

Accounting Discretion in Goodwill Impairments: UK Evidence

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Abstract

This study examines managers' use of discretion in determining goodwill impairment losses following the mandatory adoption of IFRS 3 "*Business Combinations*," and whether this discretion reflects opportunistic reporting by managers or the provision of their private information. Although IFRS 3 was issued to improve the accounting treatment for goodwill and provide users with more useful and value-relevant information regarding the underlying economic value of goodwill, it has been criticized on the grounds of the managerial discretion inherent in impairment testing. Therefore, *ex-ante*, it is unclear how the impairment-only approach has affected the reporting of goodwill impairment losses. After controlling for economic factors, empirical results reveal that managers are exercising discretion in the reporting of goodwill impairments following the adoption of IFRS 3. Specifically, goodwill impairments are more likely to be associated with recent CEO changes, income smoothing and "big bath" reporting behaviors. However, the results also indicate that goodwill impairments are strongly associated with effective governance mechanisms suggesting that managers are more likely to be exercising their accounting discretion to convey their private information about the underlying performance of the firm rather than acting opportunistically. These inferences are robust to various modeling specifications and variable definitions, suggesting that IFRS 3 has provided managers with a framework to reliably convey their private information about future cash flows consistent with the IASB's objectives in developing the impairment standard.

1. Introduction

On March 31, 2004, the International Accounting Standards Board (IASB), seeking international convergence and global harmonization,

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followed the U.S. Financial Accounting Standards Board (FASB) and issued IFRS 3, *Business Combinations*, (IASB, 2004a). IFRS 3 eliminates the use of the pooling of interests method and prohibits the amortization of goodwill. Instead it requires the testing for impairment annually or more frequently if events or changes in circumstances indicate that the asset might be impaired. With the transition to international reporting standards, U.K. firms listed in the main market had to discontinue amortizing goodwill and account for it using IFRS 3 since 2005.

The impairment approach to goodwill was introduced with the intent of improving the information content of reported acquired goodwill and reducing the managerial flexibility afforded by the former trigger-based standards. However, this approach has been criticized by academics, practitioners, and dissenting IASB members because of the managerial discretion inherent in the process of testing goodwill for impairment, and the resulting blending of acquired goodwill and internally generated goodwill (Massoud and Raiborn, 2003; Watts, 2003). Standard setters suggest managers will use this discretion to convey their private information on future cash flows, resulting in impairments that are more reflective of the firm's underlying economics.¹ Alternatively, managers may opportunistically exploit this unverifiable accounting discretion to extract rents from other contracting parties, resulting in impairments that are less reflective of the firm's underlying economics, thus mitigating the purported benefits of the impairment approach. Therefore, *ex-ante*, it is unclear how the impairment-only approach has affected the reporting of goodwill impairment losses, including the related managerial flexibility exercised in determining them.

Motivated by the above debate, the primary objective of this study is to examine managers' use of discretion in determining goodwill impairment losses following the mandatory adoption of IFRS 3, and whether this discretion reflects opportunistic reporting by managers or the provision of their private information. Using a sample of 528 firm-year observations, drawn from the top 500 U.K. listed firms for 2005 and 2006, the study employs a pooled multivariate tobit regression and investigates the extent to which proxies for economic impairment, managerial discretion, and effective corporate governance mechanisms explain the magnitude of goodwill impairment losses.

The study hypothesises that goodwill impairment losses are conceptually a function of economic factors underlying the performance of

the firm, reporting incentives of managers, and constraints imposed by effective corporate governance mechanisms. Thus, managers *should* record a goodwill impairment loss if they detect that the recoverable value of a cash-generating unit has declined below its carrying value. However, based on the managerial discretion inherent in IFRS 3 and consistent with the contracting theory of accounting (Watts and Zimmerman, 1986, 1990; Holthausen, 1990; Christie and Zimmerman, 1994), managers may overstate, understate, or simply not recognize an existing economic impairment depending on their reporting incentives. Although this behavior may be opportunistically driven, managers disciplined by effective governance mechanisms are less likely to act opportunistically but instead exercise their accounting discretion to convey their private information about the true value of the firm. Hence, goodwill impairments strongly associated with effective governance mechanisms are more likely to reflect the provision of managers' private information rather than their acting opportunistically.

After controlling for economic factors, empirical results reveal that managers are exercising discretion in the reporting of goodwill impairment losses following the adoption of IFRS 3. Specifically, goodwill impairments are more likely to be associated with recent CEO changes, income smoothing and "big bath" reporting behaviors. However, they also reveal that impairments are strongly associated with effective governance mechanisms measured by the percentage of independent directors on the board of directors, the number of board meeting, the percentage of shares owned by blockholders holding at least 10 per cent of outstanding shares, and the percentage of shares owned by executive and non-executive directors, suggesting that managers are more likely to be using the guidelines specified by IFRS 3 to convey their private information on future cash flows rather than acting opportunistically. Accordingly, the study provides evidence consistent with the IASB's objectives in developing the standard in that the results collectively suggest that IFRS 3 has provided firms with a framework to reliably reflect their underlying economic attributes. These inferences are robust to various modeling specifications and variable definitions. They are also robust to the principal component aggregation of the corporate governance variables.

This study contributes to the extant empirical research on asset and goodwill write-offs in two ways. First, it provides empirical evidence on the determinants of goodwill write-offs recorded on transition to IFRS 3 in the U.K. context which has not been examined before.

Second, it examines the effect of a wide group of governance indicators in providing incentives for managers to engage in high quality goodwill reporting practices. The use of multiple indicators to proxy for corporate governance can alleviate the measurement error associated with a single governance indicator and result in fewer correlated omitted variable problems which may yield more consistent regression coefficients (Larcker et al., 2007). However, without a clear theory about the complex, multi-dimensional nature of corporate governance or a conceptual basis for selecting the relevant governance variables, principal component analysis is also used in this study to factorize governance indicators into more reliable and valid factors that collectively capture different dimensions of corporate governance quality and yield more stable estimates.

The results of this study should be of interest to standard setters and policy makers as they suggest that managers are likely to utilize the discretion permitted in principles-based standards. They also highlight the importance of effective governance mechanisms in constraining managerial opportunism associated with such standards.

The remainder of this article is organized as follows. Section 2 discusses the background. Section 3 presents the main findings of prior research relating to write-offs. Section 4 develops the research hypotheses. Section 5 explains the research design employed to empirically test the hypotheses. Section 6 reviews descriptive statistics and empirical results. Section 7 presents additional tests and Section 8 concludes the study.

2. Accounting for Goodwill

Accounting for goodwill has long been a controversial issue in the United Kingdom, at least partly because of the quantities of goodwill that managers have to deal with (Nobes, 1992; Higson, 1998). The first attempt by the U.K. standard setter, SSAP 22 *Accounting for Goodwill*, in 1984 (ASC, 1984), required goodwill to be either written off against reserves or capitalized and amortized over an “appropriate” period. This attempt received enormous criticisms as it permitted two different accounting treatments that were “conceptually inconsistent” (Hussey and Ong, 2000). The debate in the late 1990s in the United Kingdom led to the establishment of FRS 10 *Goodwill and Intangible Assets* (ASB, 1997), whereby goodwill must be capitalized and amortized (with trigger-based impairment tests) under a rebuttable presumption

that its useful economic life does not exceed 20 years from the date of acquisition instead of the immediate write-off to reserves.²

Under IFRS 3, goodwill is no longer amortized but tested for impairment in accordance with IAS 36 (IASB, 2004b). According to IAS 36, goodwill acquired in a business combination should, from the acquisition date, be allocated to each of the acquirers' cash-generating units, or groups of cash-generating units that are expected to benefit from the synergies of the business combination. Each unit or group of units to which goodwill is allocated should represent the lowest level within the entity at which goodwill is monitored for internal management purposes; and it should not be larger than a segment based on either the entity's primary or secondary reporting format according to IAS 14 *Segment Reporting* (replaced by IFRS 8 *Operating Segments* on November 30, 2006).³ A cash-generating unit to which goodwill has been allocated shall be tested for impairment both annually and whenever there is an indication that the unit may be impaired. If the recoverable amount of the unit exceeds the carrying amount of the unit, the unit and the goodwill allocated to that unit are not impaired. If, instead, the carrying amount of the unit exceeds its recoverable amount, the entity must recognize an impairment loss.⁴ The *recoverable amount* of an asset or a cash-generating unit is the higher of its *fair value less costs to sell* and its *value in use*.

The impairment loss is allocated firstly to the goodwill of the cash-generating unit (group of units) and then on a *pro rata* basis to the other assets within the unit (group of units), as long as it does not reduce any asset below the highest of its fair value less costs to sell, its value in use, and zero. The impairment loss is recognized immediately above the line in income from continued operations. Once recognized, IAS 36 prohibits the recognition of reversals of impairment losses for goodwill in subsequent periods.

Although IFRS 3 forces managers to perform annual goodwill impairment tests, it also provides the opportunity for accounting discretion by requiring managers to make a number of accounting choices. The most important of these are the determination of the cash-generating units, the subsequent allocation of goodwill to these units, and the recoverable amount estimates of the units. By exercising discretion inherent in IFRS 3, managers may, depending on their reporting incentives, overstate, understate, or simply not recognize an existing economic impairment loss by being selective with respect to the underlying choices they make when testing goodwill for

impairment. This discretion may be used to convey managers' private information about future cash flows. Alternatively, it may be used opportunistically to extract rents from other contracting parties resulting in impairments that are less reflective of the firm's underlying economics.

3. Prior Research

The earlier asset write-off studies (Strong and Meyer, 1987; Elliott and Shaw, 1988; Zucca and Campbell, 1992) focus solely on managers' reporting incentives to take write-offs and fail to consider managers' incentives to take write-offs that reflect real declines in the value of assets. After controlling for economic factors, these studies report that write-offs are more likely to be associated with proxies for managerial discretion (recent management changes, "big bath" and income smoothing reporting behaviors). Francis et al. (1996) were among the first to examine whether write-offs are driven by managers' incentives to "manipulate" earnings or by changing economic circumstances of the firm. They find that both factors—asset impairment (poor past share performance) and managerial incentives (management changes)—are important determinants of asset write-offs. In a U.K.-based study, Kvaal (2005) finds that fixed asset impairment accounting under FRS 11, except that of goodwill, may be unbiased.

