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企業報導商譽及減損對資本市場預測併購者未來損益能力的影響

The Impact of Reporting Goodwill and Impairments on the Market's Anticipation of Future Earnings

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摘 要

本研究探討企業報導商譽及減損對資本市場預測併購者未來損益之影響。本研究使用未來盈餘反應係數 (FERC) 衡量資本市場預測未來損益之能力。依據 Collins, Kothari, Shanken, and Sloan (1994)，盈餘反應係數是當期股票報酬率與次期盈餘之間的迴歸係數。以公允價值報導商譽，將使併購者以公允價值分攤併購價格至取得之可辨認資產，並將併購效益之經濟租揭露為商譽。定期減損測試則代表併購者持續更新取得併購資產之公允價值，使可辨認資產折舊費用與公允價值相連結，可讓市場參與者自財務報表中獲得較攸關之損益資訊。我們的研究結果提出與上述論述一致的可靠證據，支持使用公允價值衡量商譽及減損之會計處理，能提供有用的財務資訊。

【關鍵字】商譽、公允價值會計、盈餘反應係數 (FERC)

Abstract

We investigate the effect of reporting goodwill and impairments on the stock market's ability to predict acquirers' future earnings, as captured by the Future Earnings Response Coefficient (FERC). Based on Collins, Kothari, Shanken, and Sloan (1994), the FERC is the association between current-year stock returns and next-year corporate earnings. Reporting goodwill reveals economic rents expected by the acquirers when they allocate purchase prices among purchased assets. This allocation assigns fair value to the book of identifiable assets acquired in business combinations. Periodical impairment tests update the fair value information. The information enables market participants to match post-merge revenue with depreciation expenses of the identifiable assets. Our results show robust evidence consistent with this argument, supporting the usefulness of fair value accounting for goodwill and impairments.

【Keywords】goodwill, fair value accounting, Future (or Forward) Earnings Response Coefficients (FERC)

1. Introduction

In this paper, we examine whether goodwill recognized under the Statement of Financial Accounting Standards (SFASs) No. 141 and No. 142 enhances stock market's ability to predict future earnings. These accounting rules require a compulsory allocation of the excess purchase price to goodwill and then periodical measurement of goodwill impairments. The standards have applied to all business combinations since July 1, 2001, representing standard setters' attempts to introduce "Fair-value Accounting" into business combinations. However, the effect of reporting goodwill and goodwill impairments on stock market's ability to predict future earnings is unknown. On one hand, allocating excess purchase price to goodwill reveals information on economic rents expected by the acquirers, and impairment tests update the information, leading to an accurate pricing of identifiable assets acquired in the business combinations. Thus, fair value accounting for goodwill results in a close match of revenue with depreciation expenses of the identifiable assets in post-merger periods. On the other hand, goodwill recognition and its subsequent impairments may make earnings noisier because fair value accounting increases the likelihood of opportunistic disclosures. These biases are particularly true when fair value measurements use inputs unobservable to accountants, auditors and appraisers. Our study contributes to the literature by investigating which effect dominates in a cross-sectional setting.

Based on the market efficiency assumption, our proxy for the stock market's ability to foresee future earnings is the Future (or Forward) Earnings Response Coefficient (FERC). It is a coefficient obtained by regressing current-year stock returns on next-year corporate annual earnings plus several control variables. This coefficient is higher for firm-years with reported goodwill in financial statements, if changes in their current stock prices contain more information about future earnings. This approach is theoretically based on Collins, Kathari, Shanken, and Sloan (1994) and empirically used by Ettredge, Kwon, Smith, and Zarowin (2005), who investigate whether segment disclosures of financial statements enable investors to predict corporate future earnings. It is also used by Tucker and Zarowin (2006), who apply FERC to examine whether income smoothing improves the market's ability to foresee future earnings based on past and current earnings.

This paper is closely related to but significantly different from prior studies on fair value accounting. Prior studies examine the discretionary nature of goodwill and impairments for earnings management (e.g., Ramanna, 2008; Shalev, 2009). We go further to test whether goodwill and its impairments enable or disable market participants to foresee

future earnings. Our tests contribute to the literature by evidence that reporting goodwill provides useful information for market participants to foresee future earnings. Furthermore, periodical measurement of goodwill impairments also provides additional information about future earnings. Our additional tests suggest that market participants' ability to foresee future earnings increase with accurate pricing of acquired assets explanation. Disclosures on business combinations are not major reasons for earnings predictability.

Our study is also different from prior studies in that our approach accommodates the unverifiable nature of recognized goodwill. Prior studies did not consider this nature while they focus on purchase price allocation to goodwill and test the association between stock price and book value of recoreded goodwill (e.g., Vincent, 1997; Jennings, Robinson, Thompson, and Duvall, 1996). Recoreded goodwill has unverifiable nature because managers may incorrectly price their merger targets or write off recorded goodwill opportunistically (Gu and Lev, 2011). This unverifiable nature of goodwill and impairment can invalidate inferences due to measurement errors of variables related to goodwill (i.e., Holthausen and Watts, 2001). Our approach uses changes in stock prices to regress on current and future earnings, using goodwill and its impairments to partition the sample. Results from this approach show significant differences in the information content of future earnings between firm-years with and without recorded goodwill and impairments.

Specifically, we regress current stock returns against future earnings with several control variables for a sample of 21,276 firm-years (5,712 firms) between 2002 and 2009. Of the sample, 9,577 observations (45%) report non-zero goodwill and enjoy a positive and significant increase in their FERC. In contrast, firm-years that are unlikely affected by SFAS No. 141 do not have the increase. In order to ensure that the increase in the returns-earnings relation results from reporting goodwill and its impairments, but not from other firm characteristics, we include several control variables. After controlling for firm size, growth opportunity, past earnings variability, free cash flow, and loss dummy, we still find consistent results. Reporting goodwill continuously increases the FERC. In some tests, reporting goodwill impairments provides incremental information about future earnings. Most of the conclusions are also robust when sizes of goodwill and its impairments are used as independent variables of regressions and when the Fama and MacBeth (1973) analyses are performed.[1]

1 The FERC for goodwill impairments loses its significance in one of the Fama and MacBeth (1973) analyses.

To identify potential reasons why reporting goodwill and its impairments enhances FERC, we create a dummy variable to indicate the years when businesses combined. In the years, acquirers make their purchase price allocation to goodwill. We interact the dummy variable indicating merger events with future earnings. In this kind of tests, FERCs are significantly smaller for those years of business combinations than subsequent years with reported goodwill and impairments. The findings suggest that the higher FERC for firm-years reporting goodwill and impairments do not result from disclosures required by SFAS No. 141 because of business combinations. Instead, we assume that SFASs No. 141 and No. 142 stand up for the benefits and costs criterion associated with most of accounting standards. We find larger fees paid to auditors and appraisers in subsequent years reporting goodwill and impairments than in the years of business combinations. These results imply the useful information about future earnings not resulting from disclosures on business combinations but from a close match of fair value with book value. In this case, depreciation expenses of the identifiable assets better match with revenue in post-merger periods.

The rest of the paper is organized as follows. Section 2 presents background information on fair value accounting for business combinations. Section 3 reviews relevant literature and develops two hypotheses. Section 4 discusses research design. Section 5 reports the sample and empirical results. Section 6 reports robustness checks and extension tests. Section 7 concludes.

2. Background

The pooling-of-interests approach had been the prevailing method to account for business combinations before it was replaced by SFAS No. 141 in June 2001. In the old approach, the balance sheets of two firms in a business combination were simply added together, item by item to form the balance sheet of the new entity. Premiums paid by the acquirer did not change the book value of acquired assets. It resulted in an inappropriate reporting of the new entity's financial condition. Subsequent depreciation expenses of the acquired assets cannot be accurately measured and match with revenues. Specifically, when the book value of acquired assets is undervalued, the new entity's depreciation expenses are underestimated and earnings are overestimated accordingly. This mismatch of depreciation expenses with revenues potentially motivates acquirers to engineer their deals to manipulate reported earnings (i.e., Lys and Vincent, 1995).

For business combinations initiated after July 1, 2001, SFAS No. 141 requires the use of

purchase method. The aim of the new regulation is to improve the quality of financial reporting and enable market participants to foresee future earnings. In this only legitimate accounting method, any premium paid over the fair value of the net identifiable assets acquired is reflected on the acquirer's balance sheet as goodwill. This goodwill, if measured properly, reveals the information about post-merger economic rents expected by the acquirer. More importantly, by allocating purchase price of acquired business to goodwill, the acquirer accommodates a close match of revenue with expenses generated from the business combinations.

