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The Association between Market Returns and Long-Lived Asset Impairment under U.S. GAAP and IFRS

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ABSTRACT

The dissimilarities between U.S. GAAP and IFRS long-lived asset impairment standards result in two different types of asset write-down firms being captured under the impairment loss rules. This study shows that in general, the U.S. write-off firms have poorer financial performance in the write-off year than IFRS write-off firms. Specifically, our results show that IFRS write-down firms have higher earnings before write-downs, smaller impairment losses, and higher stock returns. More importantly, our study has found a statistically significant negative correlation between asset impairment losses and company stock returns for U.S. firms, while no such correlation exists for IFRS firms. Therefore, we conclude that U.S. GAAP impairment losses are value relevant while IFRS impairment losses are not.

Keywords: Asset write-down, asset impairment, value relevance, IFRS, U.S. GAAP.

JEL Classifications: A1

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1. INTRODUCTION

With the imminent convergence between United States Generally Accepted Accounting Principles (U.S. GAAP) and International Financial Reporting Standards (IFRS), it is vital to understand how U.S. companies and investors will be affected. In this paper we examine the differences in impairment loss accounting standards under U.S. GAAP (FAS 144) and under IFRS (IAS 36), and seek to better understand how these differences may affect U.S. companies and influence investor's reactions to asset write-downs, once U.S. firms fully converge to IAS 36.

U.S. companies and investors will be affected by the convergence to IFRS due to significant differences between U.S. GAAP and IFRS with respect to long-lived asset impairment. There are at least two significant differences between FAS 144 and IAS 36. The first involves the test of impairment. For both standards, to determine whether or not an asset is impaired, a company must compare the future cash flow generated by the asset to the carrying amount of the asset; if the carrying amount exceeds the future cash flow, then the asset is impaired. However, IAS 36 requires companies to use the *discounted* sum of future cash flows, rather than the *undiscounted* sum of future cash flows required by FAS 144, when determining if the asset is impaired. The second difference relates to a company's ability to reverse the impairment loss. IAS 36 allows for companies to reverse an impairment loss under certain conditions, while FAS 144 strictly prohibits the reversal of previously taken impairment losses.

In order to examine the two standards and their effects, we identify an initial sample of firms within Compustat North America, which includes U.S. and international firms, who have taken impairment losses in recent years. We separate these firms into two samples, companies using U.S. GAAP (FAS 144) and companies using IFRS (IAS 36). We compare these firms' impairment loss, earnings, and stock returns using a univariate comparison. In addition, we use a multivariate regression analysis to examine the relationship between stock returns and impairment loss, after controlling for firm size and earnings before write-downs.

Our results show that impairment losses are significantly smaller under IFRS than under U.S. GAAP. Furthermore, the results indicate that IFRS earnings are generally higher than U.S. GAAP earnings for companies with recorded write-downs, even after adding back write-downs to earnings. This combination of large impairment losses with lower (even negative) pre-write-down earnings could be an indication of big bath behavior by U.S. firms. In addition, the results show that company stock returns for IFRS companies with recorded impairment losses is, on average, higher than that of U.S. companies taking impairment losses. Lastly, our results suggest that impairment losses taken under FAS 144 have a significant adverse effect on stock returns, while impairment losses taken under IAS 36 have no such correlation.

Our study indicates that IFRS firms taking write-downs are generally stronger financial performers than U.S. firms taking write-downs, showing that FAS 144 and IAS 36 capture write-down firms of differing financial performance. Our study provides evidence that FAS 144 impairment losses are seen as worse news by investors than IAS 36 impairment losses. Accordingly, the main difference between the accounting standards is the relatively favorable *signal* sent by firms through IAS 36 impairment losses as compared to FAS 144 impairment losses.

