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Claremont McKenna College

Accounting for Goodwill: The Effectiveness of Amortization and Impairments Before and After ASC 350

Submitted to
Professor Rosett

By
Jessica Cruz

For
Senior Thesis
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Abstract

Prior to the implementation of FAS 142 in 2002, goodwill was amortized annually. Now, companies with goodwill on their books must test it annually for impairment. This paper examines the effectiveness of goodwill amortization and impairment of goodwill both before and after the adoption of FAS 142 by analyzing their effect on abnormal stock returns. My results regarding the effect of goodwill amortization on stock returns are inconsistent, suggesting that goodwill amortization is not useful in determining the value of a company. My results also suggest that the stock market anticipates goodwill impairments before they are announced.

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Introduction

Representation of goodwill on the balance sheet helps firms account for the intangible value (i.e. reputation, customer loyalty, brand recognition) in their company not captured by specifically identified intangibles. Intellectual capital that is represented in goodwill can be considered the most important asset of many of the world's largest companies. The United States Generally Accepted Accounting Principles (U.S. GAAP) as set forth by the Financial Accounting Standards Board (FASB) outline standards regarding accounting for goodwill. As stated on the Financial Accounting Foundation's website in the "About GAAP" section, the objective of GAAP is to provide information for firms that is useful for investors, lenders, or others that provide or may potentially provide resources. The information on financial statements that comply with GAAP are meant to be relevant, transparent, and consistent. However, the FASB still makes various changes to GAAP, indicating that it is still a work in progress and there is room for improvement. The FASB adopted a new standard regarding goodwill accounting in June 2001, which was implemented starting in fiscal year 2002. *Statement of Financial Accounting Standards 142- Goodwill and Other Intangible Assets* (FAS 142) changed the accounting for goodwill. The purpose of this paper is to examine the effects of those changes and determine if the implementation of FAS 142 was effective in improving the relevancy, transparency, and consistency in financial accounting for goodwill.

Goodwill write-downs are so important in accounting valuation because they can be extremely large and affect stock market volatility. In 2002, AOL Time Warner Inc.

reported a $98.7 billion loss on goodwill write-down.[1] While the size of this write-down was more than double the amount the market had anticipated, it was obvious that the value of the company was plummeting. The announcement of this impairment immediately caused AOL's stock to decrease from $13.96 per share per $12.55 a share. It is a bit unusual for accounting values to be tied so closely with market valuation, since the events that led to the write-down of goodwill occurred before the announcement date. This paper will examine the effect of goodwill write-downs on stock returns using a large sample of firms.

History of Accounting for Goodwill

In August of 1970, the FASB issued Accounting Practice Board (APB) 17: *Intangible Assets.* The opinion requires companies to record the cost of intangible assets acquired from others, such as goodwill, as assets in business transactions. Additionally, goodwill must be amortized over a period in which the benefit is expected to last, not to exceed forty years (APB 17: Intangible Assets 1970, 3).

The pooling of interests method as described in page 5 of APB Opinion No. 16 allowed two or more companies to combine assets and liabilities without recognizing acquisition, which means goodwill would not need to be recognized. The FASB disallowed the pooling of interests method in Statement No. 141 in 2001, so that only the purchase method could be used to account for business combinations.[2] Under the

[1] Peers, Martin, and Julia Angwin. "AOL Posts a $98.7 Billion Loss On New Goodwill Write-Down." The Wall Street Journal. January 30, 2003.
[2] "Summary of Statement No. 141." Financial Accounting Standards Board. June 2001.

purchase method, the difference between the cost of acquiring a company and the sum of its fair values assets must be recorded as goodwill.

In June 2001, the FASB issued Statement No. 142, which revised the accounting for goodwill as it was outlined in APB No. 17. The FASB determined that goodwill that has an indefinite useful life should not be amortized, but instead tested annually for impairment.[3] The statement also provides specific guidance for goodwill impairment testing in attempt to improve consistency across firms. The FASB argues that these changes will improve financial reporting by better reflecting the "underlying economics of those assets," and subsequently, users of financial statements will have more accurate information on the value of firms.

Current Knowledge

Existing literature suggests that investors seem to partially anticipate goodwill write-off announcements, as most of the negative valuation effects of companies with goodwill write-offs occurs before the announcement date (Hirschey and Richardson 2002, 187). While some studies have shown that goodwill amortization adds no value to the usefulness of financial statements, others conclude that the elimination of goodwill amortization has resulted in inflated goodwill balances.[4] Beatty and Weber concluded that the new standard has given managers some freedom of judgement to make

[3] Financial Accounting Standards Board. June 2001. "Summary of Statement No. 142."
[4] Li, Kevin K., and Richard G. Sloan. "Has Goodwill Accounting Gone Bad?" *SSRN Electronic Journal*, 2011. Jennings, Ross, Marc J. Leclere, and Robert B. Thompson. "Goodwill Amortization and the Usefulness of Earnings." *SSRN Electronic Journal*, 2000.

biased decisions on whether or not to make goodwill impairments.[5] In Bens, Heltzer, and Segal's 2007 study, they also found that FAS 142 makes it easier for managers to manipulate fair value tests of goodwill, so post-FAS 142 write-offs of goodwill are less informative to users of financial statements.

Many of these past studies fail to look at large samples of data after the implementation of FAS 142. In this study, I use data from before and after the adoption of FAS 142 and compare the effects of goodwill impairment announcements on abnormal stock returns. Overall, my results showed that the amortization of goodwill is insignificant and the announcement of goodwill impairments after the adoption FAS 142 resulted in higher stock returns. This may be because investors are now more likely to anticipate impairments of goodwill since it is not regularly amortized. In the next section, I go further in depth on existing literature, then I go on to discuss my data set, next I describe my empirical strategy and how I interpreted my results, and finally I get to the conclusion.