Similar to SFAS No. 141 that uses fair value to record goodwill upon acquisition, SFAS No. 142 addresses how goodwill should be accounted for after it has been initially recognized. It requires firms to record goodwill impairment when the carrying amount of the goodwill exceeds its fair value. To concrete the fair value, SFAS No. 157 recommends the use of observable inputs for fair value measurements. When unobservable inputs are inevitably used, the accounting standards require extensive disclosures. These new accounting regulations were issued under the expectation that they were more informative than the old ones.

3. Literature Review and Hypothesis Developments

Before SFAS No. 141 that makes purchase method compulsory, firms tended to overpay for their business combinations and to insufficiently disclose relevant information. Lys and Vincent (1995) find that AT&T overly paid between $50 million and $500 million to avoid purchase method and to meet the pooling-of-interest criteria in Accounting Principles Board Opinion No. 16 (Business Combinations). Managements of acquirers who overpay for their business combinations strive against disclosing full information in order to escape from disciplines (Shalev, 2009). This insufficient disclosure is consistent with Rau and Vermaelen (1998), who find that additional earnings are unexpected due to different accounting methods for business combinations. In other words, financial reporting without fair disclosure of goodwill contained opaque information before the introduction of SFAS No. 141 in July 2001.

Several studies find it informative to disclose premiums paid in business combinations as goodwill. For instance, Jennings et al. (1996) and Vincent (1997) find a positive association between concurrent firm values and recorded goodwill. This positive association is the evidence that market participants treat recorded goodwill as useful information about

firms' economic resources. From the viewpoint of loan providers, Frankel, Seethamraju, and Zach (2008) find more weights on intangible assets in debt covenants if the borrowers have higher level of reported goodwill. This is evident that recognized goodwill is informative for loan providers.

In summary, SFAS No. 141 ceases the prevailing use of pooling accounting despite no difference in cash flow implications beween the pooling and purchase methods. In the opinion of standards setters and regulators, reporting goodwill reveals the acquirer's private information about post-merger economic rents. In addition, allocating a portion of the purchase price paid for business combinations makes the book value of other identifiable assets close to their fair value. These identifiable assets will subsequently be depreciated or amortized into expenses. When their book value is closer to fair value, the depreciation and amortization provide market participants with more information to foresee future revenue. These arguments in the literature suggest the following hypothesis in alternative form:

H1: Reporting non-zero balance of goodwill provides useful information about future earnings.

Our first hypothesis differs from most of prior studies that test whether goodwill is informative from the view port of loan providers. These studies tend to conclude that the unverifiable nature makes it difficult for goodwill to guarantee loan services. For example, Leftwich (1983) argues that intangible assets, in particular goodwill, are excluded from assets in debt contracts. Similarly, Frankel et al. (2008) document an increasing number of covenants that focus completely on tangible assets after SFAS No. 141 requires reporting merger premiums as goodwill. However, the literature lacks of studies that examine whether stock prices have information from goodwill to foresee future earnings. Our first hypothesis aims to fill this literature gap.

Similar to most of assets, the book value of goodwill will eventually be expensed via either amortizations or impairments. Goodwill recorded on the book was periodically amortized before SFAS No. 142 that was issued to bail out SFAS No. 141. In Ramanna (2008), firms required by SFAS No. 141 to report goodwill have strong demands for SFAS No. 142 because flexibly reporting goodwill impairments as expenses create more space for them to adjust earnings than periodical amortizations. Along with this argument, Ramanna and Watts (2012) show that firms did not properly write off their impaired goodwill under SFAS No. 142. These studies suggest using fair value to account for goodwill and to record subsequent impairments as expenses reduce the informativeness of financial reporting.

However, if fair value accounting for goodwill recognition provides useful information about future earnings, similar hypothesis should apply to subsequent goodwill amortization. Furthermore, impairment tests update firms' belief on whether the book value of goodwill is above its fair value (Godfrey and Koh, 2009). While Ramanna and Watts (2012) argue for discretionary earnings management using goodwill impairments and have a preference for systematic amortization of goodwill, an early study by Jennings, LeClere, and Thompson (2001) finds that goodwill amortization adds noise to earnings. In particular, Jarva (2009) shows no evidence that firms opportunistically avoid impairments. Therefore, based on the arguments which state that reporting goodwill is informative and impairment tests update fair value information, we have the following hypothesis,

H2: Reporting goodwill impairments provides additional future-earnings information.

4. The Measure of Stock Price Informativeness

Following Ettredge et al. (2005) and Tucker and Zarowin (2006), we use the association between current-year stock returns and next-year accounting earnings as a proxy for the "Informativeness". The prior studies refer to this association as the Future (or Forward) Earnings Response Coefficient (FERC), based on the following model by Collins et al. (1994) (hereafter CKSS),

$$R_t = \alpha_0 + \beta_1 UX_t + \sum_{k=1}^{3} \gamma_k \Delta E_t(X_{t+k}) + \varepsilon_t \tag{1}$$

where R_t is the ex-dividend annual stock return for year t, UX_t is the difference between the realized earnings for year t and the initial expectation of the year, X_{t+k} is the reported earnings for year $t + k$, and $\Delta E_t(X_{t+k})$ is the change in expectations between the end and beginning of year t for earnings of year $t + k$. β_1 is the ERC, γ_k is the FERC for year $t + k$, and both are predicted to be positive.

In Regression (1), CKSS express current stock returns as a function of the current period's unexpected earnings and (discounted) changes in expected future earnings, assuming revisions in expected dividends to be correlated with revisions in expected earnings. CKSS proxy for current unexpected earnings using observed current change in earnings, while using changes in reported future earnings for the changes in the expected future earnings. As Lundholm and Myers (2002) note, using earnings changes as explanatory variables assumes that earnings follow a random walk. This random walk will be a special case in a regression of current annual stock returns on current and future annual earnings (see, e.g., Ettredge et al., 2005).

To address our research question, we follow prior studies (i.e., Lundholm and Myers, 2002; Ettredge et al., 2005; Tucker and Zarowin, 2006) and expand Regression (1) by adding current goodwill and its interactions with the existing independent variables in the following regression model:

$$R_t = b_0+b_1X_{t-1}+b_2X_t+b_3X_{t+1}+b_4R_{t+1}$$
$$+b_5GW_t+b_6GW_t \cdot X_{t-1}+b_7GW_t \cdot X_t+b_8GW_t \cdot X_{t+1}+b_9GW_t \cdot R_{t+1}+\varepsilon_t \quad (2)$$

where GW_t is either reported goodwill scaled by beginning-of-year total assets or an indicator variable that equals 1, if reported goodwill is non-zero, and 0 otherwise. Using dummy variable mitigates the concerns that the unverifiable nature of goodwill leads to measurement errors of goodwill size and void inferences (e.g., Holthausen and Watts, 2001).

Similar to prior studies, we estimate Regression (2) on pooled cross-sectional, time series data. If reporting goodwill is to convey information about future earnings, the coefficient on $GW_t \cdot X_{t+1}$ should be positive. If the unreliable effect of fair value dominates, then the recognition of goodwill would be less informative and thus the coefficient, b_8, is expected to be negative.

5. Data and Main Empirical Results

5.1 Data and Sample Descriptions

We use the 2012 version of Compustat's combined industrial annual data file and choose 2002–2009 as the sample period for the primary test. The period begins with 2002 because July 1, 2001 was the effective date when firms were required to use purchase method and conduct impairment tests annually at a minimum. The period ends in 2009 because our tests use the next year earnings as an independent variable of interests.

Our sample selection process, documented in Panel A of Table 1, begins with 32,935 firm-years with either no goodwill at all, or goodwill greater than 10% of the beginning-of-year total assets. From this group, we delete 3,603 firm-years for which earnings before interest and taxes data were not available from Compustat, and 4,122 firm-years for which data required to compute total annual stock return were not available. We then delete 3,934 firm-years in the financial and regulated industries (SIC 4000–4999 and 6000–6999) due to their unique nature of accounting methods. This leaves 21,276 firm-year observations from 5,712 firms.

Panel B of Table 1 disaggregates our sample by goodwill and its impairments in each of the eight fiscal firm-years. Of the sample, 2,364 firms report goodwill in 9,577 firm-years.

