Do Economic Performance Indicators Support Firms' Claiming a Goodwill Impairment Loss During a Prosperous Year?

Joseph Faello
Mississippi State University

Ajeet Jain
Central Connecticut State University

Seungjae Shin
Mississippi State University

Results from the academic literature stream support both the informative and uninformative aspects of goodwill accounting. However, gaps exist in the literature stream pertaining to the timing and managerial motivation for claiming goodwill impairment losses. Our study fills a gap in the literature by examining firms' goodwill impairment loss write-offs during the year of 2006, a period of economic prosperity. We examine the association of firms' goodwill impairment losses with both economic performance and accounting indicator variables. Our findings do not support the informative role of goodwill accounting. Further, goodwill impairment losses provide a marginal increase in the explanatory power of operating earnings as a predictor of the following period's operating cash flows.

Keywords: goodwill, impairment, earnings management

INTRODUCTION

A tension exists in the accounting literature with respect to the managerial intent for recording goodwill impairment losses. On the one hand, managers record goodwill impairment losses to align the accounting book value of goodwill with its economic value. Academic research supports this informative position (Li et al., 2011; Godfrey and Koh, 2009; Jarva, 2009). On the other hand, managers use the opportunity to record a goodwill impairment loss to further managers' self-interests, for example to manage loan covenant thresholds (Beatty and Weber, 2006; Ramanna and Watts, 2012).

The study begins by examining goodwill impairment losses during the year of 2006. The U.S. Department of Commerce observed that U.S. gross domestic product (GDP) grew by 5.82% between 2005 and 2006, indicating positive conditions in the general economy (US DOC, 2015). Firms that perform well in the context of this economy have little incentive to write-down goodwill on purely economic grounds. Impairment loss statistics support the conclusion of a buoyant economy during 2006 as only 7.9% of firms with goodwill on their balance sheets recorded goodwill impairment losses, the lowest percentage from 2006 to 2011 (see Table 2). By relating firms' goodwill impairment losses to their

economic performance, managerial motivation for recording the goodwill impairment losses becomes clearer. Establishing the link between firms' relative performance and the recording of goodwill impairment losses during a period of economic prosperity is the primary focus of this study.

The examination of managements' motivations to claim goodwill impairment losses consists of Compustat firms with goodwill on the balance sheet from the year 2006. The year 2006 is chosen as the study period because this year of economic prosperity suggests firms are less likely to require a goodwill write-off for purely economic reasons and thus strengthens the study's findings.

The study uses a logit regression model that controls for the effect of firms' economic performance and focuses on those firms that claim goodwill impairment losses for consecutive years (i.e., 2005 and 2006). On the one hand, given a firm's strong relative performance with the economy in 2006 and the claim of a goodwill impairment loss in 2005, the conjecture is that the firm has little economic basis to claim an impairment loss in 2006. Thus, managerial motivation for claiming the 2006 goodwill impairment loss is not to align the goodwill's book value with its economic value but, is evidence of an earnings management strategy (e.g. income smoothing objective).

On the other hand, a firm that does not claim a goodwill impairment loss in 2005 but claims one in 2006, could be implementing a "big bath" strategy, given the time period's strong economic indicators (i.e., 5.82% growth in GDP). In either case, if a company's management is recording a goodwill impairment loss that is not related to its economic performance, then earnings management must be considered as the primary reason for recording the goodwill impairment loss.

The primary research model, a logit regression model, has an indicator variable of claiming a goodwill impairment loss in 2006 (=1) and not claiming a goodwill impairment loss (=0) as the dependent variable. The explanatory variables consist of: an indicator variable of whether or not a firm claimed a goodwill impairment loss in 2005 (i.e., accounting indicator variable); change in the firm's operating cash flows (i.e., economic performance indicator variable); ratio of the firm's market to book values of equity (i.e., economic performance indicator variable); interaction variable of the firm's total accruals and capacity to claim a goodwill impairment loss (i.e., accounting indicator variable); and size (i.e., control variable).

We argue that the managerial intent behind the firm's claiming of a goodwill impairment loss is identifiable with this research model. First, a negative change in operating cash flows between 2005 and 2006 supports a decline in economic performance. Next, if the dependent variable is associated with narrowing the gap between the market and book value of equities, then management's intent suggests informative news because the economic factors affecting the firm results in a decline in its market value, requiring management to write-down the firm's goodwill.

Second, if the dependent variable is not associated with economic performance but is associated with the firm's claim of a goodwill impairment loss in 2005 and the firm's other total accruals, then managerial intent suggests an earnings management strategy. If the dependent variable is associated with claiming the goodwill impairment loss in 2005, then this result suggests an income smoothing approach. That is, management is smoothing earnings down over consecutive years. If the dependent variable is associated with the interaction variable of a firm's total accruals and capacity to claim a goodwill impairment loss, then this result provides evidence of a broader earnings management strategy of using goodwill impairments in conjunction with other total accruals to manage earnings.

Next, the 2006 goodwill impairment loss is tested for its informative value. The test, using an additive approach, initially consists of regressing firms' 2007 operating cash flows on its 2006 operating earnings excluding the effect of the goodwill impairment loss. Then, the 2006 goodwill impairment loss is included in the model. If the goodwill impairment loss has explanatory value, then the model's Adjusted R^2 should increase when the goodwill impairment loss is included in operating earnings.

The results of the logit analysis indicate that there is an association for firms claiming goodwill impairment losses in consecutive years (i.e., 2005 and 2006). That is, firms that claim a goodwill impairment loss in 2005 are likely to claim one in 2006. There is also an association between the market value to book value of equity ratio and the likelihood of claiming a goodwill impairment loss in 2006. Specifically, when the market value to book value ratio is less than one, then firms are likely to claim a

goodwill impairment loss. However, the interaction variable of other total accruals and capacity to claim a goodwill impairment loss is not significant, providing evidence that firms generally do not possess a broad scheme of earnings management employing goodwill impairment losses and total accruals together during the 2006 study period.