Our study contributes to prior impairment loss research in a couple of ways. First, we show that investors react less harshly to IFRS impairment losses than they do to similar losses under U.S. GAAP. The more negative response to U.S. GAAP impairment losses is largely due to the fact that the losses are only taken when assets are drastically impaired and because impairment

losses are irreversible, which is not the case under IFRS. Further, U.S. investors closely relate impairment loss with poor financial performance. Hence, FAS 144 asset write-downs result in a more harsh reaction by U.S. investors.

However, our most important contribution is to provide U.S. investors and companies a preview of what to expect once IFRS is fully adopted in the United States. Investors can expect firms to report smaller impairment losses, and companies can expect impairment losses to no longer have a significant adverse effect on stock price. In other words, as mentioned above, an U.S. company taking an impairment loss can expect investors to react less harshly to impairment losses after converging to IFRS. By providing predictions, this study helps companies and investors more effectively plan for the approaching transition.

The remainder of the paper is organized as follows. Section 2 provides background and prior research on the topic. Section 3 develops our hypotheses and research design. Section 4 describes our sample selection and descriptive statistics. Section 5 presents the results, and section 6 gives concluding comments.

2. BACKGROUND AND PRIOR RESEARCH

Overview of Asset Impairment rules under U.S. GAAP and IFRS

In recent years the U.S. Securities and Exchange Commission (SEC) has taken major steps towards the convergence between U.S. GAAP and IFRS. According to the SEC's "roadmap" for the potential convergence with IFRS, U.S. issuers could be required to use IFRS as early 2014 (SEC, 2008). The SEC has already eliminated the requirement for foreign private issuers trading in the United States to reconcile IFRS financial statements to U.S. GAAP for fiscal years ending after November 15, 2007 (SEC, 2007). Accordingly, it is important to have an understanding of the two accounting standards. In this paper, we focus our attention on asset impairment standards. In the U.S, FAS 144 is the asset impairment standard under U.S. GAAP. Internationally, IAS 36 is the asset impairment standard under IFRS. We provide an overview of each standard.

FAS 144

Currently, in the United States, companies are required to "recognize an impairment loss only if the carrying amount of a long-lived asset is not recoverable from its undiscounted sum of future cash flows." (FAS 144) Consequently, a company's assets are less likely to be subject to an impairment loss given the use of undiscounted future cash flows rather than discounted cash flows. Undiscounted cash flows will always be greater than discounted cash flows and thus be more likely to exceed the carrying amount of an asset and pass the impairment test. It is important to note that the amount of the impairment loss is not the difference between the carrying value of the asset and the undiscounted future cash flows. FAS 144 states that a company must "measure an impairment loss as the difference between the carrying amount and fair value of the asset", not the undiscounted cash flows.

Also, FAS 144 makes it clear that the "restoration of previously recognized impairment losses is prohibited." Therefore, although a company's assets are less likely to qualify for impairment under current rules in the United States, the write-down or impairment loss is permanent and cannot be reversed, even if the fair value of the asset returns to or exceeds its original value. This represents a compromise between the FASB and corporations. Corporations

are only required to write-down assets if they are exceptionally impaired, but once an asset is written down they cannot reverse the impairment, thus manifesting accounting conservatism.

IAS 36

Internationally, IAS 36 is the asset impairment standard. Currently, international companies following IFRS must assess their assets annually for any indication of impairment. If they find any indication of impairment they are required to estimate the recoverable amount of the asset. IAS 36 states that "an asset is carried at more than its recoverable amount if its carrying amount exceeds the amount to be recovered through use or sale of the asset." Discounted future cash flows are used in determining the "amount to be recovered through use" instead of the undiscounted cash flows used in US GAAP. IAS 36 goes on to explain that "If, and only if, the recoverable amount of an asset is less than its carrying amount, the carrying amount of the asset shall be reduced to its recoverable amount. That reduction is an impairment loss."