Around half (45%, with a fluctuation between 34.82% in year 2003 and 51.45% in 2007) of the total firm-years in each fiscal year have reported non-zero balance of goodwill. However, only 15.49% of the firm-years with goodwill have reported impairments (fluctuating between 10.70% in year 2003 and 30.33% in 2008). Firm-years with both goodwill and impairments are less common than observations with goodwill only.

Table 1 Sample Selection

Panel A: Sample Selection Process

Sample Selection Criteria	Number of Firms	Number of Firm-years
Listed firms with or without goodwill from Compustat[a]	7,563	32,935
Delete if X_{t-1}, X_t, or X_{t+1} data are missing[b]	(941)	(3,603)
Sample with earnings data available	6,622	29,332
Delete if R_t, or R_{t+1} data are missing[b]	(806)	(4,122)
Sample with earnings and return data available	5,816	25,210
Delete if data are in the financial and regulated industries[c]	(104)	(3,934)
Final Sample	5,712	21,276

Panel B: Disaggregation of Sample by Goodwill and Impairments

	Fiscal Year							
Firm-years	2002	2003	2004	2005	2006	2007	2008	2009
Without goodwill	1,696	1,682	1,557	1,414	1,353	1,236	1,394	1,367
With goodwill	906	1,260	1,284	1,306	1,302	1,310	1,146	1,063
With goodwill impairment	186	151	157	166	176	157	499	264

[a] Listed firms in Compustat have either no goodwill (GDWL) at all or goodwill greater than 10% of the beginning-of-year total assets.

[b] Current returns, R_t, are regressed on prior earnings, X_{t-1}, current earnings, X_t, future earnings X_{t+1}, and future returns, R_{t+1}. So earnings and return data are required for 2001 and 2010 in order to estimate the models over 2002 and 2009.

[c] Firms with SIC code 4000–4999 and 6000–6999 are in the financial and regulated industries.

Table 2 provides the descriptive statistics of the 21,276 sample observations. In Panel A, the statistics of positive stock returns are consistent with prior studies (e.g., Ettredge et al., 2005; Tucker and Zarowin, 2006). The negative averages of prior, current, and future earnings deflated by the stock price at the beginning of fiscal year *t* are consistent with the recent increase in the numbers of firm-years reporting losses (e.g., Skinner and Soltes, 2011).

Panel B of Table 2 presents the pairwise correlations between the variables used in Regression (2). In Spearman's correlation coefficients, both scaled and dummy variables for

goodwill are uncorrelated with future stock returns. This uncorrelatedness suggests little surprises or sufficient expectations about future earnings for firm-years with goodwill. The Pearson correlation coefficients tell similar stories as they are statistically significant but economically insignificant. Namely, the small negative associations between goodwill and future returns are consistent with our hypothesis that goodwill reveals future information and increases predictability. This support to our hypothesis is particularly evident when goodwill is positively and significantly associated with past, current, and future earnings. Higher earnings that are predictable by information from goodwill, compared to unexpected earnings, generate lower stock returns.

In Panel C of Table 2, the first five rows list the variables in subsequent primary tests. We partition the sample into firm-years with and without goodwill. Once again, firm-years reporting goodwill have higher earnings but lower stock returns, whereas those without goodwill have lower earnings but higher stock returns. These significant contrasts suggest that earnings are more predictable for firm-years with goodwill than for those without goodwill. In addition, firm-years with goodwill are in a relatively more homogeneous group than those without goodwill. The former have smaller standard deviations than the latter. The narrower distributions also suggest more predictability for goodwill-reporting firms than firms without goodwill.

The last five rows of Panel C, Table 2 suggest our success in controlling for the differences in firm characteristics between firm-years with and without goodwill. Based on these firm characteristics, future earnings are more predictable for the former than the latter. Firm-years with goodwill are larger in size, have higher free cash flows, and make more stable earnings over the past five years than the latter. They, on average, also have lower market-to-book ratios as well as lower frequency of loss report than firm-years without goodwill.[2] These significant differences suggest that we have identified several important control variables for the effects of firm characteristics.

2 The medians of market-to-book ratios have no statistical difference between firm-years with and without recorded goodwill.

Table 2 Descriptive Statistics

Panel A: Descriptive Statistics (N = 21,276 Firm-Years during 2002–2009)

Variable	Mean	Std. Dev.	Median	Minimum	Maximum
R_t	0.260	1.170	-0.003	-0.921	7.086
X_{t-1}	-0.108	0.562	0.030	-3.790	0.820
X_t	-0.050	0.399	0.036	-2.379	1.003
X_{t+1}	-0.018	0.421	0.039	-2.300	1.520
R_{t+1}	0.264	1.081	0.036	-0.921	6.378
Sgw_t	0.121	0.163	0	0	0.640
Dgw_t	0.450	0.498	0	0	1

Panel B: Pairwise Pearson (Spearman) Correlations above (below) the Diagonal (N = 21,276)

Variable	R_t	X_{t-1}	X_t	X_{t+1}	R_{t+1}	Sgw_t	Dgw_t
R_t		-0.164	-0.025	0.019	-0.105	-0.051	-0.052
X_{t-1}	0.115		0.720	0.531	-0.083	0.164	0.215
X_t	0.248	0.781		0.715	-0.047	0.184	0.234
X_{t+1}	0.289	0.676	0.794		0.077	0.153	0.202
R_{t+1}	-0.077	0.130	0.125	0.260		-0.080	-0.078
Sgw_t	0.037	0.328	0.333	0.307	-0.006#		0.824
Dgw_t	0.050	0.358	0.356	0.330	0.007#	0.944	

Panel C: Descriptive Statistics for Firm-Years with and without Goodwill

Variable	Firm-Years without Goodwill				Firm-Years with Goodwill			
	N	Std. Dev.	Mean	Median	N	Std. Dev.	Mean	Median
R_t	11,699	1.345	0.310	-0.052	9,577	0.914***	0.201***	0.038***
X_{t-1}	11,699	0.670	-0.222	-0.046	9,577	0.346***	0.030***	0.070***
X_t	11,699	0.464	-0.139	-0.050	9,577	0.268***	0.056***	0.080***
X_{t+1}	11,699	0.487	-0.096	-0.040	9,577	0.299***	0.077***	0.085***
R_{t+1}	11,699	1.265	0.348	0.013	9,577	0.794***	0.164***	0.055***
$Size_{t-1}$	7,305	3,995.5	774.7	71.087	8,039	9,109.8***	3,647.0***	651.6***
Mtb_{t-1}	7,305	2.087	2.290	1.547	8,039	1.065***	1.816***	1.519
$EarnStd_{t-1}$	7,305	0.947	0.357	0.107	8,039	0.586***	0.170***	0.044***
FCF_t	7,305	0.294	-0.011	0.020	8,039	0.170***	0.072***	0.071***
$Dloss_t$	7,305	0.500	0.492	0	8,039	0.384***	0.179***	0

# Indicates statistically insignificant. The unmarked correlations are statistically significant at 5 percent or lower in a two-tailed test. *** Indicate t-tests and median tests of differences across groups significant at $p < 0.01$.

Appendix A contains detailed variable definitions.

5.2 Primary Model Test Results

Table 3 reports the main test results. To compare with previous research using CKSS

(e.g., Ettredge et al., 2005; Tucker and Zarowin, 2006), in Panel A of Table 3, we present the results of the benchmark CKSS model (i.e., Regression (2) without variables related to goodwill). Consistent with prior studies, both the ERC (i.e., b_2 in Panel A) and FERC (i.e., b_3) are significantly positive. The positive FERC indicates that a significant amount of information about future earnings has been impounded in current stock price. Also consistent with prior studies, the coefficients on past earnings and future stock returns are both negative.