However, although these studies recognize that write-offs may be motivated by economic incentives, they "equate" managers' incentives with manipulation (opportunism) (Wilson, 1996, p. 176) and fail to consider the possibility that managers may be using their discretion efficiently to convey their private information on future cash flows. Rees et al. (1996) were among the first to explicitly examine the extent to which the discretion associated with write-offs may be value relevant rather than opportunistic. They find that pre-write-off earnings are, on average, significantly worse than industry medians, consistent with the "big bath" reporting behavior. However, they also find that write-off firms record significant negative abnormal accruals in the write-off year which do not reverse in subsequent years, suggesting that managers are responding to changes in economic circumstances rather than acting opportunistically. Riedl (2004) extends this approach and provides evidence that asset write-offs reported following the adoption of SFAS 121 in the United States are significantly associated with "big bath" reporting behavior. However, Riedl also finds that this behavior is more evident when the CEO is also the chairman of the board and

suggests that this “big bath” behavior more likely reflects opportunistic reporting than managers providing their private information.

Studies examining the determinants of goodwill write-offs following the adoption of SFAS 142/Section 3062 in the United States and Canada were initiated by Beatty and Weber (2006) who examine managers’ choices to report certain current goodwill write-offs below-the-line or uncertain future write-offs in income from continuing operations. They find that proxies for managerial discretion (firms’ equity market considerations, debt contracting, bonus, CEO turnover, and exchange delisting incentives) affect managers’ decisions to accelerate or delay goodwill write-offs. In a similar study, Zang (2008) finds that debt contracting and management changes are important factors in determining the amount of SFAS 142 *transitional* goodwill impairment losses. In a Canadian context, where *transitional* goodwill write-offs are charged to retained earnings, Lapointe-Antunes et al. (2008) find that proxies for managerial discretion (CEO changes, managers’ incentives to smooth ROA and ROE ratios, debt contracting, the value of managers’ in-the-money exercisable stock options, the need for extra financing, and the cross-listing status of the firm) affect managers’ incentives to overstate or understate transitional goodwill write-offs. They also report that financially literate and independent audit committee members effectively constrain managerial opportunism with respect to transitional goodwill write-offs. However, results of studies using United States and Canadian data from the transition period have to be interpreted with caution and may lack generalisability as, in recording write-offs, managers may be motivated by the special accounting treatments permitted in the transition period.⁵

In contrast to these studies, Godfrey and Koh (2009), Jarva (2009), and Ramanna and Watts (2009) examine goodwill impairments appearing as operating expenses in periods following the transition period. Godfrey and Koh (2009) find that goodwill impairments are negatively associated with firms’ underlying investment opportunities and accounting returns and conclude that the introduction of SFAS 142 has enabled managers to provide information relevant to users of financial statements. Jarva (2009) finds that SFAS 142 goodwill impairments are associated with future expected cash flows as mandated by the standard. He also examines a sample of non-impairment firms in which there are indications that goodwill is impaired and fails to find convincing evidence that these firms are opportunistically avoiding impairments. Jarva concludes that goodwill impairments are,

on average, more closely related to economic factors than opportunistic behavior. On the other hand, Ramanna and Watts (2009) provide evidence that non-impairment of goodwill is increasing in firm characteristics predicted to be associated with greater managerial discretion (number and size of reporting units and unverifiable net assets in reporting units). They fail to confirm that this discretion is being used to convey managers' private information. In an international context, Verriest and Gaeremynck (2009) examine goodwill impairments for a limited sample of European listed firms following the adoption of IFRS 3. They find that firms with stronger corporate governance mechanisms measured by the amount of independent members on the board are more likely to engage in goodwill impairment.

Another stream of literature examines the information content and value relevance of goodwill impairment losses (e.g., Chen et al., 2004; Zang, 2008; Lapointe-Antunes et al., 2009; Li et al., 2010). These studies find negative correlations between goodwill write-offs and stock returns and conclude that the impairment-only approach to goodwill has improved the quality of reported information on goodwill by allowing managers to reliably convey their private future-cash-flow information to markets. However, Ramanna (2008, p. 255) casts doubts on the "net benefit" conclusions of these studies and provides alternative explanations for the perceived negative stock market reaction.⁶ In addition, Ramanna argues that these studies are focused primarily on explaining *recorded* impairments (p. 255) and suggests that examining the determinants of goodwill impairments for samples that include both impairers and non-impairers may be a better approach to arriving at conclusions on the "net benefits" of the impairment standards.

This study differs from relevant prior research in that it focuses on managers' use of discretion with respect to IFRS 3 goodwill impairments reported in the U.K. context which has not been examined before. The absence of special transitional accounting treatments in the United Kingdom suggests that goodwill impairments are less likely to be affected by managerial incentives specific to the transition period, and hence increases the generalizability of the results. In addition, the study not only considers impairers and non-impairers, but attempts to test for managers' information-efficient incentives in explaining the accounting choices they make by controlling for the effect of a wide group of governance mechanisms hypothesized to play a role in mitigating managerial opportunism. It also improves upon the analyses of

prior relevant research by applying principal component analysis to group the individual corporate governance variables into more reliable and valid factors that collectively capture different dimensions of corporate governance quality and yield more stable estimates.

4. Hypotheses Development

4.1. *Actual (Economic) Impairment Factors*

Wilson (1996, p. 172) argues that the credibility of the research findings of asset write-off studies depends on the extent to which the experimental design controls for economic impairment factors. Goodwill impairment is a result of the deteriorating economic performance of the acquired business. Following the guidelines of IFRS No. 3, managers *should* record a goodwill impairment loss if they detect that the recoverable value of a cash-generating unit has declined below its carrying value. An ideal economic factor would include the managers' unbiased expectations regarding the future performance of cash-generating units that include goodwill (Riedl, 2004). However, as managers' expectations are not observable and as no financial information is publicly available at the cash-generating unit's level, the current study follows previous researchers (e.g., Francis et al., 1996; Riedl, 2004; Beatty and Weber, 2006; Lapointe-Antunes et al., 2008; Zang, 2008) and uses empirical proxies to capture the economic impairment of *firm-wide* goodwill. The actual impairment factors attempt to explain the real impairment of goodwill before discussing the attributes of managerial discretion. The above discussion results in the following hypothesis (stated in the alternative form):

H1: *Ceteris paribus*, there is a significant association between actual factors of impairment and reported goodwill impairment losses.

Six empirical proxies (book to market, size of goodwill, number of cash-generating units, change in turnover, change in operating cash flows, and ROA) are used, as discussed in Section 5.

4.2. *Proxies for Managerial Discretion*

Based on the managerial discretion inherent in IFRS 3 and consistent with implications of the contracting theory of accounting (Watts and Zimmerman, 1986, 1990), the study expects that managers are likely to

utilize the discretion permitted by IFRS 3 in determining goodwill impairments. The following incentives are hypothesized to be associated with managers' discretionary behavior when they review goodwill for impairment.

4.2.1. Leverage. Watts and Zimmerman (1986, pp. 215–216) argue that managers of highly leveraged firms have incentives to select income-increasing accounting methods and estimates to avoid costly violations of debt covenants. In this scenario, it is expected that highly leveraged firms are less likely to record goodwill impairment losses to avoid costly violations of debt covenants (e.g., Riedl, 2004; Beatty and Weber, 2006; Lapointe-Antunes et al., 2008; Zang, 2008). An alternative argument regarding the role of debt argues that highly levered firms are likely to have the value of their assets under scrutiny from debt holders which may act as a disciplining device against opportunism and force the recognition of existing impairments that reflect the underlying performance of the firm (e.g., Strong and Meyer, 1987; Elliott and Shaw, 1988; Zucca and Campbell, 1992).

Based on the competing arguments and conflicting empirical results, the current study examines the relationship between reported goodwill impairment losses and leverage but does not predict the direction of the association. The above discussion results in the following sub hypothesis (stated in the alternative form):

H2a: *Ceteris paribus*, there is a significant association between the level of debt and reported goodwill impairment losses.

4.2.2. "Big bath" and income smoothing. Prior studies provide evidence that managers may use the discretion afforded by accounting standards to *overstate* impairment losses by taking "big bath" charges or by smoothing the reported earnings when they have incentives to do so (e.g., Zucca and Campbell, 1992; Francis et al., 1996; Rees et al., 1996; Riedl, 2004). Zucca and Campbell (1992, p. 36) suggest that "big bath" *via* asset write-offs is characterized by periods in which pre-write-off earnings are already below expected earnings. Managers may undertake a "big bath" in such periods to boost future earnings and provide a signal that "bad times" are behind them and better times will follow (Zucca and Campbell, 1992; Alciatore et al., 1998).

Income smoothing *via* asset write-offs is characterized by periods in which pre-write-off earnings are higher than expected. By recording

write-offs during such periods, reported earnings will be closer (but not less than) the level expected (Zucca and Campbell, 1992, p. 36). Finally, Kirschenheiter and Melumad (2002) present a single model in which both “big bath” and income smoothing phenomena are part of an equilibrium reporting strategy. They argue that managers wish to report higher earnings in order to convey higher long-run earnings. However, if the news is bad, managers have incentives to under-report earnings by the maximum amount possible, preferring to take a “big bath” in the current period in order to reduce the inferred precision of the earnings number. If the news is good, managers prefer to report smaller earnings surprises by smoothing earnings in order to raise the inferred precision of the earnings number. In both cases, this reporting behavior maximizes the value of the firm.

Based on the above arguments and consistent with prior research, the current study expects that managers may exercise their accounting discretion to *overstate* goodwill impairment losses by taking “big bath” charges (smoothing reported earnings) when pre-write-off earnings are abnormally low (high). The above discussion results in the following sub hypothesis (stated in the alternative form):

H2b: *Ceteris paribus*, firms with abnormally low and abnormally high pre-write-off earnings are more likely to report higher amounts of goodwill impairment losses.