Comparison of FAS 144 and IAS 36

One difference between FAS 144 and IAS 36 is that IAS 36 requires the time value of money be taken into consideration when determining whether or not an asset is impaired. This is shown through the use of discounted future cash flows under IAS 36, as opposed to undiscounted future cash flows under FAS 144. However, what truly separates the two standards is that according to IAS 36 a company is allowed to reverse the impairment. IAS 36 requires that "an entity shall assess at the end of each reporting period whether there is any indication that an impairment loss recognized in prior periods for an asset other than goodwill may no longer exist or may have decreased." If the company finds any indication that the impairment loss no longer exists or has decreased, then they may reverse the impairment. However, IAS 36 specifies that "an impairment loss recognized in prior periods for an asset other than goodwill shall be reversed if, and only if, there has been a *change in the estimates* used to determine the asset's recoverable amount since the last impairment loss was recognized."

Assuming these requirements are met, the reversal will be immediately recognized as a gain on the income statement in order to offset the loss originally recorded on the income statement for the impairment. It is important to note that although a company may reverse the impairment loss, the increased carrying amount of the asset must not exceed the carrying amount of the asset had the impairment loss never been taken. Thus, a company cannot write the asset above its original value under this traditional cost model. However, IAS 16 provides for the use of a different model, the revaluation model, which does allow for a revaluation above the historical cost of the asset. Because it is important to understand the differences between the two models, the traditional cost model and the revaluation model, for impairment purposes, we briefly discuss IAS 16 next.

IAS 16

Under IAS 16, a company may select to use either the cost model or the revaluation model as their accounting policy for a class of property, plant and equipment. The cost model is the traditional model with which we are most familiar and the model described in IAS 36. According to the cost model "an item of property, plant and equipment shall be carried at its cost less any accumulated depreciation and any accumulated impairment losses." The revaluation model, on the other hand, requires that "an item of property, plant and equipment whose fair value can be measured reliably shall be carried at a revalued amount, being its fair value at the

date of the revaluation less any subsequent accumulated depreciation and subsequent accumulated impairment losses." It is required that revaluations be performed with sufficient frequency to ensure that there is no material difference between the carrying amount of the asset and the fair market value at the end of the reporting period.

IAS 16 explains, "If an asset's carrying amount is increased as a result of a revaluation, the increase shall be recognized in other comprehensive income and accumulated in equity under the heading of revaluation surplus." Thus, if a company increases the carrying amount of the asset above the original carrying value, this will only be reflected as an increase in equity, not a gain on the income statement. On the other hand, IAS 16 states, "If an asset's carrying amount is decreased as a result of a revaluation, the decrease shall be recognized in profit or loss." Therefore, if the asset's carrying amount is originally *decreased* as a result of revaluation, it will show up as a loss on the income statement; if the asset's carrying amount is originally *increased* as a result of revaluation, it will *not* be a gain on the income statement.

Further, if the asset was originally revalued upward and is subsequently revalued downward, then the decrease would reverse the original entry and consequently reduce equity; *not* be recorded as a loss on the income statement. The opposite is also true. If an asset were originally written down in value and a loss were taken, then a subsequent reversal of that loss would not affect equity, but would be recorded as a gain on the income statement. IAS 16 states that "the increase shall be recognized in profit or loss to the extent that it reverses a revaluation decrease of the same asset previously recognized in profit or loss."

Prior Research

A substantial amount of prior studies have examined asset impairment (write-downs or write-offs). One stream of prior studies on asset impairment has examined the information content of asset write-downs by examining the relationship between share price or returns and asset write-downs. For example, Elliott and Shaw (1988), Zucca and Campbell (1992), and Francis, Hanna, and Vincent (1996) find that write-down announcements in general result in lower stock returns, suggesting that the write-offs exceed prior expectations. Bartov et al. (1998) find that, as suggested by previous studies, price declines precede write-off announcements. They also find what has not been found before: abnormal returns continue to decline after the announcement by as much as 21% annually for a two-year period. Alciatore et al. (2000) find that the correlation between the write-down amounts and contemporaneous returns is statistically significant, but much of the market price adjustment due to the write-down occurs in earlier periods as well.