Table 3 Main Tests for the Informativeness of Goodwill and Impairments

Panel A: Benchmark CKSS Model							
$R_t =$	b_0	$+b_1X_{t-1}$	$+b_2X_t$	$+b_3X_{t+1}$	$+b_4R_{t+1}$	$+\varepsilon_t$	
	0.245	-0.662	0.336	0.326	-0.144		Adjusted R^2
	(30.32)	(-33.53)	(9.99)	(12.28)	(-20.17)		0.0663
Panel B: Primary Model							
$R_t =$	b_0	$+b_1X_{t-1}$	$+b_2X_t$	$+b_3X_{t+1}$	$+b_4R_{t+1}$		
	0.284	-0.639	0.404	0.109	-0.139		
	(25.33)	(-29.47)	(10.91)	(3.65)	(-16.88)		
	$+b_5Dgw_t$	$+b_6Dgw_t \cdot X_{t-1}$	$+b_7Dgw_t \cdot X_t$	$+b_8Dgw_t \cdot X_{t+1}$	$+b_9Dgw_t \cdot R_{t+1}$	$+\varepsilon_t$	
	-0.134	0.032	-0.359	0.993	-0.050		Adjusted R^2
	(-8.17)	(0.62)	(-4.15)	(15.62)	(-3.09)		0.0825
Panel C: Primary Model with Goodwill Impairments							
$R_t =$	b_0	$+b_1X_{t-1}$	$+b_2X_t$	$+b_3X_{t+1}$	$+b_4R_{t+1}$		
	0.292	-0.658	0.440	0.077	-0.135		
	(25.93)	(-29.96)	(11.61)	(2.51)	(-16.02)		
	$+b_5Dgw_t$	$+b_6Dgw_t \cdot X_{t-1}$	$+b_7Dgw_t \cdot X_t$	$+b_8Dgw_t \cdot X_{t+1}$	$+b_9Dgw_t \cdot R_{t+1}$		
	-0.120	-0.050	-0.242	0.923	-0.041		
	(-7.30)	(-0.95)	(-2.74)	(14.37)	(-2.44)		
	$+b_{10}Dimp_t$	$+b_{11}Dimp_t \cdot X_{t-1}$	$+b_{12}Dimp_t \cdot X_t$	$+b_{13}Dimp_t \cdot X_{t+1}$	$+b_{14}Dimp_t \cdot R_{t+1}$	$+\varepsilon_t$	
	-0.201	0.469	-0.687	0.525	-0.027		Adjusted R^2
	(-6.66)	(6.37)	(-5.96)	(5.58)	(-1.26)		0.0878

The number of observations is 21,502. Numbers within parentheses are *t*-statistics for a two-tailed test. Appendix A contains detailed variable definitions.

To test our hypothesis that reporting goodwill is informative about the firms' future earnings, we add a dummy variable set to 1 if a firm-year *t* has non-zero goodwill and 0 otherwise into the CKSS model. Our use of the dummy variable to identify goodwill dilutes the importance of goodwill size in making inferences. It therefore mitigates the concern that

unverifiable nature of goodwill's fair value leads to measurement errors and incorrect inferences.

When we add the dummy variable for goodwill, Dgw_t to the primary model, Panel B of Table 3 indicates that goodwill enhances the FERC. The interaction term $Dgw_t \times X_{t+1}$ has a positive and highly significant loading (b_8 = 0.993, *t*-statistic = 15.62). More importantly, stock prices contain more than nine times the information about future earnings when market participants consider goodwill in making investment decisions. The FERC increases from 0.109 for firm-years without goodwill to 1.102 (i.e., 0.109 + 0.993) for those reporting goodwill. In addition to statistical significance (*t*-statistic = 15.62), this dramatic increase in FERC by 0.933 suggests the economic importance of goodwill in predicting future earnings.

To test whether goodwill impairments provide additional information about future earnings, Panel C of Table 3 further includes a dummy variable identifying goodwill impairments, $Dimp_t$, and its interaction with earnings and stock returns. Consistent with our expectations, goodwill impairments are incrementally informative about future earnings. The coefficient on $Dimp_t \times X_{t+1}$ is positive and highly significant (b_{13} = 0.525, *t*-statistic = 5.58). Once again, the coefficient is also economically significant, when compared with FERC without goodwill and impairments (i.e., b_3 = 0.077). Furthermore, the interaction term for goodwill and future earnings, $Dgw_t \times X_{t+1}$, still has a significantly positive and huge loading (b_8 = 0.923, *t*-statistic = 14.37). This evidence consistently indicates that reporting goodwill and its impairments provide useful and huge information about future earnings.

An interesting result is that neither goodwill nor its impairment improves the ERC. With useful information about future earnings, goodwill decreases the ERC. In both Panels B and C of Table 3, we find negative (i.e., b_7 = -0.359 or -0.242) and significant (*t*-statistic = -4.15 or -2.74) coefficients on the interaction term, $Dgw_t \times X_t$,. Similarly, Panel C has a significantly negative coefficient on $Dimp_t \times X_t$ (b_{12} = -0.687, *t*-statistic = -5.96). The different signs of coefficients between FERC and ERC support the forward-looking nature of stock prices. It is also possible that business combinations and goodwill impairments complicate concurrent accounting information.

As for control variables, the coefficients (b_4 and b_9) on, R_{t+1} and $Dgw_t \times R_{t+1}$, have expected signs and significances. Both are negative and highly significant, suggesting reversions to the mean of stock returns. They are also consistent with prior studies (e.g., Tucker and Zarowin, 2006) that argue the importance to include these two control variables.

5.3 Business Combination Event vs. Purchase Price Allocation to Goodwill

Results from our primary model have shown that reporting goodwill provides useful information about future earnings. In this section, we distinguish two potential sources for reporting goodwill to enhance FERC. First, disclosures in the years of business combinations enhance the FERC because SFAS No. 141 requires sufficient information for market participants to predict future earnings. In this case, we expect a larger FERC in the years of business combination than in subsequent years after the mergers. Second, allocating a portion of purchase prices to goodwill enhances the FERC because a closer match of revenue and depreciation expenses makes future earnings more predictable. In this situation, we expect a smaller FERC in the years of business combination than in post-merger years.

To test whether disclosures in the years of business combinations are the primary sources for the improved FERC, we use a subgroup of 9,577 firm-years with reported goodwill from 2,364 firms. We create a dummy variable, to identify the first year of a firm that reported goodwill or an increase in recorded goodwill. We also interact this dummy variable with other explanatory variables of the benchmark CKSS model. If disclosures required by SFAS No. 141 for business combinations provide useful information about the future earnings, we expect a significantly positive coefficient on $Dm\&a_t \times X_{t+1}$.

Using firm-years with reported goodwill only, Table 4 reports significantly negative coefficients on the interaction between $Dm\&a_t$ and X_{t+1} in all the four models, rejecting the conjecture that disclosures in the years of business combinations enhance the FERC. Specifically, Model (1) of Table 4 compares the differences in the FERC between the first-years of business combinations and the rest of the firm-years with goodwill. Based on the significantly negative coefficients on $Dm\&a_t \bullet X_{t+1}$ (b = -0.393, t-statistic = -4.54), we conclude that stock prices in the years of business combinations contain less information about acquirers' future earnings. In other words, reporting goodwill provides useful information about future earnings, but disclosures on business combinations reduce the usefulness of that information.

Model (2) of Table 4 includes a dummy variable to identify whether a firm-year reports goodwill impairments and interact this dummy variable with other control variables. We find that reporting goodwill impairments additionally improves the market's ability to predict future earnings. Given all observations having reported goodwill, the coefficient on $Dimp_t \bullet X_{t+1}$ is positive and highly significant (i.e., b = 0.590, t-statistic = 5.08). Furthermore, it still holds to infer that reporting goodwill rather than disclosures on business combinations provides useful information about future earnings. This inference is evidently supported by

the significantly negative coefficient (b = -0.369, t-statistic = -4.27) on $Dm\&a_t \bullet X_{t+1}$.

Table 4 Sources for Goodwill to Enhance FERC: Disclosure on Business Combinations vs. Purchase Price Allocation to Goodwill

Dependent Variable R_t =	Model (1)		Model (2)		Model (3)		Model (4)	
	Est.	t-value	Est.	t-value	Est.	t-value	Est.	t-value
Intercept	0.108	(10.23)	0.123	(11.06)	0.023	(1.19)	0.045	(2.19)
X_{t-1}	-0.654	(-13.15)	-0.818	(-15.04)	-0.654	(-13.13)	-0.820	(-15.03)
X_t	0.277	(3.68)	0.492	(5.88)	0.251	(3.33)	0.474	(5.67)
X_{t+1}	1.274	(23.22)	1.137	(19.34)	1.268	(19.62)	1.117	(16.09)
R_{t+1}	-0.152	(-10.91)	-0.129	(-7.81)	-0.148	(-10.64)	-0.128	(-7.77)
$Dm\&a_t$	0.115	(5.39)	0.110	(5.22)	0.097	(4.47)	0.096	(4.47)
$Dm\&a_t \bullet X_{t-1}$	0.198	(2.75)	0.218	(3.03)	0.190	(2.64)	0.213	(2.97)
$Dm\&a_t \bullet X_t$	-0.647	(-5.31)	-0.668	(-5.46)	-0.629	(-5.15)	-0.655	(-5.34)
$Dm\&a_t \bullet X_{t+1}$	-0.393	(-4.54)	-0.369	(-4.27)	-0.393	(-4.41)	-0.373	(-4.20)
$Dm\&a_t \bullet R_{t+1}$	-0.107	(-4.93)	-0.112	(-5.05)	-0.102	(-4.72)	-0.106	(-4.80)
$Dimp_t$			-0.130	(-4.65)			-0.102	(-3.55)
$Dimp_t \bullet X_{t-1}$			0.691	(8.24)			0.691	(8.23)
$Dimp_t \bullet X_t$			-0.799	(-5.34)			-0.809	(-5.41)
$Dimp_t \bullet X_{t+1}$			0.590	(5.08)			0.607	(5.20)
$Dimp_t \bullet R_{t-1}$			-0.065	(-2.70)			-0.063	(-2.62)
Chg_AT_t					0.162	(5.24)	0.141	(4.45)
$Chg\_AT_t \bullet X_{t+1}$					0.024	(0.28)	0.048	(0.55)
Observations	9,577		9,577		9,577		9,577	
Adjusted R^2	0.1369		0.1480		0.1392		0.1497	

Dependent variable is the ex-dividend annual stock return for year t, R_t. Appendix A contains detailed variable definitions.