These results do not overwhelmingly support the informative role of goodwill impairment accounting. Although the findings show a significant association between the dependent variable and a market-to-book value of equity value of less than one, the findings also show no significant association between the dependent variable and change in operating cash flows. Declining firm performance as shown by declining year-to-year operating cash flows provides support for claiming a goodwill impairment loss in 2006.

Finally, the link between 2007 operating cash flows and 2006 operating earnings provides insights into the contribution of the 2006 goodwill impairment loss to the operating earnings' explanatory power. The results indicate that the 2006 goodwill impairment loss provides marginal informative value as a component of operating earnings in explaining operating cash flows. The marginal increase in explanatory power due to reporting a goodwill impairment loss suggests those firms with earnings management motives represent "noise" to the overall number of firms fairly representing goodwill on the balance sheet and recording impairment losses on the income statement.

Overall, the results do not overwhelmingly support the informative role of claiming goodwill impairment losses during a period of economic prosperity. Our study extends prior research related to firms' contracting incentives in making accounting choices (Beatty and Weber, 2006; Ramanna and Watts, 2012).

The remainder of this paper is organized as follows:
1. Background information;
2. Related studies;
3. Hypotheses development;
4. Sample selection and research design;
5. Results; and
6. Conclusion.

BACKGROUND INFORMATION

Research into the accounting for goodwill impairments is extensive since the introduction of Statement of Financial Accounting Standards No. 142 (SFAS 142) in December 2001. SFAS 142 (now ASC section 350-20) replaced the annual amortization of goodwill with goodwill impairment testing because goodwill is considered an indefinite life asset. Generally, the research either supports the informative or uninformative aspects of the accounting standard.

From the informative standpoint, studies focus on the links between either stock returns or cash flows with goodwill impairment losses. A greater association between accounting values (e.g. goodwill impairment loss) and either stock returns or cash flows suggests goodwill accounting enhances the faithful representation and relevance of the financial information. Faithful representation and relevance are important fundamental qualities of the characteristics of decision-useful information prescribed by the Financial Accounting Standards Board (FASB), (see FASB's Statement of Financial Accounting Concept No. 8).

From the uninformative standpoint the discretion afforded management by SFAS 142 in determining a goodwill impairment loss provides managers with an opportunity to manipulate earnings for managers' self-interest at the shareholders' expense. Watts and Zimmerman (1986) thoroughly discuss these principal (shareholder)–agent (manager) issues in their seminal work titled, "Positive Accounting Theory." Managers have an incentive to shirk their responsibilities to the firm because the owners (shareholders) are not present to oversee the managers' actions. The shareholders enter into contracts (e.g., compensation and employment agreements) with the managers to control managerial discretion that is not congruent with the firm's policies and objectives. In addition, shareholders are willing to incur

additional costs to monitor managerial activities to provide assurance that the managers are adhering to the contractual terms of the agreements and acting in the firm's best interests. The costs of preparing the external auditor's report on the effectiveness of the firm's internal controls and the financial statement audit report are examples of these monitoring costs. Even with these monitoring costs in place, firms' managers still try to manipulate earnings for their own benefit as evidenced by the number of financial statement frauds (e.g., WorldCom Inc.).

The primary tool used to manage earnings is through manipulating accruals. Generally, period ending accrual adjustments are required to match expenses with the revenues earned during the period. Managerial discretion is required to make these adjustments and agency related considerations provide an incentive for a manager to not act in the firm's best interests. As a result, the manager's adjustment would not present fairly the firm's operating results. Nelson et al. (2003) survey external auditors regarding the earnings management techniques that they have come across while conducting their financial statement audits. Accrual-based accounting adjustments are frequently cited by auditors as the techniques used to manage earnings (e.g., "recognizing too much or too little reserve in current year" and "recognizing too much or too little asset impairment," Nelson et al. 2003, p. 23). A goodwill impairment loss falls in the category of a frequently used accrual-based earnings management technique.

A significant amount of information is required to calculate a goodwill impairment loss. In the gathering of this information and in its use to determine the goodwill impairment loss, managers must exercise their discretion. For example, managers must determine how much goodwill to assign to each "reporting unit" at the time of the business combination. A reporting unit is an operating segment with discrete financial information that is subject to managerial review (SFAS 142). Essentially, reporting units are defined by how managers view their business operations and their definition is highly subjective. Managers can structure their reporting units and assign goodwill to the reporting units in such a way, either to increase or decrease the likelihood of recording a goodwill impairment loss. On the one hand, firms that manage earnings through an income smoothing approach initially can assign the goodwill to reporting units that are likely to report an impairment loss (e.g., assign goodwill to a historically underperforming segment). On the other hand, a firm that prefers deferring goodwill impairments can assign the goodwill to those reporting units that generally outperform the firm's remaining reporting units.

In addition to the discretion afforded managers in assigning goodwill, managers must compile the figures in determining the goodwill impairment loss. These figures generally consist of cash flow information of the firm's individual reporting units and the whole firm. Cash flow information is required to determine fair values because generally no readily available and verifiable market values exist for a firm's reporting units. The cash flow information and interest rates used to discount the cash flows are compiled by a firm's managers and subject to their discretion. Overall, SFAS 142 affords managers a great opportunity to manage earnings for their own self-interests because of the subjectivity and lack of verifiability inherent in the process of determining a goodwill impairment loss.

RELATED STUDIES

Accounting studies regarding the accounting for goodwill impairments address the informative and uninformative aspects of SFAS 142.