Bunsis (1997) finds that the stock price reaction to write-off announcements is associated with the expected cash flow implications of the events surrounding the write-off. Similarly, Francis et al. (1996) find that asset impairment announcement conveys information about decreases in the economic values of assets. They also find that the market reactions to the announcement can vary by the type of write-downs. In addition, a few studies have looked at firms' repeated write-offs. Elliott and Hanna (1996) find that repeated asset write-down impairment losses cause a weakened relationship between earnings before write-offs and stock returns.

Using Chinese data, Chen et al. (2004) find that voluntary asset write downs cause positive response from investors in Chinese markets. Also Chen, Wang, and Zhao (2007) find that the information content of impairment loss reversals is weak due to earnings management opportunism in China. Datta (2008) finds that asset write-downs provide different information

content to investors depending on whether the firm is a financially distressed firm or not. Also, Choi (2008) finds that firms record their asset write-downs in a less timely manner than other components of earnings. However, some studies (Zucca and Campbell, 1992; Hogan and Jeter, 1998) do not find significant market reaction to the asset impairment announcement.

The other stream of prior research on asset impairment has investigated whether firms use asset write-downs to manipulate future earnings. Francis et al. (1996) find that both factors, manipulation and impairment, are found to be causes of discretionary asset write-downs. Zucca and Campbell (1992) find that the write-downs occur primarily in the 4th quarter of the fiscal year, probably because of the more extensive review due to the budgeting and audit processes taking place during that period. They find that the majority of the companies write down their assets in a period of *already below normal earnings*, but 25% offset the write-down with other gains or unusually high earnings. Strong and Meyer (1987) find that the most important determinant of a write-down decision is a change in senior management.

Prior studies have examined the quality of U.S. GAAP asset impairment rules using undiscounted cash flows. Reidle (2004) finds that SFAS 121 (superseded by 144) , which uses undiscounted cash flows, has resulted in low quality accounting rules with regards to asset impairment. His results show that economic factors have a weaker correlation with impairment write-downs under SFAS No. 121. This is obviously the opposite effect that the standard is meant to have, yet it is a consistent finding across industry, macro, and firm-specific variables. There is also an indication of a higher correlation between write-offs and "big bath" reporting behavior. This "big bath" reporting behavior indicates that management has used SFAS No. 121 to manipulate earnings, and not to more accurately reflect the true value of their assets.

Contrary to the finding of Reidle (2004), Alshabani (2002) suggests that SFAS 121 does not affect the magnitude and timing of asset impairment. He examines the effects of SFAS No. 121 on the reporting of impairment write-offs, specifically looking at whether SFAS No. 121 "reduces the magnitude and restricts the timing" of the reported impairment write-offs. Alshabani's results support the hypothesis that the new standard does not affect the size of asset impairment losses.

According to Duh et al. (2009), Taiwanese firms reverse impairment losses to avoid an earnings decline in a subsequent period. Duh's results show that firms recognizing more impairment losses are more likely to reverse impairment losses when doing so would avoid an earnings decline in a subsequent period, which is consistent with the "cookie jar" reserve hypothesis. They also show that such behavior is more pronounced for firms with higher debt ratios, consistent with earnings management being associated with the incentive to avoid violation of debt covenants.

Asset revaluation is different from asset impairment but provides insight on the asset impairment issue. Prior studies have examined the motivation for and effect of asset revaluation. Barlev et al. (2007) examine asset revaluations in various countries, and find that motivations for and effects of asset revaluations vary from country to country. Missonier-Piera (2007) finds that upward (downward) asset revaluations are positively (negatively) related to borrowing capacity using Swiss data.