Numbers within parentheses are t-statistics for a two-tailed test.

In both Models (3) and (4), we create a fractional ranking variable, Chg_AT_t, between 0 and 1, by sorting the change in total assets over prior year (i.e., $(AT_t - AT_{t-1}) / AT_{t-1}$) for each industry-year. Our regressions use this variable to control for a 247.34% increase in total assets in the years of business combinations over prior year. In contrast, the average change in total assets is 41.73% in post-merger years for the subsample with goodwill. After adding Chg_AT_t and its interaction with future earnings, $Chg\_AT_t \bullet X_{t+1}$, as control variables, the results in Models (3) and (4) consistently reject the conjecture that disclosures in the years of business combinations are the main reason for goodwill to enhance the FERC.

In Models (3) and (4), the coefficients on $Dm\&a_t \times X_{t+1}$ continue to be negative (b =

-0.393 and -0.373) and highly significant (t-statistic = -4.41 and -4.20). These results reject the conjecture that disclosures in the years of business combinations improve the market's ability to predict future earnings. Furthermore, Model (4) shows a positive coefficient on $Dimp_t \times X_{t+1}$ (b = 0.607) and 1% significance level (t-statistic = 5.20). This significantly positive coefficient is consistent with Model (2). It indicates that fair value accounting used to measure goodwill impairments provides useful and incremental information about future earnings.

5.4 Professional Services to Infer the Informativeness of Goodwill and Impairments

Previous sections provide evidence that stock prices contain more useful information about future earnings for firm-years reporting goodwill. Moreover, reporting goodwill impairments provides additional information about future earnings. In this section, we test our hypothesis in an alternative way by using fees paid to auditors and appraisers as a proxy for their efforts. Unlike previous tests, this alternative test does not rely on the assumption of market efficiency. It is based on the cost-benefit criterion that qualifies most of accounting standards.

Our alternative tests regress professional service fees on goodwill and impairments with control variables. We expect that fair value accounting that demands higher professional fees for auditors and appraisers provide more useful information about future earnings. This expectation is consistent with Srinidhi and Gul (2007), who show positive relationship among audit fees, auditor effort and financial reporting quality. Competitions in the professional service market ensure that benefits of a disclosure increase with the costs of making the disclosure. We expect that fair value accounting that demands higher professional fees for auditors and appraisers provide more useful information about future earnings. In other words, a positive association between professional fees and goodwill provides evidence that financial statements with goodwill are costly prepared to be informative.

We use the expenses of selling, general, and administrative ($XSGA_t$) as the proxy for professional service fees after controlling for firm characteristics. It is also a proxy for efforts exercised by the professional, including accountants, auditors, and appraisers. Our test expects a positive association between goodwill and professional service fees. In addition, we include changes in fixed assets, $\Delta PPENT_t$, and in total assets, ΔAT_t, from the beginning to the end of year t as explanatory variables. To further control for other factors that affect $XSGA_t$, we follow Roychowdhury (2006) and include lagged sales, $SALE_{t-1}$, as the major

control variable.[3]

All the four models in Table 5 report insignificant coefficients on $\Delta PPENT_t$ and significantly positive ones on ΔAT_t. This difference in statistical significance is consistent with the relation between $\Delta PPENT_t$ and ΔAT_t. Namely, $\Delta PPENT_t$ is part of ΔAT_t and needs no more professional services than other assets in ΔAT_t, when fixed assets are individually acquired via arm's length transactions. The insignificant coefficients on $\Delta PPENT_t$ suggest no incremental fees required for changes in fixed assets than changes in other assets. That is, both fixed and other assets receive similar attentions from accountants, auditors and appraisers.

Table 5 Professional Services to Infer the Informativeness of Goodwill and Impairments

Dependent	Model (1)		Model (2)		Model (3)		Model (4)	
Variable = $XSGA_t$	Est.	*t*-value	Est.	*t*-value	Est.	*t*-value	Est.	*t*-value
Intercept	150.2	(35.85)	63.16	(12.04)	231.8	(28.00)	213.6	(24.51)
$\Delta PPENT_t$	0.055	(1.11)	0.092	(1.22)	-0.062	(-0.74)	-0.074	(-0.83)
ΔAT_t	0.395	(32.23)	0.218	(8.03)	0.301	(16.72)	0.369	(19.05)
$SALE_{t-1}$	0.047	(96.15)	0.025	(42.92)	0.077	(80.29)	0.075	(72.85)
DGW_t			140.8	(18.61)				
$DGW_t \cdot \Delta PPENT_t$			0.039	(0.41)				
$DGW_t \cdot \Delta AT_t$			0.051	(1.70)				
$DGW_t \cdot SALE_{t-1}$			0.053	(58.80)				
$Dm\&a_t$					-110.1	(-6.70)	-104.8	(-6.42)
$Dm\&a_t \cdot \Delta PPENT_t$					0.878	(5.18)	0.909	(5.37)
$Dm\&a_t \cdot \Delta AT_t$					-0.165	(-4.29)	-0.189	(-4.93)
$Dm\&a_t \cdot SALE_{t-1}$					0.008	(3.21)	0.009	(3.68)
$Dimp_t$							74.17	(3.36)
$Dimp_t \cdot \Delta PPENT_t$							0.020	(0.09)
$Dimp_t \cdot \Delta AT_t$							-0.404	(-8.56)
$Dimp_t \cdot SALE_{t-1}$							0.004	(1.57)
Observations	19,608		19,608		9,360		9,360	
Adjusted R^2	0.4433		0.5553		0.5610		0.5674	

Dependent variable is the expenses of selling, general and administrative ($XSGA_t$) for year *t*. Appendix A contains detailed variable definitions.

Numbers within parentheses are *t*-statistics for a two-tailed test.

3 The use of lagged sales mitigates the concern that concurrent sales can be negatively affected by managers' intention to report higher earnings.

In Model (2) of Table 5, all variables related to goodwill have positive coefficients when the regression includes a dummy variable indicating goodwill and its interaction terms with other explanatory variables. Coefficients on DGW_t and $DGW_t \bullet SALE_{t-1}$ are hugely positive and highly significant. Based on these coefficients, additional fees are associated with goodwill. Thus, reporting goodwill is informative based on the assumption that benefits exceed costs for most requirements in financial standards. Furthermore, the difference in statistical significance between $DGW_t \bullet \Delta PPENT_t$ (t-statistic = 0.41) and $DGW_t \bullet \Delta AT_t$ (t-statistic = 1.70) is also consistent with the fact that goodwill and its impairments only affect ΔAT_t not $\Delta PPENT_t$. In other words, increases in other assets demand more professional service fees for years with goodwill than years without goodwill.

Model (3) of Table 5 purifies the sample by excluding firm-years without goodwill. Among 9,360 firm-years with goodwill from 2,331 firms, we use a dummy variable, $Dm\&a_t$, to identify the firm-years of business combinations and interact it with the other explanatory variables. Consistent with our primary test results, disclosures on business combinations do not necessarily provide useful information than reporting goodwill. Coefficients on $Dm\&a_t$ and $Dm\&a_t \bullet \Delta AT_t$ are significantly negative and large in absolute value. On the other hand, the coefficient on $Dm\&a_t \bullet \Delta PPENT_t$ is significantly positive (b = 0.878, t-statistic = 5.18), indicating that fixed assets need additional professional services. This additional need for professional services is consistent with business combination accounting, where purchase prices are first allocated to the fair value of fixed assets before remaining excesses are recorded as goodwill.