Literature Review

In his 2007 study, Chambers investigated the effect of the implementation of SFAS 142 on the accuracy of financial accounting of goodwill.[6] He compared reported financial numbers from the years following the adoption of SFAS 142 with hypothetical numbers based on alternative goodwill accounting methods (Chambers 2007, 8). The four

[5] Beatty, Anne, and Joseph Weber. "Accounting Discretion in Fair Value Estimates: An Examination of SFAS 142 Goodwill Impairments." *Journal of Accounting Research* 44, no. 2 (May 2006): 284.
[6] Chambers, Dennis J. "Has Goodwill Accounting Under SFAS 142 Improved Financial Reporting?" *SSRN Electronic Journal*, April 2007.

different accounting systems Chambers examined were annual impairment testing with no amortization, systematic amortization with no annual impairment testing, a combination of annual impairment testing and systematic amortization, and neither annual impairment testing nor systematic amortization. The relevance of these systems was measured by the degree to which the financial statement numbers explain stock prices.

He found that annual impairment testing as mandated by SFAS 142 has improved financial reporting, but the elimination of systematic amortization has reduced the quality of financial reporting (Chambers 2007, 2). He concluded that on average, a goodwill accounting system that allows both annual impairment testing and systematic amortization, provides the most relevant accounting numbers. Firms with the most significant improvements using a hybrid system were mostly large firms with lower or negative earnings. His study demonstrates that the best accounting system for goodwill overall is one that allows firms to choose between systematic amortization of goodwill, annual impairment testing, or both (Chambers 2007, 3).

Jennings, LeClere, and Thompson (2001) examined the effect of goodwill amortization on the usefulness of earnings data as an indicator of share value for a large sample of publicly traded companies over the 1993-98 period.[7] They ran cross-sectional regressions on earnings per share before goodwill amortization and on earnings per share earnings after goodwill amortization for each year in the sample period, and compared R^2

[7] Jennings, Ross, Marc J. Leclere, and Robert B. Thompson. "Goodwill Amortization and the Usefulness of Earnings." *SSRN Electronic Journal*, 2000.

values between the two regressions (Jennings, Leclere and Thompson 2000, 22). They concluded that earnings before goodwill amortization explain significantly more of the observed distribution of share prices than earnings after goodwill amortization, and the goodwill amortization component of reported earnings adds no value to information available to investors.

In Hirschey and Richardson's 2002 study, they considered whether or not goodwill write-offs represent important economic events for investors. Using a sample of 80 goodwill write-off announcements by companies in the five-year period from 1992-1996, they tested for robustness by obtaining three alternate estimates of abnormal stock returns surrounding the goodwill announcements.[8] The estimation period used began 300 trading days before the announcement date and ended 45 trading days before the announcement date. The study found that the valuation effects associated with goodwill write-off announcements are negative and material, typically 2-3 percent of the company's stock price (Hirschey and Richardson 2002, 187). In the one-year period prior to announcement dates, negative valuation effects were -40 percent on average. Post-announcement period valuation effects of -11 percent suggests that much of the negative valuation effects associated with goodwill write-off announcements are realized by the end of the announcement period. From this, they concluded that goodwill write-off decision are partially anticipated by the market or firms typically go through various value-reducing events during the pre-announcement period.

[8] Hirschey, Mark, and Vernon J. Richardson. "Information Content of Accounting Goodwill Numbers." *Journal of Accounting and Public Policy* 21, no. 3 (2002): 180.

Hirschey and Richardson (2003) extended their 2002 study by focusing on stock price behavior over long-term windows before and after announcement dates. Again, they used a sample of 80 goodwill write-off announcements made by U.S.-listed companies within the five-year period from 1992-1996 and used the same pre-announcement estimation period as in their previous study. However, this time, they used a regression analysis to find that larger initial negative stock price reactions during the announcement period are associated with larger negative post-announcement period effects. This further supports their theory that investors initially underreact to the economic importance of goodwill write-off announcements.[9]

Li and Sloan (2017) examined the impact of SFAS142 on the accounting for and valuation of goodwill. They predicted goodwill impairments based on various balance sheet items, and compared the timeliness of goodwill impairments both before and after the adoption of SFAS 142.[10] They found that goodwill impairments were less timely after the implementation of SFAS 142 and that the elimination of periodic amortization has resulted in relatively inflated goodwill balances and untimely impairments. Parallel to Hirschey and Richardson's findings, Li and Sloan concluded that investors seem to partially anticipate goodwill impairments, but do not fully anticipate when they will be announced or the magnitude of the loss. Their results suggest that some managers have exploited the discretion allowed by SFAS 142 to delay goodwill impairments, causing earnings and stock prices to be temporarily inflated.

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[9] Hirschey, Mark, and Vernon J. Richardson. "Investor Underreaction to Goodwill Write-Offs." *Financial Analysts Journal* 59, no. 6 (2003): 83.
[10] Li, Kevin K., and Richard G. Sloan. "Has Goodwill Accounting Gone Bad?" *SSRN Electronic Journal*, 2011.

Beatty and Weber (2005) analyzed choice timing and placement of goodwill impairments on the income statement. They used a sample of firms from that they determined were likely to take goodwill write-offs from 2001.[11] They examined the decision of firms to take a goodwill write-off, as well as the percentage of goodwill taken as a write-off. They considered debt covenants, market cap, and managerial compensation as driving variables for SFAS142 write-off incentives (Beatty and Weber 2005, 269-70). They controlled for the firm's economic environment, growth options, propensity to recognize special charges, and risk, since these factors were considered likely to affect the decision to make a goodwill write-off (Beatty and Weber 2005, 271). The results of their tests indicate that firms' equity market considerations affect their decision on above-the-line versus below-the-line accounting treatment for goodwill write-offs, and their debt contracting, bonuses, turnover, and exchange delisting incentives affect their decisions regarding timing of expense recognition. They concluded that managers consider the presentation of expense recognition to be important, and that economic incentives affect "unverifiable fair value estimates" (Beatty and Weber 2005, 284). They suggest that SFAS 142 requires managers to make unverifiable estimates of the values of firm segments, and subjective allocation of joint benefits associated with goodwill to the firm's segments, and that these choices allow managers to make biased decisions on whether or not to make goodwill impairments (Beatty and Weber 2005, 284).

[11] Beatty, Anne, and Joseph Weber. "Accounting Discretion in Fair Value Estimates: An Examination of SFAS 142 Goodwill Impairments." *Journal of Accounting Research* 44, no. 2 (May 2006): 267.