3. HYPOTHESES & RESEARCH DESIGN

Under U.S. GAAP, assets are only written down when the sum of the asset's *undiscounted* future cash flows is less than the book value of assets. Therefore, because assets are only written

down under severe impairment conditions and because impairment losses can never be reversed, write-downs are seen as negative news under U.S. GAAP. Under IFRS, although asset write-downs might be more frequent, the losses are likely smaller. More importantly, the impairment losses are not necessarily permanent. Thus, the less negative reaction of investors is partially due to the possibility of a subsequent asset impairment reversal under IAS 36. This leads to our first hypothesis in a directional form.

> Hypothesis 1: We predict that U.S. investors will react less harshly to impairment losses taken under IAS 36 than under FAS 144.

Due to the differences in impairment tests between FAS 144 and IAS 36, U.S. companies are prone to record impairment losses less often, but in larger amounts than IFRS companies. Consequently, when impairment losses are finally taken, the amount of the loss is detrimental to their earnings and could easily prevent the company from reaching analyst expectations. Thus, an enticing opportunity presents itself for management to take additional expenses and losses in the write-down year with the impairment, thus creating a "big bath" in order to artificially inflate future earnings.

IFRS reporting companies, on the other hand, tend to record impairment losses more often and in smaller quantities than U.S. companies. Accordingly, they do not have the same incentive to include additional expenses in the current year because the relatively smaller impairment losses are less likely to cause the company to have negative earnings and/or miss earnings targets. In addition, a company reporting according to IFRS could take a "small bath," but the relative benefit in the following years would not be as great as a U.S. company's "larger bath." Therefore, we predict that U.S. GAAP companies take more "big baths" than IFRS companies and that the adoption of IFRS will result in fewer "big baths." Although IFRS companies have an incentive to take impairment losses in a poor performance year when they have already missed earnings targets, we predict that IFRS companies will not be put in this situation as often as U.S. companies due to smaller impairment losses.

Alternatively, we may posit an opposite prediction: IFRS reporting companies take more "big baths" than U.S. companies. Recall from our opening review of IAS 36, that the reversal of a previously taken impairment loss will be recorded on the income statement as a gain. However, IAS 36 states that "the increase shall be recognized in profit or loss to the extent that it reverses the impairment of the same asset previously recognized in profit or loss." Thus, the gain is limited to the amount of the previously taken loss and any additional upward reversals will be recorded as an increase in equity. Consequently, a company under IFRS rule having a poor year has an incentive to take as much impairment losses as possible in a "big bath" to effectively create a "cookie jar" reserve. Having taken impairment losses, a company under IFRS rule then is able to reverse the losses as needed in order to recognize gains and meet analyst expectations. Conversely, under FAS 144 U.S. companies are strictly prohibited from reversing impairment losses and do not have the same incentive to take a "big bath." Based on these contrasting two alternative predictions, we posit our second hypothesis in a non-directional form:

> Hypothesis 2: The association between asset write-downs and earnings differs in the IFRS asset write-down firms compared to that in the U.S. GAAP asset write-down firms.

Research Design

To test H1empirically, we use a model modified from those suggested in prior studies, such as Easton and Harris (1991), Khurana and Lippincott (2000), and Gaber, Kim, and Kwon (2008). We use the following regression model (1) to investigate the association between market returns and asset write-down (WD) while controlling for both levels and changes in earnings. The model allows us to test whether the association between market returns and the amount of WD differs in the IFRS asset impairment firms compared to that in the U.S. GAAP asset impairment firms.

$$AR_{it} = \beta_0 + \beta_1 IFRS_{it} + \beta_2 WD_{it} + \beta_3 IFRS_{it}*WD_{it} + \beta_4 E_{it} + \beta_5 \Delta E_{it} + \beta_6 CFO_{it} + \beta_7 \Delta CFO_{it} + \beta_8 BTM_{it} + \beta_9 lnSIZE_{it} + \varepsilon_i \quad (1)$$

where:

AR_{it} = firm *i*'s annual stock market returns;