From the informative standpoint, these studies focus on the ability of firms to use goodwill accounting to enhance the relevance and representational faithfulness of financial statement reporting. Jarva (2009, p. 1083) finds a firm's recording of a goodwill impairment loss is associated with future expected cash flows and concludes, "the evidence is consistent with the notion that goodwill write-offs are, on average, more closely related to economic factors than opportunistic behavior." Li et al. (2011) examine the relation between market returns and the announcement for a goodwill impairment loss. The authors find investors and financial analysts revise their expectations downward for a firm reporting a goodwill impairment loss. Further, a goodwill impairment loss represents a leading indicator of a decline in the firm's future profitability. Godfrey and Koh (2009) utilize six variables (i.e., investment intensity;

growth in market value of assets; market-to-book value of assets; ratio of research and development expenditures to total assets; market-to-book value of equity; and earnings to price ratio) to identify a firm's underlying investment opportunities. The authors hypothesize that well-performing firms will have positive underlying investment opportunities and that these firms will possess a lower likelihood of claiming a goodwill impairment loss. The results support their hypotheses as a firm's goodwill impairment loss is negatively associated with its investment opportunity set. Overall, these studies suggest a firm's managers record a goodwill impairment loss to fairly represent a firm's financial position and convey private information about the firm's future financial prospects.

Studies that highlight the uninformative aspects of goodwill accounting suggest managers act opportunistically, resulting in less reliable financial reporting in the post-SFAS 142 reporting periods. Beatty and Weber (2006) examine firms' initial adoption of SFAS 142 when firms had a choice of reporting goodwill impairment losses above or below the line item of operating earnings or both. The accounting choices available under SFAS 142 was supposed to provide managers with the ability to customize their goodwill impairment loss reporting to reflect the firm's underlying economic circumstances. Below the line reporting means the goodwill impairment loss is not included in operating earnings and suggests the loss is a result of the change in accounting principle. Above the line reporting means the goodwill impairment loss is included in operating earnings and impacts managers' compensation tied to operating earnings. The authors hypothesize that strong contracting incentives exist for managers to shift a goodwill impairment loss to below the line treatment. Also, a firm's managers have motives to time the recognition of a goodwill impairment loss in the current or future periods based on an opportunistic strategy influenced by contracting incentives (e.g., big bath strategy of not taking a bonus one year by increasing the current period's goodwill impairment loss in return for making it easier to achieve bonus targets in future periods). Results support the hypotheses and the authors conclude, "our results suggest that both contracting and market incentives affect firms' accounting choices relating to the trade-off between the timing and the presentation of expense recognition on the income statement," (Beatty and Weber 2006, p. 284).

Several studies that consider managers' opportunistic behavior involving goodwill impairments focus on the considerable amount of goodwill recorded on the initial acquisition date. Specifically, acquiring firms that record a significant percentage of the total acquisition price as goodwill, set themselves up for future goodwill impairments. Managers know that they have overpaid for the acquired firm, thus they will opportunistically manage goodwill impairment write-offs subsequent to the acquisition date by timing the write-offs in future periods. Thus, the write-offs are not necessarily a result of declining economic circumstances in as much as managers acting opportunistically to maximize future bonuses. Studies that examine this form of managerial discretion in the timing of goodwill impairment losses include Ramanna and Watts (2012) and Hayn and Hughes (2006).

Ramanna and Watts (2012) study firms that should have recorded a goodwill impairment loss by examining firms with goodwill on the balance sheet and book-to-market ratios greater than one for two periods, but have not recorded a goodwill impairment loss (i.e., "non-impairers"). The authors suggest a non-impairer's managers will not record a goodwill impairment loss if they want to convey the firm's future prospects will improve. Further, these firms will repurchase their own shares because the share price would likely rise in the future. Results indicate there is no statistical difference in net share repurchases by impairers and non-impairers. Thus, the authors conclude managers are not communicating private information about the firm's prospects when an impairment is not recorded, but the timing of the impairment is driven by agency-based motives.

Also, Ramanna and Watts (2012) test the relation between agency-based factors (e.g. existence of debt covenants; CEO's compensation contracts with goodwill inclusive in determining compensation; CEO tenure; etc.) and non-impairers. The authors find CEO's with goodwill inclusive contracts will likely be employed by a non-impairer, debt covenant restrictions are associated with non-impairers, and non-impairment increases with CEO tenure. Overall, the findings suggest the discretion afforded managers in SFAS 142 results in delayed recognition of goodwill impairment losses.

Hayn and Hughes (2006) use operating segment data disclosed by firms in their annual reports (e.g., segments' return on assets; whether or not the segment reported an operating loss; etc.) and characteristics pertaining to the initial acquisition (e.g., payment of a premium for the acquired firm; existence of multiple bidders; etc.) as a means for predicting goodwill impairment. The authors find the segmented data disclosed in a firm's annual financial statements do not provide financial statement users with sufficient information to predict a goodwill impairment loss. Characteristics related to the initial acquisition are a better predictor of future goodwill impairment losses. Further, a firm's recognition of a goodwill impairment loss lags the economic decline in goodwill by three to four years. These results suggest SFAS 142 does not improve the quality of financial reporting.

Bens et al. (2011) examine the relation between short window abnormal stock returns and goodwill impairment announcements during the pre-SFAS 142 and post-SFAS 142 periods. Specifically, the authors focus on information asymmetry and the information content of goodwill impairment losses. High (low) analyst following firms proxy for low (high) information asymmetry. Their findings show abnormal returns are negative during the pre-SFAS 142 and post-SFAS 142 eras. However, results show the information content of a goodwill impairment loss declines in the post-SFAS 142 period for firms with high information asymmetry. This change in the information content of goodwill impairment losses subsequent to the implementation of SFAS 142 provides evidence that this accounting standard has not improved financial statement users' decision-usefulness.