Model (4) of Table 5 further includes goodwill impairments and interaction terms as explanatory variables. In addition to supporting conclusions from Model (3), Model (4) provides evidence that goodwill impairments provide incremental information beyond the information provided by goodwill. All variables related to impairments, $Dimp_t$, increase professional service fees because ΔAT_t is negative in the case of goodwill impairments. Since goodwill impairments demand for additional professional services, they are likely to provide market participants with useful and incremental information about future earnings. Furthermore, the insignificant coefficient on $Dimp_t \bullet \Delta PPENT_t$ is consistent with the impairment accounting procedure, where fair value of fixed assets is determined after the fair value of cash generating units with goodwill.

6. Robustness Tests

6.1 Magnitude of Goodwill

Our primary tests use dummy variables to indicate goodwill and impairments. However, they do not test whether the magnitude of goodwill and impairments contains information about future earnings. Using the sizes of goodwill and impairments as explanatory variables is likely to introduce measurement errors into the explanatory variables of regression models. Several studies, including Holthausen and Watts (2001), Ramanna (2008), and Ramanna and Watts (2012) stress the difficulties on verifying the fair value of goodwill and impairments under SFASs No. 141 and 142. Measurement errors may exit in the balances of goodwill and impairments, but firms without business combinations are free of this kind of measurement biases. The fact that only part of observations has measurement errors makes it unavailable to understand the inconsistency in the regression estimators (Wooldridge, 2001).

Despite potential measurement errors in goodwill and its impairments, results in Table 6 are consistent with our empirical results in primary tests. When Panel A of Table 6 includes goodwill scaled by total assets, Sgw_t, the interaction term $Sgw_t \times X_{t+1}$ has a positive and highly significant loading (b_8 = 2.084, t-statistic = 10.31). In Panel B, the coefficient on the interaction term $Sgw_t \times X_{t+1}$, is also positive and highly significant (b_8 = 2.139, t-statistic = 10.50), when the model includes goodwill impairments scaled by total assets, $Simp_t$, and interaction terms. These results support our hypothesis that reporting goodwill provides useful information about future earnings.

Based on results in Panel B of Table 6, goodwill impairments enlarge goodwill's FERC from the beginning to the end of a year. Sgw_t is goodwill after impairment and reported at the end of year t, scaled by total assets at the beginning of year t. Thus, the sum of Sgw_t and $Simp_t$ is equal to the balance of goodwill at the beginning of year t. The significantly negative coefficient (b_{13} = -1.544, t-statistic = -3.65) on the interaction term $Simp_t \times X_{t+1}$ suggests a smaller FERC for goodwill in the beginning than the end of a year. Results in Table 6, Panel B suggest that goodwill's FERC increases from 0.595 (i.e., 2.139 – 1.544) before impairments to 2.139 after goodwill impairments. Overall, we have evidence supporting the hypothesis that goodwill impairments improve the market's ability to predict future earnings in terms of magnitude.

Table 6 Robustness Tests: Using Magnitudes of Goodwill and Impairments

Panel A: Primary Model with Magnitudes of Goodwill							
R_t =	b_0	$+b_1X_{t-1}$	$+b_2X_t$	$+b_3X_{t+1}$	$+b_4R_{t+1}$		
	0.282	-0.646	0.370	0.205	-0.143		
	(27.51)	(-30.39)	(10.25)	(7.04)	(-17.97)		
	$+b_5Sgw_t$	$+b_6Sgw_t \bullet X_{t-1}$	$+b_7Sgw_t \bullet X_t$	$+b_8Sgw_t \bullet X_{t+1}$	$+b_9Sgw_t \bullet R_{t+1}$	$+\varepsilon_t$	
	-0.402	-0.063	-0.513	2.084	-0.105		Adjusted R^2
	(-8.15)	(-0.38)	(-1.87)	(10.31)	(-1.96)		0.0752
Panel B: Primary Model with Magnitudes of Goodwill and Its Impairments							
R_t =	b_0	$+b_1X_{t-1}$	$+b_2X_t$	$+b_3X_{t+1}$	$+b_4R_{t+1}$		
	0.281	-0.662	0.357	0.223	-0.140		
	(27.43)	(-30.85)	(9.73)	(7.61)	(-17.18)		
	$+b_5Sgw_t$	$+b_6Sgw_t \bullet X_{t-1}$	$+b_7Sgw_t \bullet X_t$	$+b_8Sgw_t \bullet X_{t+1}$	$+b_9Sgw_t \bullet R_{t+1}$		
	-0.405	-0.175	-0.406	2.139	-0.097		
	(-8.21)	(-1.04)	(-1.47)	(10.50)	(-1.79)		
	$+b_{10}Simp_t$	$+b_{11}Simp_t \bullet X_{t-1}$	$+b_{12}Simp_t \bullet X_t$	$+b_{13}Simp_t \bullet X_{t+1}$	$+b_{14}Simp_t \bullet R_{t+1}$	$+\varepsilon_t$	
	-0.029	1.628	0.553	-1.544	-0.169		Adjusted R^2
	(-4.41)	(5.68)	(1.15)	(-3.65)	(-2.22)		0.0788

The number of observations is 21,502. Numbers within parentheses are *t*-statistics for a two-tailed test. Appendix A contains detailed variable definitions.

6.2 Potentially Omitted Correlated Variables

A valid concern is that our statistical significance may result from omitting important variables pertaining to firms characteristics with goodwill. To address this concern, we add firm size and maturity into the primary test models. The literature shows that larger and more matured firms tend to make more disclosures for fear of litigation risk (Kasznik and Lev, 1995; Johnson, Kasznik, and Nelson, 2001). Thus, their current stock prices may have more information about future earnings. Our measure of firm size ($Size_{t-1}$) is the market value of common equity at the end of year *t*-1.[4] Firm maturity or growth opportunity is proxied by the market-to-book ratio (Mtb_{t-1}) at the end of year *t*-1, measured as the ratio of market value of total assets to book value of total assets.[5]

Future earnings can also be more predictable for firms with more free cash flow and stable earning history (Smith and Watts, 1992). In these cases, we control for past earnings

4 Compustat Data PRCC_f × CSHO.

5 (Compustat Data AT + CSHO*PRCC_F - CEQ - TXDB)/(Compustat Data AT).

predictability by the standard deviation of return on assets ($EarnStd_{t-1}$) over the past years t-5 to t-1.[6] We measure free cash flow (FCF_t) as operating income before depreciation minus income tax, interest expense, dividends for preference stock and for common stock, plus deferred income tax, scaled by total assets at the beginning of the year.[7]

For the above four new control variables, we follow Tucker and Zarowin (2006) and convert them into fractional rankings between 0 and 1 within each industry-year before they enter Regression (2). Additionally, we include a dummy variable ($Dloss_{t-1}$) to identify negative earnings of year t.[8] Profits are more value-relevant than losses (Hayn, 1995). In the regression, we add each of the five new control variables, referred as Z_t, to the primary model once at a time, together with its interaction with future earnings. In other words, we add Z and $Z \bullet X_{t+1}$ into the regression.

Panel A of Table 7 reports the estimation results of Regression (2) with Z and $Z \bullet X_{t+1}$, where Z_t is one of the above five control variables. Throughout the five individual models, the coefficients on $Dgw_t \times X_{t+1}$ remain significantly positive, supporting our conclusion that reporting goodwill is informative for future earnings. In addition, reporting goodwill impairments also incrementally enhances FERC, as the coefficients on $Dimp_t \times X_{t+1}$ are all significantly positive.

Panel B of Table 7 reports the test results that include all the five new control variables and their interaction terms with future earnings. The coefficient on the interaction term between the goodwill dummy variable and future earnings, $Dgw_t \times X_{t+1}$, is still positive and highly significant in a two-tailed test (b_8 = 0.909, t-statistic = 11.89), so is the coefficient on $Dimp_t \times E_{t+1}$ (b_{13} = 0.486, t-statistic = 4.80). Thus, reporting goodwill provides useful information about future earnings. Moreover, the goodwill dummy variable is equal to one whenever goodwill impairment dummy variable is one. This means reporting goodwill impairments has additional future-earnings information beyond what has been released by goodwill.

