Our results complement previous archival evidence by providing causal evidence that differences in the subsequent accounting for intangibles lead acquirers to adjust their acquisition-date valuation decisions in response to earnings-based preferences. In addition, when subsequent accounting implies no earnings-related consequences of acquisition-date valuations, our results provide the new insight that acquirers prefer to minimize the value of recognized goodwill. This preference regarding the composition of the balance sheet appears to be specific to goodwill. Further, we show that uncertainty in acquirers' private information about asset values is a

necessary condition for whether managers respond to their preferences in determining acquisition-date intangible valuations. Whereas previous research has focused on how acquirers respond to economic incentives, we document a behavioral effect of low uncertainty in acquirers' private information, which "psychologically ties their hands," constraining bias in their decision-making. Overall, our results indicate that acquirers bias their acquisition-date valuation decisions in response to their reporting preferences, but only when there is sufficient uncertainty in their private information about the asset's fair value.

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Figure 1
Experiment one results—goodwill values

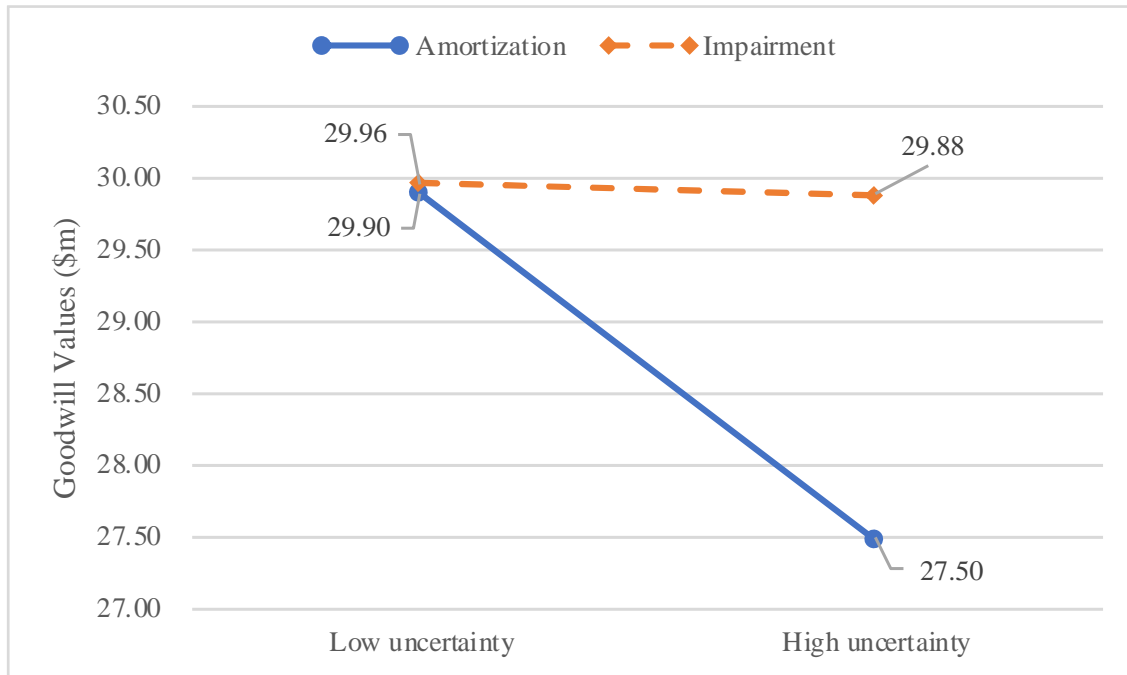


Figure 1—This figure depicts cell means for the main dependent measure in experiment one—the value assigned to goodwill—showing how our manipulations of information uncertainty and the subsequent accounting for goodwill affect acquirers’ acquisition-date fair value decisions. See Table 1 for descriptive and inferential statistics.