Taken together, the body of research in goodwill accounting supports the informative and uninformative roles of SFAS 142. The lack of clarity with respect to managerial intent and the timing of goodwill impairment losses is evident from the tension in the literature stream.

HYPOTHESES DEVELOPMENT

The purpose of this study is to establish the link between firms' relative performance and the recording of goodwill impairment losses during a period of economic prosperity. By relating a firm's claim of a goodwill impairment loss to their economic performance during this period, managerial motivation for recording a goodwill impairment loss becomes clearer. Clarifying managerial intention for claiming a goodwill impairment loss during a specific period provides a means for alleviating the tension in the goodwill accounting literature.

This study provides clarity because of the gap that it fills in the literature stream. Beatty and Weber (2006) and Ramanna and Watts (2012) restrict their samples to firms that *should* have a greater likelihood of claiming a goodwill impairment loss. On the one hand, Beatty and Weber (2006, p. 267) "restrict the sample to firms with a difference between the market and book value of their equity that is less than their recorded goodwill." On the other hand, Ramanna and Watts (2012) focus on firms with book to market equity ratios greater than one for two consecutive periods but have not recorded a goodwill impairment loss (i.e., non-impairers). The fact that these firms have not claimed a goodwill impairment loss implies the firms' individual economic circumstances are not driving their decisions. Rather, other factors (i.e., contracting incentives) dominate the economic considerations (i.e., book to market equity ratio greater than one). The primary conclusion drawn from both studies is that the existence of contracting incentives drives the managerial intent for claiming goodwill write-offs for certain financially weak performing firms.

Our research study examines managerial intent from a different perspective because of the sample period and sample selection. First, the sample period covers the year of 2006, a year of general economic prosperity as U.S. GDP grew by 5.82% (US DOC, 2015). Firms that perform well in the context of this economy have little incentive to write-down goodwill on purely economic grounds. Second, the sample selection for this study includes firms with goodwill on their balance sheets except for financial institutions. Financial institutions have specific reporting requirements and are excluded from this study. Unlike Beatty and Weber (2006) and Ramanna and Watts (2012), no restriction is placed on firms' book to market equity ratios in the decision to include firms in the sample. Thus, this research study is based on

a broader sample of firms leading to a greater degree of generalizing the study's findings during a prosperous economic period.

A sample period of general economic strength reduces the likelihood of firms claiming goodwill write-offs on purely economic grounds. Further, the lack of a statistically significant association between a firm's likelihood of claiming a goodwill impairment loss and economic performance indicators suggests contracting incentives can be the driving force behind the firm's recording of goodwill write-offs. For example, a firm claims a goodwill impairment loss as a component of a larger "income smoothing" or "big bath" strategy. The combination of a strong economic period and the availability of tools to manage earnings (e.g. managers' recording of goodwill impairment losses and the use of other accruals) provides a unique situation for this study to provide insights on managers' earnings management behavior.

These arguments lead to the following hypothesis:

H_1: *Economic performance indicators are less likely to explain a firm's claim of a goodwill impairment loss during a period of economic prosperity.*

Further, prior research (e.g., Healy, 1985) links accruals with earnings management and specifically, a firm's recording of a goodwill impairment loss to manage earnings (Nelson et al. 2003). A firm that claims a goodwill impairment loss for two consecutive years (i.e., accounting indicator variable) is indicative of an income smoothing strategy. In addition, whether or not a firm records a goodwill impairment loss during 2005 and its recording is associated with other accruals and its capacity to claim goodwill write-offs, then earnings management is inferred within a much broader strategy. These arguments lead to the following hypothesis:

H_2: *Accounting indicators are more likely to explain a firm's claim of a goodwill impairment loss during a period of economic prosperity.*

Goodwill write-offs and other earnings-related components possess informative content in predicting a firm's operating cash flows (i.e., Kim and Kross, 2005). However, the degree of informative value is muted by firms' use of goodwill impairment losses to manage earnings. This argument results in the following hypothesis:

H_3: *Goodwill impairment losses provide marginal information content in explaining a firm's following period's operating cash flows.*

SAMPLE SELECTION AND RESEARCH DESIGN

Table 1 provides the details of our sample selection process. First, firms included in the sample have a goodwill balance and are not considered a financial institution. Second, firms with missing financial information are excluded from the sample. These firms have missing financial account balances that are necessary for this study's research models. Third, firms must have three consecutive years of data (i.e., 2005 to 2007) because prior year's assets is used for scaling variables in the research models and the following year's operating cash flows (i.e., 2007) is required for the informativeness test of goodwill write-offs. Next, financially distressed firms, defined as firms with negative equity are excluded from the sample because of going concern issues. Finally, fifty-six firms identified as influential observations are excluded from the sample (Hair et al., 1998 and Field, 2005). The final sample consists of 1,484 firms and is more inclusive than the studies of Beatty and Weber (2006, p. 268) and Ramanna and Watts (2012, p. 756). Their studies consist of 176 and 124 firms, respectively. Our study's larger sample size improves the generalizability of the results during a strong economic period.

TABLE 1
SAMPLE SELECTION

Total number of firms that have goodwill balances for the year of 2006	2,946
Less:	
Financial institutions (SIC 6000 to 6999)	(604)
Firms with missing financial information	(482)
Firms not included in 2005 database	(188)
Firms not included in 2007 database	(60)
Financially distressed firms (i.e., firms with negative equity)	(72)
Influential observations	(56)
Number of firms included in sample	1,484

TABLE 2
IMPAIRMENT LOSS STATISTICS

Year	Number of Firms with Goodwill	Number of Firms with Goodwill Impairments	% Impairment
2006	2,946	233	7.9
2007	3,067	280	9.1
2008	2,938	670	22.8
2009	2,971	497	16.7
2010	3,156	293	9.3
2011	3,348	404	12.1

Table 2 provides data regarding the number of firms with goodwill balances and the number of firms that claimed goodwill impairment losses from 2006 to 2011. Prior to 2008, firms claiming goodwill impairment losses were 10% or less of the total number of firms with goodwill balances. The 2008 economic downturn results in the percentage increasing to 22.8%.