Bens, Heltzer, and Segal (2007) analyzed the information content of goodwill write-offs before, during, and after the adoption of SFAS 142 by regressing goodwill impairments on abnormal stock returns.[12] They also calculated an expected amount of goodwill impairment to analyze whether this has an effect on the market's reaction. They found that before and after the implementation of FAS 142, when firms take an impairment loss that exceed the expected amount, the market reaction is negative, and when the loss is less than the expected amount, there is no market reaction (Bens, Heltzer, and Segal 2007, 20). They found following the adoption of SFAS 142, the market reaction to goodwill impairments is no longer significant, suggesting that the adoption of SFAS 142 has reduced the information content of goodwill write-offs, and fair value tests like that imposed in SFAS 142 are easier for managers to manipulate, resulting in less informative outcomes for investors (Bens, Heltzer, and Segal 2007, 27).

Existing literature fails to examine large samples of data for the years following the implementation of SFAS 142. I will use data from before 2002 and after 2002, and include dummy variables for the implementation of SFAS 142. This way, I add to the literature by examining the overall effect of goodwill impairments on abnormal stock returns as well as the additional effect of the implementation of SFAS 142.

Sample Selection and Descriptive Statistics

Data was drawn from two different sources. Stock price data come from the Center for Research in Securities Prices (CRSP) database, and financial accounting data

[12]Bens, Daniel A., Wendy Heltzer, and Benjamin Segal. "The Information Content of Goodwill Impairments and the Adoption of SFAS 142." *SSRN Electronic Journal*, July 2007.

are from Standard and Poor's COMPUSTAT. Details on the construction and characteristics of the sample are described in this section.

This combined data set is ideal for my purpose because the COMPUSTAT data includes detailed variables on accounting for goodwill (such as goodwill impairments, goodwill amortization, and total goodwill), important balance sheet and income statement values (for example, total assets, total equity, and net income), and the industry of the companies in the sample, while the data from CRSP provides information on the companies' stock returns at various points in time.

Initially, 442,315 observations of data from public companies between the years of 1996 and 2018 were drawn from COMPUSTAT. I chose this time frame so that I could include data from both before and after the adoption of FAS 142. I also wanted to restrict the dataset to when substantial numbers of data points including valid goodwill-related information are available. Before matching this data with financial markets data from CRSP, I eliminated observations from the COMPUSTAT sample that were not useful for the purposes of my study. After sorting the dataset by the global company key and data date, it was apparent that there were various duplicate data points in the sample where there was no recorded net income for one of the observations. I eliminated 37,727 data points from the sample by dropping observations that had a recorded net income of "." and also had the same global company key and data date as the preceding or following observation. 296,359 observations were dropped because they did not have any goodwill reported on their books and I did not want to skew the data by having too few observations in the sample with goodwill. I also dropped the upper and lower 1% of the

return on assets distribution to avoid potential bias from extreme outliers. Next, I combined the data from CRSP with this data set by matching the global company key with the year and month from the data date. Observations that could not be matched this way were dropped, and I was left with 57,772 observations in the sample.

The companies in the sample are a pretty good representative sample of the population since they are distributed among 72 out of the 99 SIC code two-digit industry groups. They are fairly evenly distributed among the fiscal years 1996-2017, with the exception of containing significantly less observations from fiscal year 2018, as shown in Table 1. Additionally, the sample size is large with 57,772 observations in the final data set.

I analyzed the effect of announced goodwill impairments and amortization on stock prices of x months after the announcement date. I controlled for normal variation in stock prices by using cumulative abnormal returns (CAR_x) as my dependent variable, calculated as the cumulative returns that deviate from the industry average, where *x* is the number of months from the start of the fiscal year.

In order to standardize goodwill impairment and amortization amounts across companies of different sizes, I used goodwill impairments after tax to total assets ratio as an independent variable, as calculated below:

$$gwiat_to_ta = \frac{gdwlia}{at}$$

where gdwlia is impairments of goodwill after-tax and at is total assets.

Table 1

Distribution of Data Over Time

Data Year - Fiscal	Freq.	Percent	Cum.
1996	2,284	3.95	3.95
1997	2,459	4.26	8.21
1998	2,460	4.26	12.47
1999	2,400	4.15	16.62
2000	2,291	3.97	20.59
2001	2,312	4.00	24.59
2002	2,787	4.82	29.41
2003	2,864	4.96	34.37
2004	2,950	5.11	39.48
2005	2,967	5.14	44.61
2006	2,984	5.17	49.78
2007	2,910	5.04	54.82
2008	2,629	4.55	59.37
2009	2,562	4.43	63.80
2010	2,556	4.42	68.23
2011	2,522	4.37	72.59
2012	2,541	4.40	76.99
2013	2,584	4.47	81.46
2014	2,729	4.72	86.19
2015	2,685	4.65	90.83
2016	2,648	4.58	95.42
2017	2,540	4.40	99.81
2018	108	0.19	100.00
Total	57,772	100.00	

I also created a variable that considers the timing of the goodwill impairment announcements with respect to the implementation of FAS 142 in 2002, calculated as:

$$gwi_dumm = gwiat_to_ta \times fas142dummy$$

where *fas142dummy* is equal to 1 when the year is 2002 or later (the start of the implementation of FAS142). This will allow me to see the additional effect of goodwill impairment announcements after FAS 142 was put in effect. When creating the variable for goodwill amortization, I first created an input variable for goodwill amortization in years where it was missing using the following formula:

$$gwa2 = \frac{gdwl}{40}$$

where *gdwl* is the amount of goodwill on the company's books. This was done mainly or the purpose of having data for post-FAS 142 comparable to pre-FAS 142. Then I created a variable for goodwill amortization to total assets ratio with the formula below:

$$gwa2_to_ta = \frac{gwa2}{ta}$$

Similar to the FAS142 dummy for goodwill impairment, I created a variable that interacts goodwill amortization with the FAS 142 dummy using the following formula:

$$gwa_dumm = gwa2 \times fas142dummy$$

I also created a variable that measures total write-downs after-tax (excluding goodwill) to total assets ratio to use as a control, calculated as:

$$wda_to_ta = \frac{wda}{at}$$

where *wda* is write-downs after-tax excluding goodwill. I calculated a goodwill to total assets ratio as another variable to standardize the equation, calculated as:

$$gw_to_ta = \frac{gdwl}{at}$$

To control for variation in size of the companies, I created a variable to measure the total assets in the company as:

$$loga = \log(at)$$

Return on assets was also used as a control variable and is calculated as:

$$roa = \frac{ni + xint \ \times (1 - (txt/pi))}{.5 \times (at + at[n-1])}$$

where *ni* is net income, *xint* is interest expense, *txt* is total income taxes, *pi* is pretax income, *at* is total assets, and *n* – 1 is the previous fiscal year.