4.2.3. Management change. Prior studies provide evidence that incoming CEOs have incentives to “take a bath” in the year of the executive change (e.g., Strong and Meyer, 1987; Elliott and Shaw, 1988; Francis et al., 1996; Riedl, 2004; Kvaal, 2005; Beatty and Weber, 2006; Lapointe-Antunes et al., 2008; Masters-Stout et al., 2008; Zang, 2008) as the reported low earnings may be blamed on the old management, and the historical bases for future comparison will be reduced. In addition, relieving future income of these charges enhances the opportunity for showing improved earnings and firm performance in later periods (Moore, 1973).

An alternative argument suggests that the positive association between impairments and changes in management may reflect true economic changes as opposed to managerial opportunism, as new management may exercise greater scrutiny over existing assets or change the firm’s strategic focus, resulting in impairments (Francis et al., 1996; Wilson, 1996; Riedl, 2004). A final argument consistent

with new managers of poorly performing firms taking impairments that reflect the true underlying economics of the firm suggests that management may be changed as a consequence of poor performance that necessitates goodwill impairment losses (Murphy and Zimmerman, 1993; Fields et al., 2001). To the extent the selected economic factors used in the regression equation already control for the underlying economic performance of the firm, this variable may capture new CEOs' reporting incentives to "take a bath" when they are appointed.

Based on the above arguments and consistent with the results of prior research, the current study expects that a greater amount of goodwill impairment losses will be reported by firms that experience a recent change in the CEO. The previous discussion results in the following sub hypothesis (stated in the alternative form):

H2c: *Ceteris paribus*, firms that experience a recent change in CEO are more likely to report higher amounts of goodwill impairment losses.

4.3. *Corporate Governance*

Wilson (1996, p. 176) argues that most of the proxies for managers' reporting incentives are also good proxies for economic impairment, suggesting that researchers should not equate managers' use of discretion with opportunism and should explicitly attempt to control for managers' information-efficient incentives in explaining the accounting choices they make. Consequently, this study controls for the effect of strong governance mechanisms hypothesized to constrain opportunism and restrict managers' ability to report write-offs that differ from predicted economic losses. Managers disciplined by effective governance mechanisms are less likely to act opportunistically but instead use their accounting discretion to convey their private information. Alternatively, given an incentive to manipulate, having weak governance structures is more likely to allow managers to opportunistically exploit their accounting discretion resulting in impairments that are less reflective of the firm's underlying economics.

Prior studies suggest that effective governance mechanisms help improve the quality of financial reporting. In particular, they provide evidence that firms with stronger governance mechanisms are less

likely to engage in earnings management, commit fraud or be subject to SEC enforcement actions for allegedly manipulating earnings (Warfield et al., 1995; Beasley, 1996; Dechow et al., 1996; Bushee, 1998; Chtourou et al., 2001; Klein, 2002; Koh, 2003; Xie et al., 2003; Peasnell et al., 2005; Mulgrew and Forker, 2006; Ebrahim, 2007). They also provide evidence that effective governance practices are positively related with disclosure quality (e.g., Karamanou and Vafeas, 2005). Furthermore, Verriest and Gaeremynck (2009) report that firms with stronger corporate governance mechanisms measured by the amount of independent members on the board are more likely to engage in goodwill impairment. Hence, motivated by the above and following prior research, this study expects goodwill write-offs to have significant positive associations with effective governance mechanisms under the information-efficient perspectives of accounting choice.⁷ Shareholders will not expect boards to constrain accounting choices credibly used by managers to signal their private information about future cash flows (Healy and Wahlen, 1999). This leads to the following hypothesis (stated in the alternative form):

H3: *Ceteris paribus*, firms with stronger governance mechanisms are more likely to report higher amounts of non-opportunistic goodwill impairment losses.

Six empirical proxies (board independence, separate chairman, activity, blockholders, and shares held by executive and non-executive directors) are used, as discussed in Section 5.

5. Research Design

A one-stage test⁸ using a multivariate pooled tobit regression⁹ is used in this study to examine the determinants of goodwill impairment losses in United Kingdom. The model controls for the time period by adding a year-end dichotomous variable (*YEND*) that takes the value of 1 for the 2005 year-end firm observations, and 0 for the 2006 year-end firm observations. Data on goodwill impairments and corporate governance variables are hand-collected from the annual reports of the sample firms, while firm-specific financial variables are collected from the *Hemscott Premium Database*, supplemented by the firms' annual reports when necessary. Finally, financial statements prepared in a currency different from pounds sterling are translated into pounds using

the exchange rate at the balance sheet date. The following model is used to implement the analysis:

$$\begin{aligned}
 GIL = & \alpha + \beta_1 B/M + \beta_2 GWA + \beta_3 CGU + \beta_4 \Delta TURNOVER + \beta_5 \Delta OCF \\
 & + \beta_6 ROA + \beta_7 DEBTRATIO + \beta_8 BATH + \beta_9 SMOOTH \\
 & + \beta_{10} \Delta CEO + \beta_{11} BINDEP + \beta_{12} SEPCHAIR + \beta_{13} BACTIVITY \\
 & + \beta_{14} BLOCK + \beta_{15} EXEOWN + \beta_{16} NONEXEOWN + \beta_{17} ADD \\
 & + \beta_{18} USCLIST + \beta_{19} YEND + \beta_{20} SIZE + e
 \end{aligned}$$

where:

<i>GIL</i>	=	firm <i>i</i> 's reported goodwill impairment loss (expressed as a positive number) deflated by total assets at the end of $t - 1$;
<i>B/M</i>	=	firm <i>i</i> 's book value of equity (adjusted for goodwill write-offs) divided by market value of equity at the end of t ;
<i>GWA</i>	=	firm <i>i</i> 's opening carrying value of goodwill deflated by total assets at the end of $t - 1$;
<i>CGU</i>	=	a dichotomous variable equal to 1 if firm <i>i</i> has more than one cash-generating unit at the end of t , and 0 otherwise;
$\Delta TURNOVER$	=	the change in turnover for firm <i>i</i> from period $t - 1$ to t deflated by total assets at the end of $t - 1$;
ΔOCF	=	the change in operating cash flows for firm <i>i</i> from period $t - 1$ to t deflated by total assets at the end of $t - 1$;
<i>ROA</i>	=	the return on assets for firm <i>i</i> at the end of $t - 1$ (measured as pre-tax profit divided by total assets);
<i>DEBTRATIO</i>	=	firm <i>i</i> 's total debt at the end of $t - 1$ divided by total assets at the end of $t - 1$;
<i>BATH</i>	=	the change in firm <i>i</i> 's pre-write-off earnings from $t - 1$ to t deflated by total assets at the end of $t - 1$, when this change is below the median of non-zero negative values of this variable, and 0 otherwise;
<i>SMOOTH</i>	=	the change in firm <i>i</i> 's pre-write-off earnings from $t - 1$ to t deflated by total assets at the end of $t - 1$, when this change is above the median of non-zero positive values of this variable, and 0 otherwise;
ΔCEO	=	a dichotomous variable equal to 1 if firm <i>i</i> experiences a change in CEO in $t - 1$ or t , and 0 otherwise;
<i>BINDEP</i>	=	the number of independent non-executive directors divided by the total number of board members;
<i>SEPCHAIR</i>	=	a dichotomous variable equal to 1 if the roles of chairman and CEO are separate, and 0 otherwise;
<i>BACTIVITY</i>	=	the number of meetings of the board of directors during the financial year;
<i>BLOCK</i>	=	the cumulative percentage of outstanding common shares held by blockholders holding at least 10 per cent of outstanding shares and who are not part of the board of directors;
<i>EXEOWN</i>	=	the total number of beneficial and non-beneficial common shares held by executive directors divided by the total number of outstanding common shares;

<i>NONEXEOWN</i>	=	the total number of beneficial and non-beneficial common shares held by non-executive directors divided by the total number of outstanding common shares;
<i>ADD</i>	=	a dichotomous variable equal to 1 if firm <i>i</i> has additions to its goodwill due to acquisitions during the financial year, and 0 otherwise;
<i>USCLIST</i>	=	a dichotomous variable equal to 1 if firm <i>i</i> is cross-listed on the U.S. <i>NYSE</i> or <i>NASDAQ</i> , and 0 otherwise;
<i>YEND</i>	=	a dichotomous variable equal to 1 for the 2005 year-end firm observations, and 0 otherwise; and
<i>SIZE</i>	=	the natural logarithm of total assets at the end of $t - 1$.

Similar to Francis et al. (1996), Riedl (2004), Lapointe-Antunes et al. (2008), and Zang (2008), the dependent variable *GIL* is firm *i*'s reported goodwill impairment loss (expressed as a positive number) deflated by total assets at the end of $t - 1$.¹⁰

To test *H1*, six variables are used in the model to proxy for the economic impairment of goodwill. These variables are measured at the *firm level* and attempt to capture the actual impairment of *firm-wide* goodwill due to the unavailability of financial data to measure the actual impairment at the cash-generating unit level.¹¹

The first three variables are intended to proxy for the characteristics of goodwill (*B/M*, *GWA*, *CGU*). The first proxy, *B/M*, treats the whole firm as one cash-generating unit. Firms with a higher book-to-market ratio are expected to report more goodwill impairment losses. Following Zang (2008) and Lapointe-Antunes et al. (2008), the second proxy, *GWA*, is measured as the opening carrying value of goodwill deflated by total assets at the end of $t - 1$.¹² A firm with a greater amount of goodwill in its asset composition may report more goodwill impairment losses because the relative amount of goodwill exposed to impairment tests is greater (Zang, 2008). Therefore, the study expects a positive association between goodwill impairment losses and *GWA*. The third variable, cash-generating units, *CGU*,¹³ may have an impact on the likelihood of an impairment loss being recognized (Beatty and Weber, 2006). On one hand, firms with more than one cash-generating unit are expected to carry out more impairment tests and thus may report higher goodwill impairment losses because an existing loss in one unit cannot be netted against an increase in another unit (Schneider, 2001). Managers of firms with multiple cash-generating units may also have more flexibility to use their write-off discretion to overstate goodwill impairments (take a bath or smooth reported income) by allocating the greater part of goodwill to cash-generating units that are

expected to decrease in value. Alternatively, this discretion may be used to understate or avoid goodwill impairments by allocating the greater part of goodwill to cash-generating units that are expected to increase in value and hence lower the probability of recognizing goodwill impairment losses. As a result, the current study does not predict a sign on *CGU*.