In the post-2008 period, firms' goodwill write-offs decline, but the rate is still higher than the pre-2008 era. For 2006, the number of firms claiming goodwill impairment losses is 233 out of a total of 2,946 firms with goodwill balances, representing a rate of 7.9%. The GDP growth rate of 5.82% for 2006 (US DOC, 2015) and the relatively low 7.9% goodwill write-off rate provide evidence of the economic prosperity for this study's period.

The research method begins with a definition of total accruals. Consistent with Healy (1985), a firm's total accruals are defined as follows:

$$TA_t = (\Delta CA_t - \Delta CL_t - \Delta Cash_t + \Delta STD_t - Dep_t) / Assets_{t-1}) \tag{1}$$

where

TA_t = the firm's total accruals during period t;
ΔCA_t = change in current assets;
ΔCL_t = change in current liabilities;
$\Delta Cash_t$ = change in cash and cash equivalents;
ΔSTD_t = change in debt included in current liabilities;
Dep_t = depreciation and amortization expense; and
$Assets_{t-1}$ = firm's total assets for the preceding year.

The primary research model to test H_1 and H_2 is a logit regression model with the dependent variable represented by an indicator variable of claiming a goodwill impairment loss in 2006 (=1) and not claiming a goodwill impairment loss (=0). The research model is as follows:

$$\text{ImpairInd}_{i,t} = a + b_1 (\Delta\text{OCF}_{i,t}) + b_2 (\text{GWillPrior}_{i,t-1}) + b_3 (\text{MV/BV Ind}_{i,t-1}) +$$
$$b_4 (\text{TA}_{i,t} * \text{CAPACITY}_{i,t}) + b_5 (\text{SIZE}_{i,t-1}) + \varepsilon_{i,t} \tag{2}$$

where

$\text{ImpairInd}_{i,t}$ = the dependent variable, an indicator variable equal to 1, if the firm i claimed a goodwill impairment loss in period t (2006); otherwise = 0 for all other firms with goodwill on the balance sheet;

$\Delta\text{OCF}_{i,t}$ = the change in the firm i's operating cash flows during period t (2006) / total assets $_{t-1}$;

$\text{GWillPrior}_{i,t-1}$ = an indicator variable equal to 1, if the firm i claimed a goodwill impairment loss in period $t-1$ (2005), otherwise = 0;

$\text{MV/BV Ind}_{i,t-1}$ = an indicator variable equal to 1, if the firm i's market value to book value equity ratio is less than 1 for the year $t-1$, otherwise = 0. Book value is defined as total assets minus total liabilities;

$\text{TA}_{i,t} * \text{CAPACITY}_{i,t}$ = (firm i's total accruals$_t$ / total assets $_{t-1}$) multiplied by (firm i's goodwill$_t$ + annual goodwill impairment loss$_t$) / total assets $_{t-1}$; and

$\text{SIZE}_{i,t-1}$ = the firm i's natural logarithm of year $t-1$'s (2005) sales.

If the firms fairly represent goodwill on the balance sheet and their goodwill write-offs, then the economic performance indicator variables (MV/BV Ind) and ΔOCF should be statistically significant. Specifically, (MV/BV Ind) should be positively associated with ImpairInd and ΔOCF negatively associated with ImpairInd.

If contracting incentives dominate, then the accounting indicator variables GWillPrior and/or (TA*CAPACITY) should be associated with ImpairInd. For example, a positive association with GWillPrior suggests an income smoothing strategy. However, ImpairInd's association with (TA*CAPACITY) may indicate a broader earnings management strategy (e.g., big bath strategy), using goodwill write-offs in combination with other accruals.

H_3 addresses the informative value of firms' 2006 goodwill impairment losses on 2007 operating cash flows by using an additive approach. First, firms' 2007 operating cash flows are regressed on 2006 operating earnings excluding goodwill impairment losses (i.e., model 3). Then, firm i's goodwill impairment losses are included in the model (i.e., model 4). If a firm's goodwill impairment loss has explanatory value, then the results from model 3 to model 4 should show an increase in the Adjusted R^2. The research models 3 and 4 are presented as follows:

$$\text{OCF}_{i,t+1} = a + b_1 (\text{OpEarn1}_{i,t}) + b_2 \text{SIZE}_{i,t-1} + \varepsilon_{i,t+1} \tag{3}$$

$$\text{OCF}_{i,t+1} = a + b_1 (\text{OpEarn2}_{i,t}) + b_2 \text{SIZE}_{i,t-1} + \varepsilon_{i,t+1} \tag{4}$$

where

OCF_{t+1} = the firm i's operating cash flows for period $t+1$ (2007);

$\text{OpEarn1}_{i,t}$ = the firm i's operating earnings for period t (2006) excluding the year's goodwill impairment loss;

$\text{OpEarn2}_{i,t}$ = the firm i's operating earnings for period t (2006) including the year's goodwill impairment loss; and

$\text{SIZE}_{i,t-1}$ = the firm i's natural logarithm of year $t-1$'s (2005) sales.

OCF, OpEarn1, and OpEarn2 are scaled by ending total assets of the prior period (2005).