Table 2 presents the summary statistics of key variables used in my regression analysis. The statistics show that a small fraction of companies in the sample recorded any goodwill impairments (less than 10%), while most of them (over 90%) amortized goodwill. Of the 57,772 observations in the sample, 5,506 of them recorded goodwill impairments, and of those goodwill impairments, 341 of them, or roughly 6%, occurred before 2002 (when FAS142 was implemented). Considering that about 25% of the data came from fiscal years 2001 and earlier, this is a small percentage and indicates that companies were more hesitant to announce goodwill impairments before FAS142

was implanted. Only 748 of the 57,772 companies in the sample did not amortize goodwill. Of the companies that did amortize goodwill, 13,690 out of 57,024 of them occurred before 2002, which is not unusual since roughly 25% of the data came from fiscal years 2001 and earlier.

Both of the FAS 142 interaction variables are biased downward since all the values from before 2002 are zero in each case. Summary statistics of the interaction variables not including the data points from before 2002 are presented in Table 3 and Table 4. Note that in this sample, the number of observations with goodwill impairments raises to 10% and the mean increases from .005 to .006. The number of observations with goodwill amortization raises to over 99% of the sample, and the mean increases from .004 to .005.

I trimmed the data to exclude outliers that would heavily skew the data by dropping data points in the bottom one percentile of goodwill impairments after tax to total assets ratio, the top and bottom one percentile of goodwill to total assets ratio, and the bottom one percentile of write-downs excluding goodwill after tax to assets ratio. The respective dummy variables did not need to be trimmed since the outliers would already be dropped. 12 observations were trimmed as outliers, and in my results sections I present the effect of including versus excluding these observations in my OLS regressions. I also used dummy variables for fiscal year and the 2-digit standard industrial classification (SIC) code to see if fiscal year or industry might have an additional impact on the effect of goodwill impairment reactions. In my results section, I present and discuss the effects

of including and excluding the trimmed data and the dummy variables for fiscal year and 2-digit SIC code.

Table 5 shows pairwise correlation between my independent variables with the statistical significance level. It shows that aside from the obvious correlation between goodwill impairment and amortization and their respective dummy variables, the other independent variables are not too strongly correlated. This is good because strong correlation between independent variables could indicate multicollinearity, which would inflate the standard errors on the affected variables in regression results. Although the correlation is not strong, there is a statistically significant negative correlation between goodwill impairment and goodwill amortization. Goodwill impairment to total assets is positively correlated with return on assets, write-downs to total assets, and log of total assets. It is intuitive that if a company has goodwill impairments, it will also have write-downs of other assets. However, it is interesting to note that the bigger the company and the greater the profit in proportion to total assets, goodwill impairments actually increase.

Table 2

Summary Statistics for Selected Variables

Variable	Mean	SD	P1	P10	P25	P50	P75	P90	P99	N
GW Impairments/Total Assets	-0.006	0.05	-0.154	0	0	0	0	0	0	57,772
GW Impairment x FAS142 Dummy Interaction	-0.005	0.039	-0.138	0	0	0	0	0	0	57,772
Input GW Amort/Total Assets	0.005	0.027	0	1.93E-04	8.28E-04	0.003	0.006	0.01	0.017	57,772
GW Amortization x FAS142 Dummy Interaction	0.004	0.027	0	0	3.18E-07	0.001	0.005	0.009	0.017	57,772
Return on Assets	0.016	0.176	-0.72	-0.122	0.004	0.049	0.088	0.133	0.282	57,772
GW/Total Assets	0.155	0.151	0.001	0.009	0.034	0.106	0.236	0.381	0.615	57,772
Writedowns (excluding GW)/Total Assets	-0.002	0.019	-0.048	-0.001	0	0	0	0	0	57,772
log(total assets)	6.722	2.209	2.169	3.833	5.166	6.663	8.149	9.632	12.25	57,772

GWImpairment/Total Assets is the ratio of goodwill impairments a company took in the given year to their total assets. FAS142 Dummy Interaction is a dummy variable that is equal to 1 if the year is 2002 or later (the adoption year of FAS 142). GWImpairment x FAS142 Dummy Interaction multiplies the GWImpairment/Total Assets variable by the FAS142 Dummy Interaction Variable to account for the addition effect of goodwill impairments after the implementation of FAS 142. Input GW Amort/Total Assets is a variable that measures amortization to total assets ratio of a company. For firms that did not have recorded amortization but had goodwill on their books, I used an input variable that divided total goodwill by 40. GW Amortization x FAS142 Dummy Interactions multiplies the Input GW Amort/Total Assets variable by the FAS142 Dummy Interaction Variable to account for the addition effect of goodwill amortization after the implementation of FAS 142. Returns on Assets ratio measures the net profit with respect to a firm's assets. GW/Total Assets is calculated by dividing the total amount of goodwill on a company's books by their total assets. Write-downs (excluding GW)/Total Assets measures all write-downs a company takes not including goodwill in proportion to their total assets. Log(total assets) is used as a variable to estimate the relative size of each company.

Table 3

Summary Statistics of GW Impairment x FAS142 Dummy Interaction not including years before 2002

Mean	SD	P1	P10	P25	P50	P75	P90	P99	N
-0.006	0.044	-0.182	-0.007	0	0	0	0	0	43,880

Table 4

Summary Statistics of GW Amortization x FAS 142 Dummy Interaction not including years before 2002

Mean	SD	P1	P10	P25	P50	P75	P90	P99	N
0.005	0.031	0	6.58E-05	0.001	0.003	0.006	0.01	0.018	43,880

Table 3 and Table 4 are included to show the summary statistics of the goodwill impairment and goodwill amortization FAS 142 interaction variables without the downward bias of the data points that are zero because they are from before 2002.

Table 5

Correlation matrix between main variables

Statistics include correlation, p-value for significance of correlation and number of observations.