$IFRS_{it}$ = an indicator variable equal to 1 for a firm in the IFRS asset write-down rule, and 0 for a firm in the U.S. GAAP asset write-down rule;

WD_{it} = firm *i*'s after-tax long-lived asset write-down (converted to a positive amount) for year t, divided by average total asset $\{(Asset_t + Asset_{t-1}) / 2\}$

$IFRS_{it}*WD_{it}$ = an interaction variable between IFRS and WD_{it}

E_{it} = firm *i*'s income from continuing operations, with asset write-down (WD) amount added back to reported income from continuing operations, divided by market value (MV) of equity for year *t*-1;

ΔE_{it} = firm *i*'s change in E_{it} from year *t*-1 to *t*, divided by MV_{t-1};

CFO_{it} = firm *i*'s operating cash flows divided by MV_{t-1};

ΔCFO_{it} = firm *i*'s change in operating cash flows divided by MV_{t-1};

BTM_{it} = firm *i*'s book-to-market ratio, common equity divided by MV at year *t*;

$lnSIZE_{it}$ = natural logarithm of firm *i*'s MV at year *t*;

Our main interest is the sign and the magnitude of β_3, the coefficient of the interaction variable between IFRS and WD to test H1. We also include other variables to control for the factors that are potentially associated with a firm's market returns. E_{it} is income from continuing operations, and ΔE_{it} is the change in income from continuing operations. To calculate what the firm's income from continuing operations would have been prior to WD, we add back asset write-down amount to reported income from continuing operations. The results of prior studies (Easton and Harris, 1991 and Khurana and Lippincott, 2000) suggest that coefficients β_4 and β_5 are on average, positive. We predict that coefficient β_2 is negative because asset write-down impairment loss (WD) has the same information content as any other expenses. The model also includes both levels and changes in operating cash flow, book-to-market ratio, a firm's market value to control for the potential impact of cash flow, firm growth, and size on market returns.

Hypothesis 2 investigates whether association between the amount of asset write-downs (WD) and earnings for companies reporting according to IFRS differs from that of the companies reporting according to US GAAP. We use the following regression model (2) to test H2. We develop this model based on the suggestions made in prior studies, such as Francis, Hanna, and Vincent (1996), Riedl (2004), Gaber, Kim, and Kwon (2008), and Duh, Lee, and Lin (2009). Our model allows us to test whether the relationship between WD and earnings differs between the IFRS conforming firms with reported asset impairments and US GAAP conforming firms with recorded asset impairments.

$$WD_{it} = \beta_0 + \beta_1 IFRS_{it} + \beta_2 ROA_{it} + \beta_3 \Delta ROA_{it} + \beta_4 IFRS_{it}* ROA_{it} + \beta_5 IFRS_{it}*\Delta ROA_{it} + \beta_6 AR1_{it} + \beta_7 PPE_{it} + \beta_8 DEBT_{it} + \beta_9 BTM_{it} + \beta_{10} lnSIZE_{it} + \beta_{11} ETR_{it} + \varepsilon_i \quad (2)$$

where:

ROA_{it} = firm *i*'s income from continuing operations, with asset write-down (WD) amount added back to reported income from continuing operations, divided by average total asset $\{(Asset_t + Asset_{t-1}) / 2\}$;

ΔROA_{it} = firm *i*'s change in ROA_{it} from year *t*-1 to *t*;

$IFRS_{it}*ROA_{it}$ = an interaction variable between IFRS and ROA_{it};

$IFRS_{it}*\Delta ROA_{it}$ = an interaction variable between IFRS and ΔROA_{it};

$AR1_{it}$ = firm *i*'s annual stock returns of the year preceding the write-down year *t*;

PPE_{it} = firm *i*'s property, plant, and equipment, divided by total asset for year *t*;

$DEBT_{it}$ = firm *i*'s debt to asset ratio for year *t*;