RESULTS

Table 3: Descriptive Statistics, shows the descriptive statistics for the independent variables included in the primary research model (i.e., model 2). The descriptive statistics reflect the positive economic climate for 2006. The change in operating cash flows are positive. Also, most firms did not have a market value to book value of equity less than one as evidenced by the mean equal to 0.05. The mean for the (TA*CAPACITY) variable indicates firms' total accruals are negative because the CAPACITY variable is always positive. Thus, total accruals are on average income decreasing for 2006. In addition, the descriptive statistics for the GWillPrior variable (i.e., mean = 0.07) indicates firms generally did not claim a goodwill impairment loss in 2005. Sample firms possess sales with a mean of $594.4 million (i.e., natural log = 20.203).

TABLE 3
DESCRIPTIVE STATISTICS

Variable	N	Mean	SD
ΔOCF	1,484	0.015	0.199
GWillPrior	1,484	0.070	0.263
MV/BV Ind	1,484	0.050	0.209
TA*CAPACITY	1,484	-0.143	0.393
SIZE	1,484	20.203	2.106
Mean and standard deviation of the independent variables expected to predict the likelihood of a firm claiming a goodwill impairment loss during a period of economic prosperity (2006). Variables are defined in Table 5.			

Table 4: Pearson Correlations, provides a correlation analysis. Correlation of -0.861 (significant at 0.01 level) exists between (TA*CAPACITY) and ΔOCF, but tests of collinearity in the research models did not provide evidence of multicollinearity. Table 5: Economic Performance and Accounting Indicator Variables as Predictors of Goodwill Impairment, presents the results for the following logistic regression model:

$$\text{ImpairInd}_{i,t} = a + b_1 (\Delta OCF_{i,t}) + b_2 (\text{GWillPrior}_{i,t-1}) + b_3 (\text{MV/BV Ind}_{i,t-1}) +$$
$$b_4 (TA_{i,t}*CAPACITY_{i,t}) + b_5 (SIZE_{i,t-1}) + \mathcal{E}_{i,t} \qquad (2)$$

This model provides the basis for testing Hypotheses 1 and 2. Hypothesis 1 tests the association between economic performance indicators and the likelihood of claiming a goodwill impairment loss. The economic performance indicator variables are ΔOCF and MV/BV with co-efficients b_1 and b_3, respectively. The co-efficient on ΔOCF is negative but not significant. This insignificant result is explainable by 2006's strong economy and the positive effect on firms' operating cash flows. From Table 3, firms on average exhibit positive operating cash flows and would not have the economic justification of declining operating cash flows to write down their goodwill.

TABLE 4
PEARSON CORRELATIONS

Variable		ΔOCF	GWillPrior	MV/BV Ind	TA*CAPACITY	SIZE
ΔOCF	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	1,484				
GWillPrior	Pearson Correlation	.003	1			
	Sig. (2-tailed)	.897				
	N	1,484	1,484			
MV/BV Ind	Pearson Correlation	-.015	.060*	1		
	Sig. (2-tailed)	.565	.020			
	N	1,484	1,484	1,484		
TA*CAPACITY	Pearson Correlation	-.861**	.005	.005	1	
	Sig. (2-tailed)	.000	.860	.846		
	N	1,484	1,484	1,484	1,484	
SIZE	Pearson Correlation	-.013	.019	-.050**	.001	1
	Sig. (2-tailed)	.613	.466	.002	.978	
	N	1,484	1,484	1,484	1,484	1,484

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).
Variables are defined in Table 5.

The co-efficient on MV/BV is positive and highly significant (i.e., p-value = 0.001) indicating firms with market-to-book equity values less than one are more likely to record a goodwill impairment loss. However, Chen et al. (2017) provide evidence that managers use of MV/BV indicators (i.e., market-to-book equity values less than one) are problematic because declines in firms' market values are often temporary. The authors find a firm that records a goodwill impairment loss due to market-to-book value of equity ratio less than one, subsequently is inclined to buyback its stock at a lower price. The announcement of a goodwill impairment loss is interpreted as negative news by investors resulting in an even lower stock price, thus providing incentive for the firm's management to buyback its stock. The combination of recording a goodwill impairment loss and stock repurchases benefits the firm's managers in several ways:
- the goodwill write-down makes it easier for managers to achieve bonus targets in future years based on return on assets;
- the stock buybacks reduce the number of outstanding shares on the market, increasing the firm's stock price; and
- higher stock prices increase a manager's individual wealth if they hold the firm's stock or stock options.

TABLE 5
ECONOMIC PERFORMANCE AND ACCOUNTING INDICATOR VARIABLES AS PREDICTORS OF GOODWILL IMPAIRMENT

Logistic regression:

$$\text{ImpairInd}_{i,t} = a + b_1\,(\Delta OCF_{i,t}) + b_2\,(\text{GWillPrior}_{i,t-1}) + b_3\,(\text{MV/BV Ind}_{i,t-1}) + b_4\,(TA_{i,t}{}^{*}\text{CAPACITY}_{i,t}) + b_5\,(\text{SIZE}_{i,t-1}) + \varepsilon_{i,t} \qquad (2)$$

Variable	(B) Co-efficient	Std. Error	p-value	Exp(B)
Constant	-4.450***	0.983	0.000	0.012
ΔOCF	-0.478	1.016	0.638	0.620
GWillPrior	1.358***	0.252	0.000	3.887
MV/BV Ind	1.126***	0.330	0.001	3.083
TA*CAPACITY	-0.145	0.609	0.812	0.865
SIZE	0.088*	0.047	0.065	1.092
N=1,484				
-2 Log likelihood = 798.971; Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.				
Cox & Snell R Square = 0.026				
Nagelkerke R Square = 0.061				
Statistical significance indicated by ***, **, and * for 1%, 5%, and 10% level, respectively.				