Similar to Francis et al. (1996), Riedl (2004), Lapointe-Antunes et al. (2008), and Zang (2008), the next three economic variables (Δ *TURNOVER*, Δ *OCF*, *ROA*) control for firm-specific past performance and firm-specific change in performance. The first variable, Δ *TURNOVER*, captures accrual-related performance attributes (Riedl, 2004). In addition, it represents a gross measure of firm performance, which reflects more of the recoverability of goodwill's value. The second variable, Δ *OCF*, captures cash-related performance attributes (Riedl, 2004). In addition, it represents a net measure of performance, which reflects more of the return on investment in goodwill (Riedl, 2004). Cash flows are expected to be a key economic driver that determines the amount of any goodwill impairment loss since value-in-use estimates are highly dependent on cash flow projections. Generating lower cash flows than expected increases the likelihood that impairment charges will be required. The third variable, *ROA*, captures the firm's prior profitability. It is expected that the poorer the firm's past performance, the greater the magnitude of reported goodwill impairment losses (Francis et al., 1996; Zang, 2008). As a result, the study predicts a negative sign on Δ *TURNOVER*, Δ *OCF*, and *ROA*.

To test *H2a*, *H2b*, and *H2c*, four variables are used to proxy for incentives managers may face in recording goodwill write-offs (*DEBT-RATIO*, *BATH*, *SMOOTH*, Δ *CEO*).

The first variable, *DEBTRATIO*, is measured as the firm's total debt at the end of $t - 1$ divided by total assets at the end of $t - 1$. Total debt is collected from the *Hemscott Premium Database* and defined as the sum of short-term (debt in current liabilities) and long-term debt. Unlike Riedl (2004) and Beatty and Weber (2006), this study does not use the details of firms' actual debt contracts and covenants to differentiate between private and public debt and uses a crude proxy (debt-to-asset ratio) to proxy for the tightness and proximity of firms to violation of their debt covenants. According to *H2a*, the current study does not predict a sign on *DEBTRATIO*.

Similar to Riedl (2004), the second variable, *BATH*, is measured as the change in firms' pre-write-off earnings from $t - 1$ to t deflated by

total assets at the end of $t - 1$, when this change is below the median of non-zero negative values of this variable, and 0 otherwise. The third variable, *SMOOTH*, is measured as the change in firms' pre-write-off earnings from $t - 1$ to t deflated by total assets at the end of $t - 1$, when this change is above the median of non-zero positive values of this variable, and 0 otherwise. According to *H2b*, the current study expects a negative (positive) association between reported goodwill impairment losses and *BATH* (*SMOOTH*).

Similar to previous studies (e.g., Lapointe-Antunes et al., 2008), the fourth variable, ΔCEO , is a dichotomous variable equal to 1, if the firm experiences a change in CEO in $t - 1$ or t , and 0 otherwise.¹⁴ The ΔCEO variable is hand-collected from the sample firms' annual reports. According to *H2c*, the current study expects a positive association between reported goodwill impairment losses and ΔCEO .

To test *H3*, six variables are used to proxy for effective corporate governance mechanisms (*BINDEP*, *SEPCHAIR*, *BACTIVITY*, *BLOCK*, *EXEOWN*, and *NONEXEOWN*). Consistent with *H3*, a positive sign is predicted on all six variables.

The first variable, *BINDEP*, is measured as the number of independent non-executive directors divided by the total number of board members. Directors' independence is measured according to firms' disclosures in their annual reports. Prior studies provide evidence that firms with a higher proportion of independent directors on their boards are less likely to engage in accruals earnings management, commit fraud or be subject to SEC enforcement actions for allegedly manipulating earnings (e.g., Beasley, 1996; Dechow et al., 1996; Xie et al., 2003; Peasnell et al., 2005).

The second variable, *SEPCHAIR*, is a dichotomous variable equal to 1 if the roles of chairman and CEO are separate and 0 otherwise. Fama and Jensen (1983) recommend that the roles of the chairman and CEO be separated, in order to limit the power of the CEO to expropriate the shareholders' interests. Jensen (1993, p. 866) also argues that without the direction of an independent chairman, it is much more difficult for the board to perform its critical monitoring function.

The third variable, *BACTIVITY*, as measured by the frequency of board meetings, is considered an important dimension of board monitoring operations (Vafeas, 1999; Xie et al., 2003), and the U.K. Combined Code (FRC, 2003, p. 5) recommends that the board should meet sufficiently regularly to discharge its monitoring duties effectively.

The fourth variable, *BLOCK*, is measured as the cumulative percentage of outstanding common shares held by blockholders holding at least 10 per cent of outstanding shares and who are not part of the board of directors¹⁵ (Beasley, 1996; Bushee, 1998; Chtourou et al., 2001; Lapointe-Antunes et al., 2008). Large shareholders have been viewed by prior studies as an alternative external governance mechanism which actively or passively monitors management's actions. Shleifer and Vishny (1986, 1997) suggest that large shareholders, in view of their significant equity stake in the firm, have greater incentives to collect information and monitor management's actions thereby avoiding the traditional free rider problem. Prior research also suggests that institutional shareholders in the United Kingdom are likely to be more active in their monitoring capacity than their U.S. counterparts as they face fewer restrictions with respect to their ownership and monitoring actions (Shleifer and Vishny, 1997; Short and Keasey, 1999). Short and Keasey (1999, p. 83) argue that much of the monitoring of companies by U.K. institutions takes place in a private "behind the scenes" fashion, which allows institutions to take joint actions to constrain managerial opportunism without drawing public attention to the fact. They further argue that the geographical clustering of the institutional shareholders within the City of London leads to an effective but informal monitoring of the U.K. listed companies.

The fifth variable, *EXEOWN*, is measured as the total number of common shares held by executive directors divided by the total number of outstanding common shares. The belief that managerial ownership helps to reduce agency costs and restrict managerial opportunism in agency settings arising from the separation of corporate ownership and control is well documented in the agency theory (Jensen and Meckling, 1976; Jensen, 1993). Alternatively, in a U.S.-based study, Morck et al. (1988) suggest that high levels of managerial ownership may provide managers with a deeper "entrenchment" because, through greater ownership levels, managers are able to exert greater control over decision making without fear of discipline from other external shareholders. However, in a U.K.-based study, Short and Keasey (1999) suggest that the greater institutional monitoring and the lesser ability to mount take-over defenses within the United Kingdom leads to management becoming entrenched at higher levels of ownership in the United Kingdom compared to their U.S. counterparts. The empirical results of Short and Keasey (1999) provide strong evidence of a consistently significant and positive association between performance and managerial ownership at

high levels of ownership. This is consistent with the hypothesis that the “convergence of interest” effect dominates the “entrenchment effect” at high levels of ownership in the United Kingdom.

The sixth variable, *NONEXEOWN*, is measured as the total number of common shares held by non-executive directors divided by the total number of outstanding common shares. Share ownership is expected to provide independent non-executive directors with greater incentives to monitor executive directors than other independent directors with insignificant shareholdings (Jensen, 1989, 1993).

Finally, four control variables are included in the model. *ADD* is a dichotomous measure of additions to goodwill due to acquisitions during the financial year. *ADD* may proxy for merger activity as firms active in mergers and acquisitions may be more inclined to impair goodwill associated with prior unprofitable acquisitions as the decrease in the carrying value of goodwill will be offset by the additions to goodwill during the year. Furthermore, the requirements to review goodwill arising on acquisition for impairment as soon as possible after the acquisition date may encourage managers to immediately identify and write off any overpayments relating to acquisitions that take place during the financial year. *USCLIST* is a dichotomous measure of U.S. cross-listing. Cross-listed firms may be more familiar with goodwill impairment tests because they have been required to carry out such tests under the requirements of SFAS 142 since 2001. Such firms are also likely to face a stricter enforcement regime resulting in more conservative U.K. earnings (Huijgen and Lubberink, 2005). Therefore, cross-listed firms may be more likely to report IFRS 3 goodwill impairments than other firms.¹⁶ As a result, the current study predicts a positive association between reported goodwill impairments and both *ADD* and *USCLIST*. *YEND* controls for the time period. Finally, *SIZE* is measured as the natural logarithm of total assets at the end of $t - 1$. Following prior studies (e.g., Beatty and Weber, 2006; Zang, 2008), the current study does not predict a sign on *SIZE*.

6. Empirical Results

6.1. Sample Construction, Year and Industry Composition

Table 1 presents the sample construction process. Firstly, the top 500 U.K. firms by total market capitalization as listed by the *Financial Times* at March 30, 2007 are selected for the 2005 and 2006 financial

Table 1. *Sample Construction*

	<i>Firm-year observations</i>
Top 500 U.K.-listed firms by market capitalization (as listed by the <i>Financial Times</i> at March 30, 2007) for the 2005 and 2006 financial years	1,000
Observations belonging to the <i>Financials</i> industry	(254)
Observations listed on the <i>Alternative Investment Market</i>	(80)
Observations with no positive goodwill balances	(87)
Observations with insufficient/missing data	(51)
Final Sample	528
Goodwill impairers	109 (20.6%)
Non goodwill impairers	419 (79.4%)
Observations belonging to the 2005 year	256
Observations belonging to the 2006 year	272

Notes: This table presents the construction process for the final sample used to examine the determinants of IFRS 3 goodwill impairment losses.

years.¹⁷ This results in 1000 firm-year observations. Following prior research (e.g., Francis et al., 1996; Riedl, 2004), 254 observations belonging to the *Financials* industry are excluded since their financial reporting processes, as regulated industries, tend not to conform with other industries. Eighty observations listed on the *Alternative Investment Market* (AIM) are excluded as they were required to adopt the IFRS for the first time in 2007. Finally, 87 observations with no positive goodwill balances and 51 observations that do not have necessary data to run the tests are excluded. These procedures result in a final sample that consists of unbalanced data of 528 firm-year observations comprised of 109 write-off (20.6 per cent of sample) and 419 non-write-off observations (79.4 per cent of sample). The sample firms with a mean (median) market capitalization of £2338 (512) million (as listed by the *Financial Times* at March 30, 2007) are significantly larger than non-sample firms with mean (median) market capitalization of £1459 (327) million. Mean and median differences are significant at the 10 and 1 per cent level, respectively.¹⁸ The percentage of sample observations recording a goodwill impairment loss is 20.6 per cent.