In both panels of Table 7, the coefficients have their expected signs and significance for each of the interactive terms between X_{t+1} and the five firm characteristics: firm size, growth opportunity, past earnings variability, free cash flow, and reporting a loss. Information about future earnings is richer for larger, higher free cash flow firms; stock prices are less

6 Compustat data EBIT divided by total assets at the beginning of the year.

7 (Compustat Data OIBDP – TXT – XINT – DVP – DVPSX_F × CSHO + TXDI)/(Compustat Data AT).

8 Compustat Data EBIT < 0.

informative about future earnings for firms with higher past earnings variability and larger growth potentials. Future earnings are more unpredictable for loss firms than firms with profits. Namely, the coefficients on the interaction terms between X_{t+1} , firm size, and free cash flow are positive, whereas the coefficients on the interaction terms between X_{t+1} and past earnings variability, growth opportunity, and loss dummy are negative.

Table 7 Robustness Tests: Controlling for Potentially Omitted Correlated Variables

Panel A: Adding a Single New Control Variable Z, as Differently Defined

$$R_t = b_0+b_1X_{t-1}+b_2X_t+b_3X_{t+1}+b_4R_{t+1}$$
$$+b_5Dgw_t+b_6Dgw_t \bullet X_{t-1}+b_7Dgw_t \bullet X_t+b_8Dgw_t \bullet X_{t+1}+b_9Dgw_t \bullet R_{t+1}$$
$$+b_{10}Dimp_t+b_{11}Dimp_t \bullet X_{t-1}+b_{12}Dimp_t \bullet X_t+b_{13}Dimp_t \bullet X_{t+1}+b_{14}Dimp_t \bullet R_{t+1}$$
$$+b_{15}Z+b_{16}Z \bullet X_{t+1}+\varepsilon_t$$

Z =	$Size_{t-1}$		Mtb_{t-1}		$EarnStd_{t-1}$		FCF_t		$Dloss_{t-1}$	
	Est.	*t*-value	Est.	*t*-value	Est.	*t*-value	Est.	*t*-value	Est.	*t*-value
Intercept	0.498	(28.40)	0.559	(29.00)	0.286	(25.76)	-0.008	(-0.38)	0.173	(12.22)
X_{t-1}	-0.848	(-28.84)	-0.883	(-29.78)	-0.927	(-31.04)	-0.738	(-25.53)	-0.739	(-25.54)
X_t	0.437	(9.11)	0.445	(9.17)	0.425	(8.67)	0.329	(6.57)	0.386	(7.86)
X_{t-1}	-0.142	(-2.94)	0.747	(15.62)	0.589	(15.10)	-0.700	(-13.87)	1.662	(35.36)
R_{t-1}	-0.152	(-15.07)	-0.157	(-15.34)	-0.149	(-14.43)	-0.154	(-15.66)	-0.161	(-16.32)
Dgw_t	-0.136	(-8.31)	-0.152	(-9.88)	-0.179	(-11.53)	-0.161	(-10.77)	-0.166	(-10.81)
$Dgw_t \bullet X_{t-1}$	0.189	(2.74)	0.261	(3.74)	0.239	(3.39)	0.318	(4.73)	0.299	(4.44)
$Dgw_t \bullet X_t$	-0.615	(-5.72)	-0.690	(-6.34)	-0.655	(-5.95)	-1.015	(-9.64)	-0.874	(-8.30)
$Dgw_t \bullet X_{t+1}$	0.900	(11.37)	1.138	(14.25)	1.121	(13.91)	1.099	(14.30)	0.947	(12.28)
$Dgw_t \bullet R_{t+1}$	-0.023	(-1.36)	-0.009	(-0.51)	-0.015	(-0.86)	-0.027	(-1.61)	-0.025	(-1.49)
$Dimp_t$	-0.164	(-6.07)	-0.242	(-8.77)	-0.175	(-6.35)	-0.182	(-6.91)	-0.191	(-7.21)
$Dimp_t \bullet X_{t-1}$	0.443	(4.34)	0.504	(4.89)	0.554	(5.31)	0.316	(3.17)	0.432	(4.34)
$Dimp_t \bullet X_t$	-0.604	(-4.01)	-0.613	(-4.02)	-0.651	(-4.22)	-0.636	(-4.32)	-0.785	(-5.33)
$Dimp_t \bullet X_{t+1}$	0.214	(2.04)	0.355	(3.34)	0.329	(3.07)	0.515	(5.03)	0.612	(5.96)
$Dimp_t \bullet R_{t-1}$	-0.013	(-0.62)	-0.032	(-1.46)	-0.026	(-1.16)	-0.018	(-0.83)	-0.007	(-0.31)
Z	-0.501	(-17.39)	-0.458	(-17.73)	-0.010	(-3.05)	0.357	(10.64)	-0.066	(-3.52)
$Z \bullet X_{t+1}$	2.574	(24.89)	-0.658	(-8.18)	-0.028	(-6.53)	2.278	(35.59)	-2.038	(-38.63)
Adjusted R^2	0.1766		0.1564		0.1382		0.2165		0.2165	

Panel B: Full Model						
R_t =	b_0	$+b_1X_{t-1}$	$+b_2X_t$	$+b_3X_{t+1}$	$+b_4X_{t+1}$	
	0.214	-0.688	0.355	0.497	-0.162	
	(5.26)	(-24.02)	(7.03)	(4.07)	(-16.74)	
	$+b_5Dgw_t$	$+b_6Dgw_t \bullet X_{t-1}$	$+b_7Dgw_t \bullet X_t$	$+b_8Dgw_t \bullet X_{t+1}$	$+b_9Dgw_t \bullet R_{t-1}$	
	-0.138	0.273	-0.914	0.909	-0.026	
	(-8.66)	(4.11)	(-8.80)	(11.89)	(-1.56)	
	$+b_{10}Dimp_t$	$+b_{11}Dimp_t \bullet X_{t-1}$	$+b_{12}Dimp_t \bullet X_t$	$+b_{13}Dimp_t \bullet X_{t+1}$	$+b_{14}Dimp_t \bullet R_{t-1}$	
	-0.208	0.320	-0.692	0.486	-0.013	
	(-7.91)	(3.26)	(-4.78)	(4.80)	(-0.64)	
	$+b_{15}Size_{t-1}$	$+b_{16}Size_{t-1} \bullet X_{t+1}$	$+b_{17}MTb_{t-1}$	$+b_{18}MTb_{t-1} \bullet X_{t+1}$	$+b_{19}EarmStd_{t-1}$	
	-0.227	1.444	-0.177	-0.514	-0.008	
	(-7.35)	(13.34)	(-6.36)	(-6.35)	(-2.51)	
	$+b_{20}EarmStd_{t-1} \bullet X_{t+1}$	$+b_{21}FCF_t$	$+b_{22}FCF_t \bullet X_{t+1}$	$+b_{23}Dloss_t$	$+b_{24}Dloss_t \bullet X_{t+1}+\varepsilon_t$	
	-0.018	0.283	0.751	0.018	-1.122	Adjusted R^2
	(-4.41)	(6.73)	(6.53)	(0.77)	(-11.82)	0.2414

The number of observations is 15,344. Numbers within parentheses are *t*-statistics for a two-tailed test. Appendix A contains detailed variable definitions.

6.3 Fama-MacBeth Regressions

Our inferences can also be overstated in estimating the above cross-sectional regressions, if the regression residuals have positive cross-sectional correlations. To address this concern, we estimate the Fama-MacBeth analysis over each of the eight years by cross-section regressions.

Results in Table 8 are consistent with our primary test results for goodwill. However, evidence is weak to show that reporting goodwill impairments provides additional information about future earnings beyond the information offered by goodwill. The table lists the means, medians, and *t*-statistics, adjusted by the Newey-West for standard errors, for annual Regression (2) and its extension with goodwill impairments over 2002 and 2009. In the primary model, the mean and median coefficients on $Dgw_t \times X_{t+1}$ are 0.968 and 1.028, with high significance (adjusted Fama-MacBeth *t*-statistic = 5.97). This provides strong evidence that reporting goodwill provides useful information about future earnings. After adding the dummy variable identifying goodwill impairments and its interaction terms into the regression model, the mean and median coefficients on $Dgw_t \times E_{t+1}$ are still positive and highly significant (b_8 = 0.985 and 0.930, respectively, adjusted Fama-MacBeth *t*-statistic = 5.67). Thus, we are confident with the conclusion that reporting goodwill is informative for future earnings.