Variable	GW Impairment to Total Assets	GW Impairment Dummy	GW Amortization to Total Assets	GW Amortization Dummy	Return on Assets	GW to Total Assets	Writedowns to Total Assets	log(Total Assets)
GW Impairment to Total Assets	1							
	57772							
GW Impairment Dummy	0.7676	1						
	0							
	57772	57772						
GW Amortization to Total Assets	-0.0888	-0.1158	1					
	0	0						
	57772	57772	57772					
GW Amortization Dummy	-0.0901	-0.1196	0.9964	1				
	0	0	0					
	57772	57772	57772	57772				
Return on Assets	0.2814	0.2778	-0.0701	-0.0641	1			
	0	0	0	0				
	57772	57772	57772	57772	57772			
GW to Total Assets	-0.0466	-0.0505	0.1485	0.1215	-0.0403	1		
	0	0	0	0	0			
	57772	57772	57772	57772	57772	57772		
Writedowns to Total Assets	0.139	0.1678	-0.0624	-0.0643	0.2295	-0.0032	1	
	0	0	0	0	0	0.4359		
	57772	57772	57772	57772	57772	57772	57772	
log(Total Assets)	0.0477	0.0429	-0.0264	-0.012	0.2911	-0.0155	0.0585	1
	0	0	0	0.0041	0	0.0002	0	
	57772	57772	57772	57772	57772	57772	57772	57772

GW Impairment to Total Assets is the ratio of goodwill impairments a company took in the given year to their total assets. FAS142 Dummy Interaction is a dummy variable that is equal to 1 if the year is 2002 or later (the adoption year of FAS 142). GW Impairment Dummy is the GW Impairment to Total Assets variable multiplied by the FAS142 Dummy Interaction Variable. GW Amortization to Total Assets measures goodwill amortization to total assets ratio of a company. For firms that did not have recorded amortization but had goodwill on their books, I used an input variable that divided total goodwill by 40. GW Amortization Dummy multiplies the GW Amortization to Total Assets variable by the FAS142 Dummy Interaction Variable. Returns on Assets ratio measures the net profit with respect to a firm's assets. GW to Total Assets is calculated by dividing the total amount of goodwill on a company's books by their total assets. Writedowns to Total Assets measures write-downs a company takes not including goodwill in proportion to their total assets. Log(Total Assets) is used as a variable to estimate the relative size of each company.

Empirical Strategy and Results

In an attempt to determine the effect of my independent variables on abnormal stock returns, I created the following regression:

$$CAR_X = \beta_0 + \beta_1 gwiat_to_ta + \beta_2 gwi_dumm + \beta_3 gwa2_to_ta + \beta_4 gwa_dumm + \beta_5 roa + \beta_5 gw_to_ta + \beta_6 wda_to_ta + \beta_7 logta,$$

Where CAR_X is cumulative abnormal stock returns from the announcement date of goodwill impairments and x is the respective month, *gwiat_to_ta* is goodwill impairments after tax to total assets ratio, *gwi_dumm* is a dummy variable that reflects whether the impairment announcement was in 2002 or later (when FAS142 was implemented), *gwa2_to_ta* is goodwill amortization after tax to total assets ratio, *gwa_dumm* is a dummy variable that reflects whether the amortization was done in 2002 or later (when FAS142 was implemented), *roa* is the return on assets ratio, *gw_to_ta* is goodwill to total assets ratio, *wda_to_ta* is write-downs (excluding goodwill) after tax to total assets ratio, and *logta* is the log of total assets.

In addition to the variables described above, I used dummy variables to control for industry group and fiscal year. In order to analyze the different effects of including and excluding these dummy variables as well as the data with extreme outliers that I trimmed as described in the previous section, I present OLS regressions with all the different combinations that include and exclude the three of those controls. I included regression results for months 1, 3, 5, and 9 to show the effects of goodwill impairment announcements over time. I found that using the OLS regressions for cumulative

abnormal returns for those months were a good representation of the sample of the preceding and following months. Table 6 shows OLS regression results from month 1, and Tables 7, 8, and 9 show results from months 3, 5, and 9, respectively.

Table 6

Regression results for CAR1 (cumulative abnormal returns for month 1)

Reported statistics are coefficient and robust standard error. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

SIC Dummy	No	Yes	Yes	No	No	Yes	No	Yes
FY Dummy	No	No	Yes	No	Yes	No	Yes	Yes
Trim	No	No	No	Yes	Yes	Yes	No	Yes
gwiat/ta	0.015	0.017	0.03	0.016	0.029	0.018	0.028	0.031
	(0.03)	(0.03)	(0.029)	(0.03)	(0.029)	(0.03)	(0.029)	(0.029)
gwi FAS142 dummy	0.048	0.047	0.04	0.05	0.045	0.05	0.041	0.044
	(0.052)	(0.052)	(0.051)	(0.054)	(0.052)	(0.054)	(0.051)	(0.053)
gwa/ta	3.74***	3.89***	1.32*	3.73***	1.27*	3.88***	1.28	1.31*
	(0.537)	(0.546)	(0.72)	(0.537)	(0.712)	(0.546)	(0.712)	(0.72)
gwa dummy	-3.74***	-3.89***	-1.31*	-3.73***	-1.27*	-3.88***	-1.27	-1.31*
	(0.536)	(0.545)	(0.719)	(0.536)	(0.711)	(0.545)	(0.711)	(0.719)
roa	-0.06***	-0.06***	-0.06***	-0.06***	-0.06***	-0.06***	-0.06***	-0.06***
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
gw/ta	-0.02***	-0.02***	-0.01*	-0.02***	-0.01*	-0.02***	-0.01	-0.01*
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
wda/ta	-0.004	0.003	0.006	-0.012	-0.008	-0.005	0.0001	-0.002
	(0.076)	(0.075)	(0.074)	(0.076)	(0.075)	(0.076)	(0.074)	(0.075)
loga	-0.004***	-0.004***	-0.003***	-0.004***	-0.003***	-0.004***	-0.003***	-0.003***
	(0.0003)	(0.0004)	(0.0004)	(0.0003)	(0.0003)	(0.0004)	(0.0003)	(0.0004)
constant	0.04***	-0.001	-0.02**	0.04***	0.01***	-0.001	0.01***	-0.02**
	(0.003)	(0.01)	(0.011)	(0.003)	(0.005)	(0.01)	(0.005)	(0.011)
R-squared	0.01	0.013	0.034	0.01	0.032	0.013	0.032	0.034
N	56,859	56,859	56,859	56,847	56,847	56,847	56,859	56,847