The final sample consists of 256 observations belonging to the 2005 financial year comprised of 60 write-off (23.4 per cent) and 196 non-write-off observations; and 272 observations belonging to the 2006 financial year comprised of 49 write-off (18 per cent) and 223 non-write-off observations. The goodwill write-off percentage is not

significantly different between the 2 years included in the final sample of the study.

6.2. Descriptive Statistics

Table 2 provides descriptive statistics for the continuous variables used in the multivariate tobit regression examining the determinants of goodwill impairments losses, as well as the results of two-tailed *t*-tests of differences in means and two-tailed Mann–Whitney *U*-tests of differences in median. The mean (median) goodwill impairment charge for the final sample ($N = 528$) is £50.219 (£0) million. The mean (median) goodwill impairment charge for the write-off observations ($N = 109$) is £243.261 (£6.0) million. This mean goodwill impairment charge represents 1.8 per cent of the book value of total assets at the beginning of the financial year, and the median represents 0.30 per cent. Consistent with *H1*, write-off firms exhibit poorer financial performance than do non-write-off firms, reflected in a significantly lower mean and median for *ROA* and significantly lower medians for Δ *TURNOVER* and Δ *OCF*. Consistent with the expectations of *H3*, they also have stronger governance mechanisms reflected in significantly higher means and medians for *BINDEP*, *BACTIVITY*, and *BLOCK*. However, contrary to the expectations of this study, executive directors hold significantly fewer shares in write-off firms as reflected by the significantly lower median for *EXEOWN*, supporting the “entrenchment hypothesis” that high levels of managerial ownership may be associated with managers acting opportunistically to avoid reporting goodwill impairment losses; and hence no support is provided for *H3* with regard to *EXEOWN* on a univariate basis. In terms of control variables, consistent with prior research (Beatty and Weber, 2006; Zang, 2008), write-off firms are larger than non-write-off firms as reflected by the significantly higher mean and median for *SIZE*.

Table 3 provides descriptive statistics for the dichotomous variables used in the multivariate tobit regression. Consistent with prior research, write-off firms have more cash-generating units and experience more CEO changes than non-write-off firms, as reflected by the statistically significant differences on *CGU* and Δ *CEO*. In addition, write-off firms have more additions to their goodwill and have more observations cross-listed in the United States, as reflected by statistically significant differences on *ADD* and *USCLIST*.

Table 2. Descriptive Statistics – Continuous Variables

Variable	All sample (n = 528)			Write-off observations (n = 109)			Non-write-off observations (n = 419)			Test of differences (write-offs versus non-write-offs)	
	Mean	Median	SD	Mean	Median	SD	Mean	Median	SD	Mean	Median
GILA	50.219	0.000	1,023.930	243.261	6.000	2,251.347	0.000	0.000	0.000	<.000	<.000
GIL	0.004	0.000	0.020	0.018	0.003	0.040	0.000	0.000	0.000	<.000	<.000
B/M	0.331	0.302	0.258	0.362	0.329	0.334	0.323	0.298	0.234	.254	.436
GW/A	0.190	0.137	0.177	0.197	0.150	0.173	0.188	0.134	0.178	.646	.413
ΔTURNOVER	0.113	0.090	0.461	0.075	0.046	0.284	0.123	0.106	0.497	.328	<.000
ΔOCF	0.020	0.011	0.098	0.007	0.004	0.130	0.023	0.013	0.087	.133	.036
ROA	0.084	0.075	0.120	0.060	0.056	0.117	0.090	0.083	0.120	.019	<.000
DEBTRATIO	0.249	0.224	0.191	0.245	0.213	0.159	0.249	0.227	0.198	.834	.691
BATH	-0.016	0.000	0.120	-0.017	0.000	0.100	-0.015	0.000	0.124	.887	.926
SMOOTH	0.029	0.000	0.057	0.033	0.000	0.071	0.028	0.000	0.052	.421	.919
BINDEP	0.498	0.5000	0.121	0.527	0.556	0.137	0.491	0.500	0.116	.005	<.000
BACTIVITY	9.057	9.000	3.036	10.064	9.000	4.126	8.795	8.000	2.624	.003	.002
BLOCK	12.034	10.390	15.015	14.905	11.040	18.300	11.287	10.220	13.963	.056	.087

Table 2. (Continued)

Variable	All sample (<i>n</i> = 528)			Write-off observations (<i>n</i> = 109)			Non-write-off observations (<i>n</i> = 419)			Test of differences (write-offs versus non-write-offs)	
	Mean	Median	SD	Mean	Median	SD	Mean	Median	SD	Mean	Median <i>p</i> -value
<i>EXEOWN</i>	0.038	0.002	0.102	0.034	0.001	0.111	0.039	0.002	0.099	.661	.012
<i>NONEXEOWN</i>	0.014	0.001	0.056	0.017	0.0003	0.056	0.014	0.001	0.056	.547	.150
<i>SIZE</i>	6.889	6.700	1.577	7.316	7.028	1.698	6.778	6.600	1.526	.001	.006

Notes: This table provides descriptive statistics for the continuous variables used in the multivariate tobit regression examining the determinants of goodwill impairments losses, as well as the results of two-tailed *t*-tests of differences in means and two-tailed Mann-Whitney *U*-tests of differences in medians. In this table, the bold values indicate significance.

Variable definitions: *GIL*: the reported goodwill impairment loss amount (in millions of pounds); *GIL*: firm *i*'s reported goodwill impairment loss (expressed as a positive number) deflated by total assets at the end of $t - 1$; *B/M*: firm *i*'s book value of equity (adjusted for goodwill write-offs) divided by market value of equity at the end of t ; *GW*: firm *i*'s opening carrying value of goodwill deflated by total assets at the end of $t - 1$; Δ *TURN*: the change in turnover for firm *i* from period $t - 1$ to t deflated by total assets at the end of $t - 1$; Δ *OCF*: the change in operating cash flows for firm *i* from period $t - 1$ to t deflated by total assets at the end of $t - 1$; *ROA*: the return on assets for firm *i* at the end of $t - 1$ (measured as pre-tax profit divided by total assets); *DEBT*: firm *i*'s total debt at the end of $t - 1$ divided by total assets at the end of $t - 1$; *BATH*: the change in firm *i*'s pre-write-off earnings from $t - 1$ to t deflated by total assets at the end of $t - 1$, when this change is below the median of non-zero negative values of this variable, and 0 otherwise; *SMOOTH*: the change in firm *i*'s pre-write-off earnings from $t - 1$ to t deflated by total assets at the end of $t - 1$, when this change is above the median of non-zero positive values of this variable, and 0 otherwise; *BNDEP*: the number of independent non-executive directors divided by the total number of board members; *BACTIVITY*: the number of meetings of the board of directors during the financial year; *BLOCK*: the cumulative percentage of outstanding common shares held by blockholders holding at least 10 per cent of outstanding shares and are not part of the board of directors; *EXEOWN*: the total number of beneficial and non-beneficial common shares held by executive directors divided by the total number of outstanding common shares; *NONEXEOWN*: the total number of beneficial and non-beneficial common shares held by non-executive directors divided by the total number of outstanding common shares; and *SIZE*: the natural logarithm of total assets at the end of $t - 1$.

Table 3. *Descriptive Statistics – Dichotomous Variables*

<i>Variable</i>	<i>All sample (n = 528) proportion (%)</i>	<i>Write-off observations (n = 109) proportion (%)</i>	<i>Non-write-off observations (n = 419) proportion (%)</i>	<i>Chi-square test of difference (write-offs versus non-write-offs)</i>
<i>CGU</i>	80.7	90.8	78	0.003
<i>ΔCEO</i>	25	35.8	22.2	0.004
<i>SEPCHAIR</i>	94.9	96.3	94.5	0.442
<i>ADD</i>	73.1	82.6	70.6	0.012
<i>USCLIST</i>	8.5	12.8	7.4	0.070
<i>YEND</i>	48.5	55	46.8	0.124

Notes: This table provides descriptive statistics for the dichotomous variables used in the multivariate tobit regression examining the determinants of goodwill impairments losses, as well as the results of two-tailed Chi-Square tests of differences in proportions. In this table, the bold values indicate significance.

Variable definitions: *CGU*: a dichotomous variable equal to 1 if firm *i* has more than one cash generating unit at the end of *t*, and 0 otherwise; *ΔCEO*: a dichotomous variable equal to 1 if firm *i* experiences a change in CEO in *t* – 1 or *t*, and 0 otherwise; *SEPCHAIR*: a dichotomous variable equal to 1 if the roles of chairman and CEO are separate, and 0 otherwise; *ADD*: a dichotomous variable equal to 1 if firm *i* has additions to its goodwill due to acquisitions during the financial year, and 0 otherwise; *USCLIST*: a dichotomous variable equal to 1 if firm *i* is cross-listed on the U.S. *NYSE* or *NASDAQ*, and 0 otherwise; and *YEND*: a dichotomous variable equal to 1 for the 2005 year-end firm observations, and 0 otherwise.