Variable definitions:

$\text{ImpairInd}_{i,t}$ = the dependent variable, an indicator variable equal to 1, if the firm i claimed a goodwill impairment loss in period t (2006); otherwise = 0 for all other firms with goodwill on the balance sheet;

$\Delta OCF_{i,t}$ = the change in the firm i's operating cash flows during period t (2006) / total assets $_{t-1}$;

$\text{GWillPrior}_{i,t-1}$ = an indicator variable equal to 1, if the firm i claimed a goodwill impairment loss in period $t-1$ (2005), otherwise = 0;

$\text{MV/BV Ind}_{i,t-1}$ = an indicator variable equal to 1, if the firm i's market value to book value equity ratio is less than 1 for the year $t-1$, otherwise = 0. Book value is defined as total assets minus total liabilities;

$TA_{i,t}{}^{*}\text{CAPACITY}_{i,t}$ = (firm i's total accruals$_t$ / total assets $_{t-1}$) multiplied by (firm i's goodwill$_t$ + annual goodwill impairment loss$_t$) / total assets $_{t-1}$; and

$\text{SIZE}_{i,t-1}$ = the firm i's natural logarithm of year $t-1$'s (2005) sales.

Overall, these results do not provide strong support for the presence of economic performance indicators as the driving force behind a firm's recording of a goodwill impairment loss in 2006.

Hypothesis 2 tests the association between accounting indicators and the likelihood of claiming a goodwill impairment loss. The accounting indicator variables are GWillPrior and (TA*CAPACITY) with co-efficients b_2 and b_4, respectively. The co-efficient on GWillPrior is positive and highly significant, indicating a firm that claims a goodwill impairment loss in 2006, likely claimed one in 2005. This result suggests firms engage in an income smoothing strategy for 2006. The interaction variable, (TA*CAPACITY), consists of two components — the total other accruals as defined in equation (1) and the percentage of goodwill to total assets on the balance sheet. A significant result would imply a firm with a greater percentage of its assets invested in goodwill in conjunction with its total accruals is likely to claim a goodwill impairment loss in 2006, providing evidence of a broader earnings management strategy. However, the results show a lack of significance for the (TA*CAPACITY) variable refuting the existence of a broader earnings management strategy for 2006. Taken together, these results do not support the informative aspect of goodwill accounting.

Overall, these results provide further evidence of the non-informative aspects of goodwill accounting and increases the knowledge base in this literature stream (e.g., Hayn and Hughes, 2006; Beatty and Weber, 2006; Ramanna and Watts, 2012). We do not find a significant relationship between leverage and

the likelihood of claiming a goodwill impairment loss (results not shown). Results from other studies are mixed regarding the association of leverage and goodwill write-offs. On the one hand, Beatty and Weber (2006) find no statistical significance between the likelihood of a goodwill impairment loss claim and the ratio of debt to total assets. On the other hand, Ramanna and Watts (2012) find an association between goodwill impairment and firms with debt covenants.

Table 6: Informativeness of Operating Earnings without Goodwill Impairment Losses, presents the results for the following regression equation:

$$OCF_{i, t+1} = a + b_1 (OpEarn1_{i, t}) + b_2 SIZE_{i,t-1} + \varepsilon_{i, t+1} \tag{3}$$

Table 7: Informativeness of Operating Earnings with Goodwill Impairment Losses, presents the results for the following regression equation:

$$OCF_{i, t+1} = a + b_1 (OpEarn2_{i, t}) + b_2 SIZE_{i,t-1} + \varepsilon_{i, t+1} \tag{4}$$

Taken together, the two research models provide the basis for testing Hypothesis 3. Hypothesis 3 tests the additional explanatory power that the goodwill impairment loss component of operating earnings has in explaining the firm's following year's operating cash flows. An increase in the Adjusted R^2 from model 3 to model 4 provides evidence of the additional explanatory power of a firm's goodwill impairment loss.

Our findings in Table 6 show the information content of earnings (without goodwill impairment loss) in predicting operating cash flows. The operating earnings co-efficient (b_1) is positive and significant and the model's Adjusted R^2 is 0.840. Results from prior research studies support the informative role of earnings information in explaining firms' cash flows (e.g., Kim and Kross, 2005). Adding firms' 2006 goodwill impairment losses to the research model results in an increase in the explanatory power of the model, but only marginally, as the Adjusted R^2 increases to 0.849 (see Table 7). The marginal incremental increase in Adjusted R^2 from models 3 to 4 indicates firms with earnings management motives represent "noise" to the overall number of firms in the sample that faithfully represent goodwill impairment losses.

The negative co-efficient and significance of the SIZE variable is an interesting result. Generally, larger firms would have larger cash flows, suggesting a positive relationship. However, larger firms may have used the economic prosperity of the period as an opportunity to pay down short-term debts and strengthen their balance sheets or larger firms may have increased their investment in current assets (e.g., accounts receivable) to take advantage of the expanding economy during 2006.

TABLE 6
INFORMATIVENESS OF OPERATING EARNINGS WITHOUT GOODWILL IMPAIRMENT LOSSES

Research Model:

$$OCF_{i, t+1} = a + b_1 (OpEarn1_{i, t}) + b_2 SIZE_{i,t-1} + \varepsilon_{i, t+1} \tag{3}$$

Variable	(B) Co-efficient	Std. Error	t-value	p-value
Constant	0.095***	0.021	4.637	0.000
OpEarn1	0.842***	0.010	86.238	0.000
SIZE	-0.003***	0.001	-3.059	0.002
N=1,484 Adjusted R^2 = 0.840				
Statistical significance indicated by ***, **, and * for 1%, 5%, and 10% level, respectively.				

Variable definitions:
OCF_{t+1} = the firm i's operating cash flows for period $t+1$ (2007);
$OpEarn1_{i, t}$ = the firm i's operating earnings for period t (2006) excluding the year's goodwill impairment loss; and
$SIZE_{i,t-1}$ = the firm i's natural logarithm of year $t - 1$'s (2005) sales.