Figure 2
Experiment two results—trademark values

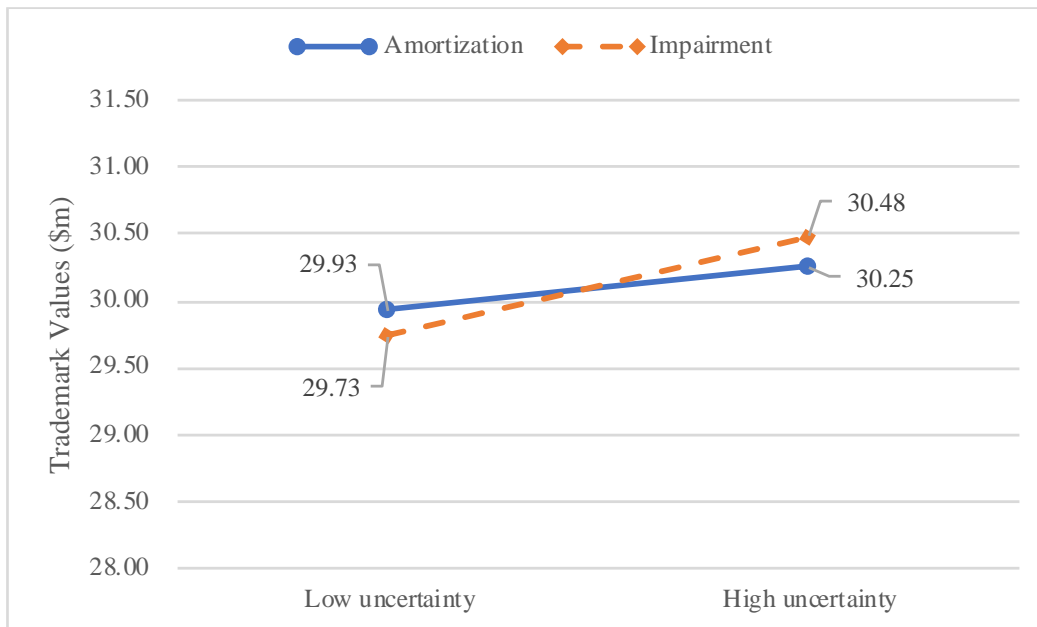


Figure 2—This figure depicts cell means for participants’ trademark value decisions in experiment two. See Table 2 for descriptive and inferential statistics.

Table 1
Experiment one results—goodwill values

Panel A: Descriptive statistics – mean [standard deviation] goodwill values

Uncertainty	Accounting for Goodwill		Row Means
	Impairment	Amortization	
Low uncertainty	29.96 [3.11] <i>n</i> = 23	29.90 [0.54] <i>n</i> = 21	29.93 [2.26] <i>n</i> = 44
High uncertainty	29.88 [3.41] <i>n</i> = 25	27.50 [3.04] <i>n</i> = 20	28.82 [3.43] <i>n</i> = 45
Column Means	29.92 [3.23] <i>n</i> = 48	28.73 [2.45] <i>n</i> = 41	

Panel B: Analysis of variance results

Source	<i>df</i>	MS	<i>F</i> -stat	<i>p</i> -value
Goodwill Accounting	1	32.65	4.13	.045
Uncertainty	1	34.00	4.30	.041
Goodwill Accounting × Uncertainty	1	29.93	3.78	.055
Error	85	7.91		

Panel C: Simple main effects

	<i>df</i>	MS	<i>F</i> -stat	<i>p</i> -value
Effect of accounting given high uncertainty	1	62.94	7.96	0.006
Effect of accounting given low uncertainty	1	0.03	0.00	0.952
Effect of uncertainty given amortization	1	59.24	7.49	0.008
Effect of uncertainty given impairment	1	0.07	0.01	0.925

This table reports the results of experiment one, which investigates how the uncertainty of private information about the value of acquired intangible assets and the subsequent accounting for goodwill affect experienced participants' acquisition-date fair value estimates. We manipulate uncertainty of private information at two levels: low and high. We manipulate the subsequent accounting for goodwill by informing participants that goodwill is amortized to expense over the subsequent ten years (amortization) or is tested for impairment annually and only reduces net income if there is evidence that its value has declined (impairment). Participants assign the remaining \$50 million of the purchase price to developed software and goodwill. Panel A reports the descriptive statistics for goodwill values, Panel B reports the ANOVA results for this measure, and Panel C reports the simple main effects of our manipulations.

Table 2
Experiment one results—trademark values

Panel A: Descriptive statistics – mean [standard deviation] trademark values

Uncertainty	Accounting for Trademark		Row Means
	Impairment	Amortization	
Low uncertainty	29.73 [1.08] <i>n</i> = 26	29.93 [0.98] <i>n</i> = 30	29.84 [1.02] <i>n</i> = 56
High uncertainty	30.48 [3.32] <i>n</i> = 29	30.25 [2.22] <i>n</i> = 28	30.37 [2.81] <i>n</i> = 57
Column Means	30.13 [2.53] <i>n</i> = 55	30.09 [1.69] <i>n</i> = 58	

Panel B: Analysis of variance results

Source	<i>df</i>	MS	<i>F</i>-stat	<i>p</i>-value
Accounting	1	0.01	0.00	0.970
Uncertainty	1	8.04	1.76	0.188
Accounting × Uncertainty	1	1.34	0.29	0.591
Error	109	4.58		

Panel C: Simple main effects

	<i>df</i>	MS	<i>F</i>-stat	<i>p</i>-value
Effect of accounting given high uncertainty	1	0.77	0.17	0.682
Effect of accounting given low uncertainty	1	0.57	0.13	0.725
Effect of uncertainty given amortization	1	1.45	0.32	0.575
Effect of uncertainty given impairment	1	7.75	1.69	0.196

This table reports the results of experiment two, which investigates how the uncertainty of private information about the value of acquired intangible assets and the subsequent accounting for a trademark affect experienced participants' acquisition-date fair value estimates. We manipulate uncertainty of private information at two levels: low and high. We manipulate the subsequent accounting for the trademark by informing participants that the trademark is amortized to expense over the subsequent ten years (amortization) or is tested for impairment annually and only reduces net income if there is evidence that its value has declined (impairment). Participants assign the remaining \$50 million of the purchase price to developed software and the trademark. Panel A reports the descriptive statistics for the trademark values, Panel B reports the ANOVA results for this measure, and Panel C reports the simple main effects of our manipulations.