Table 4 presents the Pearson correlations for the variables used in the multivariate tobit regression. The table reveals that the proxies for the hypotheses are not highly correlated with one another or with the control variables. The highest pair-wise correlation coefficient is 0.510, suggesting that multicollinearity does not appear to be a problem in this study.¹⁹

Table 4 also reveals that the majority of actual (economic) impairment variables (*B/M*, *GWA*, *ΔOCF*, and *ROA*) are significantly correlated with IFRS 3 impairment charges (*GIL*) in the predicted direction. In terms of managers' reporting incentives, *DEBTRATIO* has a significant negative correlation with *GIL*. *SMOOTH* is significantly correlated with *GIL* in the predicted direction; and *BATH* and *ΔCEO* are correlated with *GIL* in the predicted direction; however, these correlations are not significant. In terms of corporate governance variables, *BINDEP*, *BACTIVITY*, and *BLOCK* are significantly correlated with *GIL* in the predicted direction. *SEPCHAIR* and *NONEXE-OWN* are correlated with *GIL* in the predicted direction; however, these correlations are not significant. Finally, *ADD* and *USCLIST* are insignificantly correlated with *GIL* in the predicted direction. Although

Table 4. Pearson Correlations

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
1 <i>CGU</i>	1																					
2 <i>BIM</i>	0.181***	1																				
3 <i>GHA</i>	0.156***	0.095**	1																			
4 <i>CGU</i>	0.083*	0.012	0.216***	1																		
5 <i>TURNOVER</i>	0.019	0.042	-0.113***	-0.019	1																	
6 <i>ΔOCF</i>	-0.161**	-0.132***	-0.068*	-0.165***	0.028	1																
7 <i>ROE</i>	-0.132***	-0.132***	-0.132***	-0.132***	0.028	0.484	1															
8 <i>RETRATIO</i>	-0.108*	-0.131***	-0.086**	-0.131***	-0.131***	-0.131***	0.087	1														
9 <i>BATH</i>	-0.028	0.028	0.039	0.12***	0.182***	-0.510***	-0.499***	-0.263***	1													
10 <i>SMOOTH</i>	0.219***	-0.144***	-0.055	-0.064	0.155***	0.015	-0.078*	-0.147***	0.067	1												
11 <i>ACFO</i>	0.062	-0.044	-0.055	0.039	-0.128***	-0.085**	-0.046*	0.039	0.028	0.046	1											
12 <i>BINDEP</i>	0.038	0.076*	0.015	0.039	-0.094**	-0.039	-0.003	-0.021	0.046	-0.021	0.055	1										
13 <i>SECFAIR</i>	0.038	0.076*	0.015	0.039	-0.094**	-0.039	-0.003	-0.021	0.046	-0.021	0.055	0.005	1									
14 <i>RECAPIT</i>	0.038	0.076*	0.015	0.039	-0.094**	-0.039	-0.003	-0.021	0.046	-0.021	0.055	0.005	0.064	1								
15 <i>BLOCK</i>	0.088**	-0.046	0.063	0.064	-0.088**	-0.042	0.019	0.001	0.082*	0.171***	0.098**	0.064	0.064	0.064	1							
16 <i>EXEODWN</i>	-0.027	-0.063	-0.085*	-0.085*	0.079*	0.244***	0.192***	-0.035	-0.186***	0.099**	-0.081*	-0.24***	-0.192***	-0.213***	0.035	1						
17 <i>NONEXEODWN</i>	0.059	0.067	-0.064	0.011	0.047	-0.053	0.004	-0.102**	-0.001	-0.05	-0.018	-0.214***	0.058	0.016	-0.008	-0.003	1					
18 <i>ADD</i>	0.054	0.019	0.125***	0.352***	0.067	0.011	-0.043	-0.021	0.082*	-0.078*	-0.015	0.048	-0.044	-0.041	-0.064	0.018	-0.134***	1				
19 <i>USCLIST</i>	0.061	0	0.008	0.012	-0.026	0.027	0.096**	-0.017	0.02	-0.005	-0.098**	0.273***	0.04	-0.148**	-0.076*	-0.108**	-0.075*	0.047	1			
20 <i>SIZE</i>	-0.023	0.178***	-0.058	0.074*	-0.114***	-0.079*	-0.024	0.18***	0.128***	-0.181***	0.073*	0.389***	0.095**	-0.023	-0.146***	-0.244***	-0.117***	0.147***	0.404***	1		
21 <i>SIZE</i>																					0.002	1
																					0.002	0.404***
																					0.147***	0.404***

Notes: This table presents the Pearson correlations for the variables used in the multivariate tobit regression examining the determinants of goodwill impairment losses. The variable definitions are reported in Tables 2 and 3. *Denotes significance at <.10 level for two-tailed test. **Denotes significance at <.05 level for two-tailed test. ***Denotes significance at <.01 level for two-tailed test.

bivariate correlations exist, the tobit analysis offers advantages over bivariate analysis on the ground of its ability to control for the effects and interrelationships between other independent variables. Therefore, the results of the multivariate regression are given greater consideration in this study.

6.3. Multivariate Results

Table 5 presents the results of the multivariate tobit regression with an adjusted R^2 of 13.2 per cent. In terms of proxies for actual (economic) impairment, as predicted in *H1*, *B/M* ($Z = 1.960$) is positive and significant. ΔOCF ($Z = -1.762$) and *ROA* ($Z = -1.819$) are significantly negative while *GWA* ($Z = 1.358$), albeit of the correct sign, is insignificant. *CGU* ($Z = 1.455$) is positive and insignificant. Finally, contrary

Table 5. *Multivariate Tobit Regression: The Determinants of Goodwill Impairment Losses*

<i>Variable</i>	<i>Prediction</i>	<i>Coefficient</i>	<i>Z-statistic</i>	<i>p-value</i>	<i>VIF</i>
Intercept		-0.1689	-6.279	< .001	
<i>B/M</i>	+	0.0203	1.960	.048	1.339
<i>GWA</i>	+	0.0216	1.358	.174	1.154
<i>CGU</i>	?	0.0131	1.455	.145	1.259
Δ TURNOVER	-	0.0062	0.940	.347	1.232
Δ OCF	-	-0.0589	-1.762	.078	1.647
<i>ROA</i>	-	-0.0533	-1.819	.068	1.692
<i>DEBTRATIO</i>	?	-0.0121	-0.711	.477	1.380
<i>BATH</i>	-	-0.0938	-3.381	< .001	1.872
<i>SMOOTH</i>	+	0.1019	2.136	.0327	1.189
Δ CEO	+	0.0105	1.732	.079	1.097
<i>BINDEP</i>	+	0.0460	2.130	.032	1.575
<i>SEPCHAIR</i>	+	0.0060	0.479	.623	1.086
<i>BACTIVITY</i>	+	0.0033	3.845	< .001	1.201
<i>BLOCK</i>	+	0.0005	2.675	.0075	1.181
<i>EXEOWN</i>	+	0.0596	2.047	.046	1.261
<i>NONEXEOWN</i>	+	0.1102	2.393	.016	1.117
<i>ADD</i>	+	0.0171	2.276	.022	1.259
<i>USCLIST</i>	+	0.0201	1.964	.049	1.434
<i>YEND</i>	?	0.0097	1.654	.120	1.038
<i>SIZE</i>	?	0.0025	1.183	.237	2.739
McFadden's Adjusted R^2	0.132				

Notes: This table presents the results of the tobit regression examining the determinants of goodwill impairment losses. The model uses a sample of 528 firm-year observations (109 write-off observations and 419 non-write-off observations). The variable definitions are reported in Tables 2 and 3. In this table, the bold values indicate significance.

to the expectations, Δ TURNOVER ($Z = 0.940$) is positive and insignificant. In terms of reporting incentive, as predicted in *H2b* and *H2c*, *BATH* ($Z = -3.381$) is negative and significant and both *SMOOTH* ($Z = 2.136$) and Δ CEO ($Z = 1.732$) are significantly positive.

DEBTRATIO ($Z = -0.711$), is negative and insignificant, suggesting that debt is less likely to provide U.K. managers with incentives to manipulate the amount of goodwill impairment losses to avoid the costly violations of debt covenants compared to their U.S. and Canadian counterparts. This may be because there is less information asymmetry between U.K. managers and (private) lenders which creates fewer incentives to manage earnings.²⁰ In terms of corporate governance variables, *BINDEP* ($Z = 2.130$), *BACTIVITY* ($Z = 3.845$), *BLOCK* ($Z = 2.675$), *EXEOWN* ($Z = 2.047$), and *NONEXEOWN* ($Z = 2.393$) are significantly positive, as predicted in *H3*. *SEPCHAIR* ($Z = 0.479$), while of the correct sign, is insignificant. Finally, in terms of control variables, as predicted, *ADD* ($Z = 2.276$) and *USCLIST* ($Z = 1.964$) are positive and significant, while, *YEND* ($Z = 1.654$) and *SIZE* ($Z = 1.183$) are positive and insignificant.

After controlling for economic factors, the overall results suggest that managers are exercising discretion in the reporting of goodwill impairment losses following the adoption of IFRS 3, as indicated by the significant coefficients for *BATH*, *SMOOTH*, and Δ CEO. However, the results also reveal that goodwill impairments are strongly associated with effective governance mechanisms. This suggests that managers are more likely to be exercising their accounting discretion to convey their private information and expectations about the underlying performance of the firm than to be acting opportunistically. The results collectively suggest that, in recording goodwill impairments following the adoption of IFRS 3, managers are more likely responding to changes in economic circumstances and real declines in the value of the firm.

6.4. Factorization of Corporate Governance Variables

Without a clear theory about the complex, multi-dimensional nature of corporate governance and in order to develop a parsimonious representation for this construct and draw stronger conclusions regarding its role in constraining managerial opportunism over write-offs (Larcker et al., 2007), principal component analysis is also used in this study as a sensitivity analysis to group the individual corporate governance variables into more reliable and valid factors that capture different

dimensions of corporate governance quality and yield more stable estimates. *SEPCHAIR* variable is omitted from this analysis as it was not significant in explaining managers' goodwill reporting choices when used individually. Factors with an eigenvalue greater than one are retained (Kaiser, 1960). Varimax orthogonal (uncorrelated) rotation is used to minimize the number of variables that have high loadings on each factor.