Gwiat/ta is the ratio of goodwill impairments a company took in the given year to their total assets. FAS142 Dummy Interaction is a dummy variable that is equal to 1 if the year is 2002 or later (the adoption year of FAS 142). Gwi FAS142 dummy is the gwiat/ta variable multiplied by the FAS142 Dummy Interaction Variable. Gwa/ta measures goodwill amortization to total assets ratio of a company. For firms that did not have recorded amortization but had goodwill on their books, I used an input variable that divided total goodwill by 40. Gwa dummy multiplies the gwa/ta variable by the FAS142 Dummy Interaction Variable. Returns on Assets ratio (roa) measures the net profit in proportion to a firm's assets. Gw/ta is calculated by dividing the total amount of goodwill on a company's books by their total assets. Wda/ta measures write-downs a company takes not including goodwill in proportion to their total assets. Log(a) is the log of total assets. In this OLS regression, all of the above independent variables are regressed on CAR1, cumulative abnormal returns for the first month after the announcement date of write-downs.

Table 7

Regression Results for CAR3

Reported statistics are coefficient and robust standard error. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

SIC Dummy	No	Yes	Yes	No	No	Yes	No	Yes
FY Dummy	No	No	Yes	No	Yes	No	Yes	Yes
Trim	No	No	No	Yes	Yes	Yes	No	Yes
gwiat/ta	0.043	0.045	0.076	0.043	0.075	0.044	0.075	0.076
	(0.043)	(0.044)	(0.048)	(0.043)	(0.047)	(0.044)	(0.048)	(0.048)
gwi FAS142 dummy	-0.004	-0.005	-0.034	-0.007	-0.035	-0.008	-0.032	-0.037
	(0.07)	(0.07)	(0.072)	(0.073)	(0.075)	(0.073)	(0.072)	(0.075)
gwa/ta	0.21	0.416	-1.358	0.222	-1.323	0.431	-1.324	-1.355
	(0.721)	(0.728)	(0.97)	(0.721)	(0.963)	(0.729)	(0.963)	(0.97)
gwa dummy	-0.162	-0.369	1.413	-0.165	1.386	-0.375	1.379	1.418
	(0.719)	(0.727)	(0.969)	(0.719)	(0.961)	(0.727)	(0.961)	(0.969)
roa	0.05***	0.04***	0.05***	0.05***	0.05***	0.04	0.05***	0.05***
	(0.013)	(0.013)	(0.014)	(0.013)	(0.013)	(0.014)	(0.013)	(0.014)
gw/ta	-0.02**	-0.02**	-0.01	-0.02**	-0.01	-0.02	-0.01	-0.01
	(0.008)	(0.009)	(0.009)	(0.008)	(0.008)	(0.009)	(0.008)	(0.009)
wda/ta	0.04	0.045	0.08	0.041	0.077	0.046	0.076	0.082
	(0.104)	(0.105)	(0.103)	(0.105)	(0.103)	(0.105)	(0.103)	(0.104)
loga	-0.005***	-0.005***	-0.005***	-0.005***	-0.005***	-0.005	-0.005***	-0.005***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
constant	0.05***	-0.02	-0.05***	0.05***	0.01**	-0.02	0.01**	-0.05***
	(0.005)	(0.018)	(0.018)	(0.005)	(0.007)	(0.018)	(0.007)	(0.018)
R-squared	0.002	0.005	0.023	0.002	0.021	0.005	0.021	0.023
N	56,495	56,495	56,495	56,484	56,484	56,484	56,495	56,484

Gwiat/ta is the ratio of goodwill impairments a company took in the given year to their total assets. FAS142 Dummy Interaction is a dummy variable that is equal to 1 if the year is 2002 or later (the adoption year of FAS 142). Gwi FAS142 dummy is the gwiat/ta variable multiplied by the FAS142 Dummy Interaction Variable. Gwa/ta measures goodwill amortization to total assets ratio of a company. For firms that did not have recorded amortization but had goodwill on their books, I used an input variable that divided total goodwill by 40. Gwa dummy multiplies the gwa/ta variable by the FAS142 Dummy Interaction Variable. Returns on Assets ratio (roa) measures the net profit in proportion to a firm's assets. Gw/ta is calculated by dividing the total amount of goodwill on a company's books by their total assets. Wda/ta measures write-downs a company takes not including goodwill in proportion to their total assets. Log(a) is the log of total assets. In this OLS regression, all of the above independent variables are regressed on CAR3, cumulative abnormal returns for the third month after the announcement date of write-downs.

Table 8

Regression results for CAR5

Reported statistics are coefficient and robust standard error. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

SIC Dummy	No	Yes	Yes	No	No	Yes	No	Yes
FY Dummy	No	No	Yes	No	Yes	No	Yes	Yes
Trim	No	No	No	Yes	Yes	Yes	No	Yes
gwiat/ta	0.11*	0.11*	0.17**	0.11*	0.16**	0.11*	0.16**	0.17**
	(0.062)	(0.062)	(0.069)	(0.062)	(0.069)	(0.062)	(0.069)	(0.069)
gwi FAS142 dummy	-0.32***	-0.32***	-0.31***	-0.30***	-0.29***	-0.30***	-0.31***	-0.29***
	(0.104)	(0.105)	(0.108)	(0.101)	(0.105)	(0.102)	(0.108)	(0.105)
gwa/ta	1.92**	2.13**	-1.98*	1.93**	-1.92	2.14**	-1.92	-1.98*
	(0.882)	(0.885)	(1.189)	(0.88)	(1.183)	(0.884)	(1.183)	(1.189)
gwa dummy	-1.57*	-1.77**	2.29*	-1.56*	2.25*	-1.77**	2.23*	2.31*
	(0.877)	(0.881)	(1.186)	(0.876)	(1.18)	(0.88)	(1.181)	(1.186)
roa	0.08***	0.07***	0.09***	0.08***	0.09***	0.08***	0.09***	0.08***
	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)
gw/ta	-0.06***	-0.06***	-0.04***	-0.06***	-0.04***	-0.06***	-0.04***	-0.043***
	(0.011)	(0.012)	(0.012)	(0.011)	(0.011)	(0.012)	(0.011)	(0.012)
wda/ta	-0.30*	-0.30*	-0.18	-0.30*	-0.18	-0.30*	-0.18	-0.18
	(0.163)	(0.163)	(0.155)	(0.163)	(0.155)	(0.163)	(0.155)	(0.155)
loga	-0.004***	-0.004***	-0.004***	-0.004***	-0.004***	-0.004***	-0.004***	-0.004***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
constant	0.06***	-0.02	-0.09***	0.06***	-0.01	-0.02	-0.01	-0.09***
	(0.007)	(0.032)	(0.031)	(0.007)	(0.009)	(0.032)	(0.009)	(0.031)
R-squared	0.003	0.005	0.029	0.003	0.027	0.005	0.027	0.029
N	55,691	55,691	55,691	55,681	55,681	55,681	55,691	55,681