However, we do not have evidence that reporting goodwill impairments has additional information beyond what has been released from reporting the existence of goodwill. On the right hand side of Table 8, coefficients on $Dimp_t \bullet X_{t+1}$ are insignificant, as adjusted Fama-MacBeth *t*-statistic is -0.61. Given that firm-years reporting goodwill impairments must have goodwill, Dgw_t equal to one, the current stock prices contain similar information about future earnings between firm-years with and without impairment, in these Fama-MacBeth regressions.

Table 8 Robustness Tests: Fama-MacBeth Regressions

Primary Model:

$$R_t = b_0+b_1X_{t-1}+b_2X_t+b_3X_{t+1}+b_4R_{t+1} +b_5Dgw_t+b_6Dgw_t \bullet X_{t-1}+b_7Dgw_t \bullet X_t+b_8Dgw_t \bullet X_{t+1}+b_9Dgw_t \bullet R_{t+1}+\varepsilon_t$$

Primary Model with Goodwill Impairments:

$$R_t = b_0+b_1X_{t-1}+b_2X_t+b_3X_{t+1}+b_4R_{t+1} +b_5Dgw_t+b_6Dgw_t \bullet X_{t-1}+b_7Dgw_t \bullet X_t+b_8Dgw_t \bullet X_{t+1}+b_9Dgw_t \bullet R_{t+1} +b_{10}Dimp_t+b_{11}Dimp_t \bullet X_{t-1}+b_{12}Dimp_t \bullet X_t+b_{13}Dimp_t \bullet X_{t+1}+b_{14}Dimp_t \bullet R_{t+1}+\varepsilon_t$$

Time-series Statistics	Primary Model			Primary Model with Goodwill Impairments		
	Dgw_t	$Dgw_t \bullet X_t$	$Dgw_t \bullet X_{t+1}$	Dgw_t	$Dgw_t \bullet X_t$	$Dgw_t \bullet X_{t+1}$
Mean	-0.131	-0.263	0.968	-0.116	-0.302	0.985
Median	-0.109	-0.172	1.028	-0.091	-0.187	0.930
Fama-MacBeth *t*-statistic	(-3.31)	(-4.07)	(5.97)	(-2.90)	(-4.60)	(5.67)
				$Dimp_t$	$Dimp_t \bullet X_t$	$Dimp_t \bullet X_{t+1}$
Mean				-0.193	-0.158	-0.105
Median				-0.215	-0.278	-0.239
Fama-MacBeth *t*-statistic				(-6.72)	(-0.61)	(-0.61)

The models are each estimated on 8 industry-year cross-sections during 2002–2009. The number of observations used for each industry-year is listed in Panel B of Table 1. The Fama-MacBeth approach treats the coefficients from the annual regressions as i.i.d. Numbers within parentheses are *t*-statistics for a two-tailed test, adjusted by the Newey-West for standard errors.
Appendix A contains detailed variable definitions.

7. Conclusion

We investigate whether reporting goodwill provides useful information about future earnings. Furthermore, we hypothesize that fair value accounting that updates the balance of

recorded goodwill by measuring goodwill impairments also provides additional information about future earnings. We find that firm-years reporting goodwill experienced a significant increase in their FERC, which is a regression coefficient of current-year stock returns on future earnings for goodwill-reporting firm-years. In some tests, reporting goodwill impairments also contains useful and incremental information about future earnings. These findings endorse the merits of the fair value accounting introduced by SFASs No. 141 and No. 142.

To identify the sources of goodwill's informativeness, we purify our sample by including only firm-years with goodwill, and find that stock returns in the years of business combinations contain less information about future earnings than subsequent firm-years. This result refutes the conjecture that goodwill's informativeness comes from disclosures required by SFAS No. 141 when businesses combine. Instead, a close match of post-merger revenue and expenses is likely the potential source for goodwill to contain information about future earnings.

In addition to tests relying on stock prices under the market efficiency assumption, we use professional fees for auditors and appraisers to investigate our hypothesis. Fair value accounting comes at a cost—the cost to prepare, provide, and audit the information. This is the unverifiable nature of goodwill and impairment emphasized by Holthausen and Watts (2001) and Watts (2003), among others. However, FASB is to issue accounting standards only when the expected benefits justify the cost of preparing, providing, and auditing that information. Our study documents positive associations between reporting goodwill and professional service fees. Moreover, reporting goodwill impairment demands additional services from the professional.

Overall, this study is the first attempt to empirically identify the benefits of reporting goodwill and its impairments under fair value accounting. We use return-earnings regressions to let market participants reflect all relevant information. Based on the cost-benefit analysis integrated throughout the FASB's standard-setting process, our results also support the hypothesis that reporting goodwill and its impairment provide useful information. Our conclusions are robust when considering several firm characteristics, including firm size, growth opportunity, free cash flow, past earnings variability, reporting a loss. However, we rely on dummy variables to identify goodwill and impairments. Further studies may focus on size effects of goodwill with solutions to the measurement issues.

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Appendix A
Variable Definitions

Chg_AT_{jt}	=	differences in total assets (AT) of firm j from the beginning to the end of year t, scaled by total assets of firm j at the beginning of year t.
Dgw_{jt}	=	indicator variable that takes the value of one if goodwill (GDWL) of firm *j* at the end of year *t-1* is non-zero, and zero otherwise.
$Dimp_{jt}$	=	indicator variable that takes the value of one if impairments of goodwill (GDWLIP) of firm *j* at the end of year *t* is negative, and zero otherwise.
$Dloss_{jt}$	=	indicator variable that takes the value of one if earnings before interest and taxes (EBIT) of firm *j* in year *t* is negative, and zero otherwise.
$Dm\&a_{jt}$	=	indicator variable that takes the value of one if year *t* is the first year for firm *j* to report goodwill, and zero otherwise.
$EarnStd_{jt\text{-}1}$	=	the within industry-year fractional ranking (between 0 and 1) of firm *j*'s standard deviation of returns on assets, measured as earnings before interest and taxes (EBIT) divided by beginning-of-year total assets (AT) of firm *j*, over years *t-5* to *t-1*.
FCF_{jt}	=	the within industry-year fractional ranking (between 0 and 1) of firm *j*'s free cash flow, measured as operating income before depreciation (OIBDP) minus income tax (TXT), interest expense (XINT), dividends for preference stock (DVP) and for common stock (DVPSX_F×CSHO), plus deferred income tax (TXDI) at the end of year t, scaled by total assets (AT) of firm *j* at the end of year t-*1*.
$Mtb_{jt\text{-}1}$	=	the within industry-year fractional ranking (between 0 and 1) of firm *j*'s ratio of the market value of total assets (AT + CSHO*PRCC_F - CEQ - TXDB) to book value of total assets (AT) at the end of year *t-1*.
R_{jt}	=	annual stock return of firm *j*, adjusted for stock dividends and splits, for year *t*, measured over the 12-month period ending a quarter after the firm's fiscal year-end.
R_{jt+1}	=	annual stock return of firm *j*, adjusted for stock dividends and splits, for year *t*+1, measured over the 12-month period ending a quarter after the firm's fiscal year-end.
$SALE_{jt\text{-}1}$	=	net sales (SALE) of firm *j* at the end of year *t*-1.
Sgw_{jt}	=	goodwill (GDWL) reported by firm *j* at the end of year *t*, scaled by total assets (AT) of firm *j* at the beginning of year *t*.
$Simp_{jt}$	=	goodwill impairment (GDWLIP) reported by firm *j* in year *t*, scaled by total assets (AT) of firm *j* at the beginning of year *t*.
$Size_{jt\text{-}1}$	=	the within industry-year fractional ranking (between 0 and 1) of firm *j*'s market value of common equity (PRCC_f × CSHO) at the end of year *t-1*.
$X_{jt\text{-}1}$	=	earnings before interest and taxes (EBIT) of firm *j* at the end of year *t*-1, deflated by the market value of common equity (CSHOQ × PRCCQ) at the end of first quarter after the year *t*-1.

X_{jt}	=	earnings before interest and taxes (EBIT) of firm *j* at the end of year *t*, deflated by the market value of common equity (CSHOQ × PRCCQ) at the end of first quarter after the year *t*-1.
X_{jt+1}	=	earnings before interest and taxes (EBIT) of firm *j* at the end of year *t*+1, deflated by the market value of common equity (CSHOQ × PRCCQ) at the end of first quarter after the year *t*-1.
ΔAT_{jt}	=	changes in total assets (AT) of firm *j* from the beginning to the end of year *t*.
$\Delta PPENT_{jt}$	=	changes in net property plant and equipment (PPENT) of firm *j* from the beginning to the end of year *t*.

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