Table 6A, B present the results of this analysis. Three factors (principal components) that jointly explain 71.023 per cent of the total variance in the individual corporate governance proxies are retained.²¹

Table 6. *Corporate Governance Variables Based on Principal Component Analysis*

(A) *Factor loading*

<i>Variable</i>	<i>Principal component 1</i>	<i>Principal component 2</i>	<i>Principal component 3</i>
<i>BINDEP</i>	0.419	-0.617	-0.292
<i>BACTIVITY</i>	0.749	0.061	0.075
<i>BLOCK</i>	0.026	-0.002	0.968
<i>EXEOWN</i>	-0.751	0.082	0.062
<i>NONEXEOWN</i>	0.141	0.890	-0.116

(B) *Description*

	<i>CG-PC1 monitoring versus managerial ownership</i>	<i>CG-PC2 non-executive directors' ownership versus board independence</i>	<i>CG-PC3 blockholders</i>
Eigenvalue	1.460	1.091	1.000
Variance explained	29.204	21.811	20.008
Variance explained (cumulative)	29.204	51.015	71.023

Notes: Components have been Varimax rotated. Rotation converged in five iterations.

This table presents the details about the principal component analysis used to factorize governance variables into a smaller number of principal components (factors). (A) Reports the factor loadings for the retained three principal components. Figures in bold print indicate factor loadings in excess of 0.4 in absolute terms.

(B) Reports the names assigned to each principal component based on the governance variables which exhibit factor loadings in excess of 0.40 in absolute value. The bottom three rows of (B) present the eigenvalues assigned for each principal component and the percentage of total variance in the governance variables explained by each principal component separately and cumulatively. The principal component analysis is based on the 528 firm-year observations used in the primary analysis of the study.

Following Larcker et al. (2007), variables are retained if they have a minimum factor loading of 0.40 in absolute value. Similar to Larcker et al. (2007), each factor is assigned a name based on the characteristics of the governance variables which exhibit factor loadings in excess of 0.40 in absolute value. The first factor is positively correlated with *BINDEP* and *BACTIVITY*, and negatively correlated with *EXEOWN*. This factor seems to account for the monitoring power of the board of directors as reflected by board independence and activity versus managerial ownership. The second factor is positively correlated with *NON-EXEOWN* and negatively correlated with *BINDEP*. This factor seems to reflect concern for outside directors' interest versus board independence. Finally, the third factor is positively correlated with *BLOCK* and hence seems to account for the monitoring power of institutional (large) shareholders.²² The primary tobit analysis is repeated after replacing the individual corporate governance variables with the three corporate governance factors. Consistent with the hypothesis examined in this study, a positive association is expected between reported goodwill impairment losses and each of these factors. Table 7 presents the results of this analysis. The first ($Z = 2.596$) and third ($Z = 1.783$) governance factors are positive and significant at the 1 and 10 per cent levels, respectively. The second governance factor ($Z = 1.140$), while of the correct sign, is insignificant. The inferences on all the other variables remain unaffected and similar to those reported in Table 5. These results provide corroborating evidence regarding the role corporate governance plays in mitigating managerial opportunism with respect to goodwill impairment losses and reinforce the conclusions reached in the primary analysis of the study.

7. Additional Analyses

To provide additional assurance that the perceived reporting incentives are less likely to be opportunistic. The primary tobit analysis was repeated including the interactions between *BATH*, *SMOOTH*, and ΔCEO with the first principal component (*CG-PCI*).²³ This was under the hypothesis that these reporting incentives are less likely to be opportunistic if they occur in conjunction with effective governance mechanisms. Earnings management will benefit shareholders if managers use their accounting discretion to signal private information about future performance (Healy and Wahlen, 1999). In such cases, shareholders will not expect boards to constrain earnings management.

Table 7. *Tobit Regression Using Corporate Governance Factors*

<i>Variable</i>	<i>Prediction</i>	<i>Coefficient</i>	<i>Z-statistic</i>	<i>p-value</i>	<i>VIF</i>
Intercept		-0.0979	-5.324	< .001	
<i>B/M</i>	+	0.0217	1.995	.046	1.332
<i>GWA</i>	+	0.0182	1.105	.269	1.153
<i>CGU</i>	?	0.0145	1.584	.113	1.244
Δ <i>TURNOVER</i>	-	0.0024	0.366	.714	1.208
Δ <i>OCF</i>	-	-0.0420	-1.642	.084	1.622
<i>ROA</i>	-	-0.0634	-2.383	.017	1.676
<i>DEBT RATIO</i>	?	-0.0202	-1.170	.242	1.349
<i>BATH</i>	-	-0.1034	-3.644	< .001	1.829
<i>SMOOTH</i>	+	0.1232	2.910	.004	1.169
Δ <i>CEO</i>	+	0.0133	2.218	.023	1.085
<i>CG-PC1</i>	+	0.0078	2.596	.009	1.259
<i>CG-PC2</i>	+	0.0033	1.140	.254	1.215
<i>CG-PC3</i>	+	0.0050	1.783	.074	1.207
<i>ADD</i>	+	0.0151	1.990	.047	1.245
<i>USCLIST</i>	+	0.0200	1.859	.063	1.393
<i>YEND</i>	?	0.0086	1.550	.121	1.029
<i>SIZE</i>	?	0.0027	0.946	.344	2.632
McFadden's Adjusted R^2	0.153				

Notes: This table presents the results of the tobit regression examining the determinants of goodwill impairment losses. This model is similar to the model shown in Table 5 except that corporate governance variables (*BINDEP*, *BACTIVITY*, *BLOCK*, *EXEOWN*, *NONEXEOWN*) are replaced with corporate governance factors (*CG-PC1*, *CG-PC2*, *CG-PC3*) based on principal component analysis and *SEPCHAIR* is omitted. The model uses a sample of 528 firm-year observations over the period 2005–2006 (109 write-off observations and 419 non-write-off observations).

Variable definitions: *CG-PC1*: Corporate governance principal component 1 representing board independence and activity versus managerial ownership.

CG-PC2: Corporate governance principal component 2 representing non-executive directors' ownership versus board independence.

CG-PC3: Corporate governance principal component 3 representing blockholders.

The other variables are defined in Tables 2 and 3.

A negative sign is predicted on *BATH*CG-PC1* and a positive sign on both *SMOOTH*CG-PC1* and Δ *CEO*CG-PC1*. Consistent with this hypothesis, results (un-tabulated) reveal that *BATH*BINDEP* ($Z = -3.867$), *SMOOTH*BINDEP* ($Z = 2.763$) and Δ *CEO*BINDEP* ($Z = 2.138$) are all significant in the predicted direction. The inferences on all the other variables remain unaffected, providing additional evidence that the perceived reporting incentives more likely reflect the provision of managers' private information, as opposed to their acting opportunistically.

As discussed earlier, the use of OLS when the dependent variable is censored is inappropriate and produces biased (underestimated in particular) as well as inconsistent estimates (Greene, 1997; Gujarati,

2003). However, Maddala (1991, p. 804) notes that the tobit model should not be used if the observations on the dependent variable are missing because of individual choices rather than pure censoring. From this perspective, it is possible that some or even all of the non-write-off observations have true values of zero, reflecting that there has been no change in the economic value of their goodwill (no increase or decrease), and suggesting that the distribution may not be censored. In this alternative scenario, the use of OLS may be appropriate. Consequently, an OLS regression was also run. The untabulated results (adjusted $R^2 = 18.6$ per cent) are quite similar to those reported under the primary tobit analysis. However, *B/M*, Δ *CEO*, *BLOCK*, and *NON-EXEOWN*, while all of the correct sign, are no longer significant; and *GWA*, while insignificant in the primary analysis, become significant at the 10 per cent level. The inferences on all the other variables remain unaffected. Comparison of the OLS and the tobit coefficients, reveals that OLS coefficients are smaller in magnitude than their tobit equivalents, consistent with the view that the use of OLS when the dependent variable is censored produces biased (underestimated in particular) and inconsistent estimates.

To examine whether the results of the study are driven by industry effects, the primary tobit analysis was repeated after incorporating eight industry dichotomous variables. The industry membership is defined by the Industry Classification Benchmark (ICB) code, as given by the *London Stock Exchange* (LSE). The industry of the firm is expected to provide some common effect with respect to the goodwill impairment, as the impairment charges are closely related to competition, deterioration, or other economic factors of the industry (Bens, 2006; Zang, 2008). However, the untabulated results reveal that none of the industries is significant in explaining the goodwill impairment losses, suggesting that an industry effect is unlikely to have driven the results documented in the primary tobit analysis. The inferences on all the other variables remain unaffected. This result is also consistent with the write-off and non-write-off observations having a similar industry composition with three industries, Consumer Services (ICB 5000), Industrials (ICB 2000), and Consumer Goods (ICB 3000), having the highest presentation (approximately 74 per cent) within each grouping (untabulated).

Unlike prior studies (e.g., Beatty and Weber, 2006; Lapointe-Antunes et al., 2008), the current study does not examine the role of managers' bonuses in their decisions to report goodwill impairment

losses. Conyon et al. (2006) document that base salaries are a more important component of CEO pay in the United Kingdom compared to the United States. They find that U.S. CEO incentives in 2003 were about 8.8 times U.K. CEO incentives, suggesting that pay-related governance problems are more severe in the United States. However, the analysis was repeated after adding *BONUS* as measured by the value of bonus compensation for the CEO at the end of t divided by the CEO's base salary at the end of t . Untabulated results reveal that *BONUS* ($Z = 1.503$) is positive and insignificant suggesting that U.K. managers are less likely to exploit their accounting discretion to manage earnings for bonus purposes.

Finally, in addition to the pooled regression analysis, yearly analysis was performed to examine whether the results are time-sensitive or influenced by transition effects from U.K. GAAP to IFRS. The untabulated results yield inferences that are qualitatively similar to those reported under the primary tobit analysis (Table 5).

8. Summary and Conclusions

Using a sample of 528 firm-year observations, drawn from the top 500 U.K. listed firms for the years 2005 and 2006, this study examines managers' use of discretion in determining goodwill impairment losses following the mandatory adoption of IFRS 3, and whether this discretion reflects opportunistic reporting by managers or the provision of their private information. Despite the standard setters' contention that the impairment-only approach will improve the accounting treatment for goodwill and provide users with more useful and value-relevant information regarding the underlying economic value of goodwill, this approach has been largely criticized on the grounds of the managerial discretion inherent in the process of testing goodwill for impairment. Therefore, *ex-ante*, it is unclear how the impairment-only approach has affected the characteristics of reported goodwill impairment losses.