Gwiat/ta is the ratio of goodwill impairments a company took in the given year to their total assets. FAS142 Dummy Interaction is a dummy variable that is equal to 1 if the year is 2002 or later (the adoption year of FAS 142). Gwi FAS142 dummy is the gwiat/ta variable multiplied by the FAS142 Dummy Interaction Variable. Gwa/ta measures goodwill amortization to total assets ratio of a company. For firms that did not have recorded amortization but had goodwill on their books, I used an input variable that divided total goodwill by 40. Gwa dummy multiplies the gwa/ta variable by the FAS142 Dummy Interaction Variable. Returns on Assets ratio (roa) measures the net profit in proportion to a firm's assets. Gw/ta is calculated by dividing the total amount of goodwill on a company's books by their total assets. Wda/ta measures write-downs a company takes not including goodwill in proportion to their total assets. Log(a) is the log of total assets. In this OLS regression, all of the above independent variables are regressed on CAR5, cumulative abnormal returns for the fifth month after the announcement date of write-downs.

Table 9

Regression results for CAR9

Reported statistics are coefficient, t-statistic, and robust standard error. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

SIC Dummy	No	Yes	Yes	No	No	Yes	No	Yes
FY Dummy	No	No	Yes	No	Yes	No	Yes	Yes
Trim	No	No	No	Yes	Yes	Yes	No	Yes
gwiat/ta	0.082	0.082	0.146	0.082	0.147	0.082	0.146	0.146
	(0.084)	(0.084)	(0.092)	(0.084)	(0.092)	(0.084)	(0.092)	(0.092)
gwi FAS142 dummy	-0.658***	-0.662***	-0.580***	-0.654***	-0.559***	-0.659***	-0.574***	-0.565***
	(0.151)	(0.151)	(0.149)	(0.154)	(0.152)	(0.154)	(0.149)	(0.152)
gwa/ta	-2.434*	-1.888	-3.361**	-2.418*	-3.548**	-1.87	-3.522**	-3.382**
	(1.245)	(1.248)	(1.712)	(1.246)	(1.706)	(1.249)	(1.704)	(1.713)
gwa dummy	3.099**	2.557**	3.914**	3.105**	4.101**	2.562**	4.073**	3.938**
	(1.241)	(1.243)	(1.708)	(1.24)	(1.701)	(1.243)	(1.701)	(1.708)
roa	0.107***	0.105***	0.129***	0.107***	0.129***	0.105***	0.130***	0.128***
	(0.025)	(0.026)	(0.025)	(0.025)	(0.025)	(0.026)	(0.025)	(0.026)
gw/ta	-0.082***	-0.099***	-0.093***	-0.082***	-0.079***	-0.099***	-0.079***	-0.092***
	(0.015)	(0.017)	(0.017)	(0.015)	(0.015)	(0.017)	(0.015)	(0.017)
wda/ta	-0.801***	-0.801***	-0.587**	-0.793***	-0.580**	-0.792***	-0.584**	-0.582**
	(0.289)	(0.289)	(0.267)	(0.29)	(0.267)	(0.29)	(0.267)	(0.267)
loga	-0.006***	-0.006***	-0.006***	-0.006***	-0.006***	-0.005***	-0.006***	-0.006***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
constant	0.078***	0.028	-0.022	0.078***	0.027**	0.028	0.027**	-0.022
	(0.009)	(0.045)	(0.043)	(0.009)	(0.012)	(0.045)	(0.012)	(0.043)
R-squared	0.005	0.008	0.043	0.005	0.04	0.007	0.041	0.043
N	52,238	52,238	52,238	52,230	52,230	52,230	52,238	52,230

Gwiat/ta is the ratio of goodwill impairments a company took in the given year to their total assets. FAS142 Dummy Interaction is a dummy variable that is equal to 1 if the year is 2002 or later (the adoption year of FAS 142). Gwi FAS142 dummy is the gwiat/ta variable multiplied by the FAS142 Dummy Interaction Variable. Gwa/ta measures goodwill amortization to total assets ratio of a company. For firms that did not have recorded amortization but had goodwill on their books, I used an input variable that divided total goodwill by 40. Gwa dummy multiplies the gwa/ta variable by the FAS142 Dummy Interaction Variable. Returns on Assets ratio (roa) measures the net profit in proportion to a firm's assets. Gw/ta is calculated by dividing the total amount of goodwill on a company's books by their total assets. Wda/ta measures write-downs a company takes not including goodwill in proportion to their total assets. Log(a) is the log of total assets. In this OLS regression, all of the above independent variables are regressed on CAR9, cumulative abnormal returns for the ninth month after the announcement date of write-downs.

The explanatory power of all of the OLS regressions are fairly weak, with none of the r-squared values exceeding 5%. This indicates that less than 5% of the variation in cumulative abnormal returns can be explained by the independent variables. It is not surprising that the model does not explain much of the variation in abnormal stock returns since we mainly analyzed the goodwill and total assets in a company.