TABLE 7
INFORMATIVENESS OF OPERATING EARNINGS WITH GOODWILL IMPAIRMENT LOSSES

Research Model:

$$OCF_{i, t+1} = a + b_1 (OpEarn2_{i, t}) + b_2 SIZE_{i,t-1} + \varepsilon_{i, t+1} \tag{4}$$

Variable	(B) Co-efficient	Std. Error	t-value	p-value
Constant	0.107***	0.020	5.361	0.000
OpEarn1	0.846***	0.009	89.271	0.000
SIZE	-0.004***	0.001	-3.622	0.000
N=1,484				
Adjusted R^2= 0.849				
Statistical significance indicated by ***, **, and * for 1%, 5%, and 10% level, respectively.				

Variable definitions:
OCF_{t+1} = the firm i's operating cash flows for period $t+1$ (2007);
$OpEarn2_{i, t}$ = the firm i's operating earnings for period t (2006) including the year's goodwill impairment loss; and
$SIZE_{i,t-1}$ = the firm i's natural logarithm of year t - 1's (2005) sales.

CONCLUSION

Overall, we find mixed results for the association of economic performance indicator variables and firms' goodwill impairment write-offs. On the one hand, the change in a firm's operating cash flows are not significantly associated with the firm's claiming of a goodwill impairment loss during 2006. On the other hand, we find firms with a market value to book value of equity ratio less than one are more likely to claim a goodwill impairment loss. On the surface, this result appears to support the association of an economic performance indicator variable with the firm recording a goodwill impairment loss. However, Chen et al. (2017) find firms' market value declines can be temporary and that managers use market-to-book equity values less than one to justify goodwill write-offs. Subsequently, managers purchase their firms' stock at a lower price. Thus, the market-to-book equity values are employed in an opportunistic manner.

The results for the accounting indicator variables find firms that claim a goodwill impairment loss in 2006 likely claimed one in 2005, suggesting an income smoothing strategy. However, the results also indicate firms do not employ a broader based strategy in conjunction with the other total accruals.

The results for the final test show the inclusion of the goodwill impairment loss in 2006's operating earnings improves its explanatory power of 2007 operating cash flows, but only marginally. This result suggests firms with earnings management motives represent "noise" to the overall number of firms in the sample that faithfully represent goodwill impairment losses. Taken together, the overall results do not support the informative role of goodwill accounting during the study period.

Our results, like other research studies are subject to caveats, the most important one being the study period of a single year. Events particular to 2006 could influence the findings and the results may not be generalizable to less prosperous economic periods. However, this research study fills a gap in the goodwill accounting literature stream because of its focus on an economically prosperous period. Future research can extend the literature stream further by investigating managerial motivation during other periods of varying economic activity (e.g. 2008 financial collapse) and by examining changes in managerial motivation as economic prospects change.

REFERENCES

Beatty, A., & Weber, J. (2006). Accounting discretion in fair value estimates: An examination of SFAS 142 goodwill impairments. *Journal of Accounting Research, 44,* 257-288.

Bens, D., Heltzer, W., & Segal, B. (2011). The information content of goodwill impairments and SFAS 142. *Journal of Accounting, Auditing, & Finance, 26*(3), 527-555.

Chen, W., Shroff, P., & Zhang, I. (2017). *Fair value accounting: Consequences of booking market-driven goodwill impairment.* Working Paper. Retrieved December 20, 2018, from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2420528

Field, A. (2005). *Discovery statistics using SPSS* (second edition). Thousand Oaks, CA: Sage Publications Inc.

Financial Accounting Standards Board (FASB). (2001). *Goodwill and other intangible assets, Statement of Financial Accounting Standards No. 142* (SFAS 142). Norwalk, CT: FASB.

Financial Accounting Standards Board (FASB). (2010). *Statement of Financial Accounting Concept No. 8.* Norwalk. CT: FASB.

Godfrey, J., & Koh, P. (2009). Goodwill impairment as a reflection of investment opportunities. *Accounting & Finance, 49*(1), 117-140.

Hair, J., Jr., Anderson, R., Tatham, R., & Black, W. (1998). *Multivariate data analysis* (5th edition). Upper Saddle River, NJ: Prentice-Hall, Inc.

Hayn, C., & Hughes, P. (2006). Leading indicators of goodwill impairment. *Journal of Accounting, Auditing, & Finance, 21,* 223-265.

Healy, P. (1985). The impact of bonus schemes on the selection of accounting principles. *Journal of Accounting and Economics, 7,* 85-107. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2420528

Jarva, H. (2009). Do firms manage fair value estimates? An examination of SFAS 142 goodwill impairments. *Journal of Business Finance & Accounting, 36*(9 & 10), 1059-1086.

Kim, M., & Kross, W. (2005). The ability of earnings to predict future operating cash flows has been increasing – not decreasing. *Journal of Accounting Research, 43*(5), 753-780.

Li, Z., Shroff, P., Venkataraman, R., & Zhang, I. (2011). Causes and consequences of goodwill impairment losses. *Review of Accounting Studies, 16,* 745-778.

Nelson, M., Elliott, J., & Tarpley, R. (2003). How are earnings managed? Examples from auditors. *Accounting Horizons,* Supplement, pp.17-35.

Ramanna, K., & Watts, R. (2012). Evidence on the use of unverifiable estimates in required goodwill impairment. *Review of Accounting Studies, 17,* 749-780.

U.S. Department of Commerce, Bureau of Economic Analysis (US DOC). (n.d.). Retrieved September 16, 2015, from http://www.bea.gov/national/

Watts, R., & Zimmerman, J. (1986). *Positive accounting theory.* Edgewood Cliff, NJ: Prentice-Hall, Inc.