After controlling for economic factors, empirical results reveal that managers are exercising discretion in the reporting of goodwill impairment losses following the adoption of IFRS 3. The results also reveal that goodwill impairments are strongly associated with effective governance mechanisms, suggesting that managers are more likely to be using the discretion afforded by IFRS 3 efficiently to convey their private information and expectations about the underlying performance of the firm rather than acting opportunistically in the write-off year.

Effective governance mechanisms are likely to restrict managers' ability to report goodwill impairments that differ from predicted economic losses, resulting in the recognition of more timely impairments that better reflect the firm's underlying economics. Contrary to criticisms that surrounded the application of the impairment approach, the overall results suggest that IFRS No. 3 has improved the quality of reported goodwill impairment losses, and hence provide support to the IASB's contention that IFRS 3 allows firms to reflect their underlying economic attributes. These inferences are robust to various modeling specifications and variable definitions. They are also robust to the principal component aggregation of the corporate governance variables.

One of the criticisms of write-offs reported under the former trigger-based standards (e.g., FRS 10 and FRS 11) is that an absence of a specific impairment trigger gave firms too much discretion in timing the write-offs which could be used by managers opportunistically to meet certain reporting objectives (Henning et al., 2004; Hayn and Hughes, 2006). It is possible that the requirement to test goodwill for impairment annually (irrespective of whether there is any indication that it may be impaired) at the cash-generating unit level has removed many of the "cushions" protecting goodwill from impairment (IASB, 2004a). It could also have eradicated the discretion available to managers in deciding when to test it for impairment, resulting in more timely recognitions of existing goodwill impairments that better reflect the underlying performance of the firm.

The results of this study should be of interest to standard setters and policy makers as they suggest that managers are likely to utilize the discretion permitted in principles-based standards. They also highlight the importance of effective governance mechanisms in constraining managerial opportunism associated with such standards. Future research may examine the value relevance or information content of IFRS 3 goodwill impairments. Such studies offer an opportunity to explore additional questions related to the relevance of the goodwill impairments and hence may be viewed as complementary to this study.

Notes

1. For example, in explaining how IFRS 3 improves financial reporting, the IASB (2004a, BC 140, 142) argued that "straight-line amortization of goodwill over an arbitrary period fails to provide useful information. The Board noted that both anecdotal

and research evidence supports this view ... The Board reaffirmed the view it reached in developing ED 3 that if a rigorous and operational impairment test could be devised, more useful information would be provided to users of an entity's financial statements under an approach in which goodwill is not amortized, but tested for impairment annually or more frequently if events or changes in circumstances indicate that the goodwill might be impaired."

2. FRS 10 allowed goodwill to have a useful economic life of greater than 20 years, or even indefinite, but only when it is expected to be capable of continued measurement. Where goodwill is regarded as having an indefinite useful economic life, it should not be amortized. If goodwill is not amortized, or amortized over a period of more than 20 years, then an impairment review must be performed each year to ensure that the carrying value of the goodwill does not exceed its recoverable amount in accordance with FRS 11 *Impairment of Fixed Assets and Goodwill* (ASB, 1998). However, the way that U.K. firms applied the requirements of FRS 10 and FRS 11 was regarded as "slightly surprising, given their long-standing hostility to amortizing goodwill: most of them chose the amortization route in order to avoid the complexities of the full-blown impairment testing regime" (Paterson, 2002, p. 102). Andrews (2006) also reports that the majority of large U.K. firms in the 2004 financial year have selected 20 years as the finite useful economic life for goodwill and have amortized the asset over its finite life.

3. In deciding not to converge with SFAS 142 on the level of the goodwill impairment test, the Board noted that several North American round-table participants expressed a high level of dissatisfaction at being prevented by SFAS 142 from recognizing goodwill impairments that they knew existed at levels lower than reporting units (as defined by SFAS 142), but which disappeared once the lower level units were aggregated with other units containing sufficient cushions to offset the impairment loss (IASB, 2004b, BC 149).

4. The goodwill impairment test required by IFRS 3 is a one-stage process, as opposed to the two-stage test required by the U.S. SFAS 142. If the carrying amount of a cash-generating unit that contains goodwill exceeds its fair value, firms are required to report an impairment loss under IAS 36. However, under SFAS 142, U.S. firms that fail the first step can still avoid recording an impairment loss if the implied fair value of goodwill exceeds its carrying value (FASB, 2001).

5. For example, managers may have incentives to act strategically in the transition period by increasing the amount of write-offs that are treated as merely an accounting change or charged to retained earnings thereby decreasing the probability and amount of future impairments that would, if recorded, be included in income from continuing operations (Beatty and Weber, 2006).

6. Ramanna (2008) argues that these findings can alternatively be explained by arguments that impairments are utilized as a "big bath" strategy, or by management's incompetence to avoid losses despite SFAS 142's discretion potential. In both cases, the impairments are informative to markets, but not because the standard has provided a framework for managers to reliably report private information.

7. The implicit assumption in this study is that causality runs from corporate governance practices to reported impairment losses. However, corporate governance practices may also be driven by the poor performance that necessitates goodwill impairment losses. Endogeneity problems in corporate governance research may be large but not "fatal" requiring careful interpretation of the results (Denis, 2001, p. 198).

8. The one-stage impairment test of IFRS 3 suggests that managers cannot evaluate whether impairment occurs without understanding the magnitude of the impairment. The alternative two-stage specification is more appropriate in a U.S. context, with the

first stage capturing the decision to report an impairment using a logistics regression, and the second capturing the magnitude of the impairment using a tobit regression.

9. A tobit regression is used rather than an OLS. The tobit is a censored regression model where observations on the dependent variable are unobservable below some threshold (Maddala, 1983, 1991). Firms that experience an increase in the economic value of goodwill are not allowed to record the increase, causing the distribution of the dependent variable to be censored at zero. OLS produces biased and inconsistent estimates when the dependent variable is censored (Greene, 1997; Gujarati, 2003).

10. Due to the difficulty of separating write-offs into discretionary and non-discretionary components, the majority of write-off studies (e.g., Francis et al., 1996; Riedl, 2004; Beatty and Weber, 2006; Zang, 2008) use the reported write-off amount as the dependent variable, assuming all write-offs to be unanticipated.

11. This may be a noisy measure as firms that perform poorly at the firm level may be able to avoid impairment if the cash-generating unit performs particularly well. Alternatively, a firm may perform well but still have cash-generating units that impair goodwill because of poor performance.

12. The study deflates all firm-specific financial variables by the same deflator (lagged total assets) to reduce potential heteroscedasticity problems (e.g., Riedl, 2004; Lapointe-Antunes et al., 2008; Zang, 2008).

13. *CGU* is measured as a dichotomous variable rather than a continuous one as many firms do not disclose the number of cash-generating units, simply stating that goodwill is allocated to "multiple" units. This measurement is consistent with Beatty and Weber (2006).

14. Consistent with prior research (Beatty and Weber, 2006; Lapointe-Antunes et al., 2008), this study considers only changes in CEO, as CEOs are more likely to have incentives to accelerate or delay goodwill impairments depending on whether they made the acquisition decision or not. The study does not also differentiate between forced and voluntary CEO changes as in most cases companies do not disclose the reason for the change.

15. Shleifer and Vishny (1997) suggest that large shareholders with substantial ownership stakes, such as 10 or 20 per cent, are more likely to have incentives to collect information and monitor the management. The measurement of *BLOCK* is consistent with this view. An alternative definition of *BLOCK* is examined: *BLOCK1* equals the cumulative percentage of outstanding common shares held by blockholders holding at least 3 per cent of outstanding shares and who are not part of the board of directors. Untabulated results reveal that *BLOCK1* ($Z = 1.152$), although still positive, is no longer significant. The inferences on all the other variables remain unaffected and similar to those reported in the primary tobit analysis. This result provides corroborating evidence consistent with the view of Shleifer and Vishny (1997) adopted in this study.

16. Another explanation derived from the transaction cost theory suggests that cross-listed firms would incur fewer extra compliance costs than non-cross-listed firms because they have been required to carry out goodwill impairment tests following the requirements of SFAS 142.

17. Similar to prior U.S. and Canadian research (e.g., Beatty and Weber, 2006; Lapointe-Antunes et al., 2008; Zang, 2008), the analysis in this study is limited to the post-adoption period only. As such, the purpose is not to measure the impact of standard change but the effects of the mandatory IFRS 3 application on reported goodwill impairment losses. However, the limited number of years studied is a limitation of the current research. Given more years of financial statement data, it may be possible to examine the long-term effects of IFRS 3 on goodwill accounting and determine whether

the conclusions of this study hold over time. Furthermore, sample firms come from listed companies in a single country, and further investigations using listed firms in other countries are warranted.

18. This is expected as the study excludes firms listed on the Alternative Investment Market, which is primarily a small-cap market, and firms with no positive goodwill balances which are expected to be smaller than firms active in mergers and acquisitions.

19. The highest variance inflation factor is less than 3, providing further evidence that multicollinearity is not a problem in this study.

20. In the United Kingdom, Ball et al. (2000) provide evidence that corporate debt is predominately private which reduces the information asymmetry between managers and (private) lenders. When information asymmetry is low, lenders are more likely to have a closer relationship with firms (borrowers) providing the former with the necessary information to monitor the latter on their actions and hence leaving less room for earnings management around debt contracts.

21. The Bartlett's Test of Sphericity is significant ($p < .001$) (untabulated) indicating that the factor model is appropriate.

22. *BLOCK* loads heavily and individually to the third factor suggesting that large shareholders form a unique governance mechanism that acts independently of other mechanisms.

23. Interactions are performed only with *CG-PCI* to avoid having a complex model. The first principal component explains 29.2 per cent of total variation, which exceeds the explanatory power of the second and third components (21.8 and 20.0 per cent, respectively).

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