The results from all four months suggest that the main effects of goodwill impairments are correlated with negative abnormal returns, noting that the impairments are negative values, consistent with previous findings in literature. However, this result is only significant in the fifth month after impairment announcements so we cannot confidently rely on this suggestion. The interaction effects with the FAS142 dummy show the difference in the effects of impairments from before to after FAS 142 was adopted. During the first month, the goodwill impairment FAS142 dummy interaction corresponds to the goodwill impairments to total assets ratio, but is not significant. At month 3, it is still not significant but starts to reverse at a very small rate so that abnormal returns are not as heavily affected downward by goodwill impairments. Beginning in the fifth month, the goodwill impairment FAS142 dummy interaction variable coefficient becomes negative in a proportion than the goodwill impairments to total assets ratio coefficient, suggesting a positive correlation between goodwill impairments and cumulative abnormal returns when the impairment was taken in 2002 or later, significant at the 1% level. This more positive reaction by the market to goodwill impairments after the implementation of FAS142 indicates that the market expects and accepts more goodwill impairments now than they did in the past. The common expectation of goodwill impairments may also imply that investors value amortization of goodwill.

When goodwill stopped being amortized after the adoption of FAS 142, investors seemed to expect it to be written down anyways.

The trend of stock prices initially only slightly decreasing at an insignificant level after goodwill impairment announcements may indicate that the market already expected the impairment, and perhaps even drove it. A few months after the impairment (after the implementation of FAS142) is taken, the stocks tend to go back up at a higher rate than they went down. This may indicate that once a company recognizes a loss that was already expected and takes an impairment, the market goes back up because they initially overestimated the negative effect of the impairment. Perhaps if there was a way to force companies to take an annual write-down of goodwill, varying in size based on the current value of the company, the goodwill impairment announcements would not cause volatility in the stock market.

Coefficients of goodwill amortization variables and their respective dummy variable interactions showed very inconsistent results across the different OLS regressions. It seems that in month one, goodwill amortization has no effect on abnormal stock returns after FAS142 was implemented. In the third month, goodwill amortization in years 2002 and later has a slight negative impact on stock returns, but the results are not significant. In years before 2002, the effects vary depending on which dummy variables were included and whether or not the data was trimmed. Months 5 and 9 show similar trends in regards to effects of goodwill amortization and the implementation of FAS142, but the results are mostly significant at the 10% or 5% level. These scattered results suggest that goodwill amortization may not be useful in determining the value of a

company. I should note that the amortization figures after FAS 142 were imputed to allow a common regression specification across years, and are likely subject to significant measurement error, which would tend to attenuate the results for this variable.

The coefficient of the goodwill to total assets ratio is negative in all of the OLS regressions, and is statistically significant in most of them. This suggests that companies with a greater proportion of goodwill on their books tend to decrease in market value, perhaps due to the market predicting future impairments of goodwill. This is also consistent with the idea suggested in past literature that the stock market does not agree with failing to amortize goodwill in the post-FAS 142 time period. While the FASB argued that amortizing goodwill added no informative value to users of financial statements, the market seems to anticipate that goodwill will eventually decline.

The presence of a fiscal year dummy significantly raises r-squared values of the OLS regressions. The inclusion of outlier from the trimmed data does not seem to have much of an effect on the r-squared values, coefficients, or significance of results. This is likely due to the fact that the data set contained very few outliers (12) and they come out of a very large sample size. The inclusion of dummy variables for the 2-digit SIC industry codes does not seem to have that large of an effect on the OLS regression results, suggesting that the industry group of companies does not significantly impact the effect of goodwill impairments on stock price.

Conclusion

The purpose of this paper was to analyze whether or not the implementation of FAS 142 achieved its goal in improving the usefulness of information pertaining to

goodwill for investors by eliminating goodwill amortization and instead requiring annual impairment testing. Existing literature shows that investors already anticipate most of the deterioration in value of a company that will take a goodwill impairment before it is announced. Additionally, previous studies suggest that regulations that outlined in FAS 142 make it easier for managers to manipulate earnings by using their biased judgement when deciding when to take impairments of goodwill.

My study extends existing literature by examining a large sample of firms with goodwill on their books in years before *and* after the adoption of FAS 142. I analyzed the effect of goodwill impairments and amortization, as well as corresponding variables that consider the timing of those impairments and amortization with respect to the implementation of FAS 142, on cumulative abnormal returns of the companies' stock for the months after those announcements. My results pertaining to goodwill amortization show inconsistent results on its effect on stock returns, suggesting that goodwill amortization is not useful in determining the value of a company. This result is consistent with existing literature, and supports the FASB's claim that eliminating mandatory goodwill amortization will improve the usefulness of financial statements. However, the stock market's anticipation of goodwill impairments suggest that if a company has goodwill on their books, the market expects it will eventually be written down. Under this argument, perhaps a more efficient system would force companies will goodwill on their books to make a yearly write-down, varying in size depending on the current value of the company.

My results also suggest that the main effect of goodwill impairments (irrespective of whether before or after FAS 142) resulted in negative stock returns, the marginal impact of the interaction of the post-FAS 142 dummy with the goodwill impairment turns the stock return positive by the fifth month after the impairment. This result likely indicates that the elimination of goodwill amortization after FAS 142 has caused investors to better anticipate goodwill impairment announcements. However, if investors have already anticipated impairments of goodwill before they are announced, it does not seem like these impairments actually add value to the usefulness of financial statements. On the other hand, the result for the fifth month could indicate that investors take the impairment as a positive signal for future performance. That is, when managers decide to take a goodwill impairment, they are no longer attempting to hide a decrease in value of the company, but instead are taking steps to address current issues and move forward to improve the future performance of the company.

In a perfect world, managers would not take advantage of a system that leaves room for judgement when determining the timing of goodwill impairments. However, past results and the results presented in this study indicate that the market already anticipates these write-offs, and management is likely choosing to delay goodwill impairments. Perhaps a new system that combines a systematic amortization of goodwill and annual impairment testing that can somehow be more subjective would improve the usefulness of financial reporting of goodwill. Unfortunately, the intangible properties of goodwill makes the creation of such a system seem nearly impossible.

The results of this study are limited in that many of the coefficients of my independent variables were not statistically significant. Additionally, the data I used had a relatively small number of goodwill impairments that occurred before FAS 142 was implemented, which could cause bias in the results. The r-squared values in all of my OLS models were very small, all under 5%, indicating that a very small fraction of variation in abnormal stock returns was attributed to my variables. There are many other variables that drive stock returns that were not accounted for in this study, and it is hard to know if those variables might be correlated with goodwill impairment and amortization, which would cause bias.

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