ETR_{it} = firm *i*'s effective tax rate (tax expense divided by pretax income) for year *t*;

As discussed in the hypothesis development section, we have two contrasting predictions regarding the signs of the coefficients of the two variables, ROA and ΔROA_{it}. Recall that asset write-down, WD, is defined as a positive amount. If firms show "big bath" reporting behavior, we predict that coefficients β_2 and β_3 are on average negative. This is because firms are more likely to increase the amount of WD when income prior to the write-down is already low and/or there are unusual decreases in earnings prior to write-downs. On the other hand, prior research on income smoothing (Trueman and Titman, 1988; Tucker and Zarowin, 2006) suggests that coefficients β_2 and β_3 are on average positive. Firms may take larger amounts of write-downs in periods when they have unusually high operating earnings and/or have unusual increases in earnings prior to write-downs which exceed the amount of the write-downs. Reiterating, if firms exhibit "income smoothing" reporting behavior, we expect that ROA and ΔROA_{it} are positively correlated with the extent of impairment, resulting in positive signs of β_2 and β_3. To test H2, our main focus is on the signs and the magnitudes of two coefficients, β_4 and β_5. β_4 (β_5) is the coefficient of the interaction variable between IFRS and ROA (IFRS and ΔROA).

We also include other variables in the model to control for the factors that are potentially associated with the amount of asset write-down impairment loss (WD). The first control variable, AR1, represents the firm's annual stock returns of the year preceding the write-down year. The results of Francis, Hanna, and Vincent (1996) suggest that coefficient β_6 is on average negative. We expect that the lower the firm's past stock returns, the greater the amount of asset write-down. Therefore, we predict that write-down amounts (WD, reflected as positive numbers) are negatively correlated with AR1.

Tangible long-lived assets, such as property, plant, and equipment (PPE) are directly associated with firms' production activities; thus they may affect the firms' write-down decision. We predict coefficient β_7 is positive because firms with more tangible long-lived assets are more likely to report larger amounts of write-downs.

Prior research (Fields, Lys, and Vincent, 2001; Duh, Lee, and Lin 2009), proposes to include DEBT as a control variable to explain WD. Firms with a higher debt ratio are likely to engage in earnings manipulation through asset write-downs. We predict the coefficient β_8 to be positive. In addition, we predict coefficient β_9 is positive on average because we expect firms with higher book-to-market ratios are likely to have more impaired assets; thus they report larger amounts of asset write-down impairment loss. Lastly, firms belonging to a higher tax bracket may want to

reduce tax expenses through asset write-down impairment loss. Therefore, we predict that coefficient β_{11} is on average positive.

TABLE 1
Asset-Write-Down by Year

Year	Number of IFRS Firms	Number of US GAAP Firms	Number of All Firms
2005	25	574	599
2006	17	519	536
2007	19	522	541
2008	30	737	767
2009	24	548	572
2010	21	401	422
2011	37	411	448
2012	4	73	77
Total	177	3,785	3,962

4. SAMPLE AND DESCRIPTIVE STATISTICS

We gather a sample of firms conforming to IFRS and US GAAP that have recorded asset write-downs by first identifying all public companies within *Compustat North America* recording a write-down from January 2005 to December 2012.[1] Specifically, we include all companies with total assets greater than zero and pre-tax write-downs of less than zero. These firms are reported as either using IFRS or U.S. GAAP for their financial reporting. Although firms reporting according to IFRS have historically been required by the SEC to reconcile their financial statements to U.S. GAAP, the SEC has eliminated the requirement to reconcile to U.S. GAAP for all foreign private issuers that adopt IFRS, effective for fiscal years ending after November 15, 2007. Furthermore, the financial data obtained from the Compustat North American database for firms reporting according to IFRS is recorded at pre-reconciliation values, and is therefore reported according to IFRS.[2]

[1] The sample period begins immediately *after* the effective date of FAS 144, which superseded the previous impairment standard FAS 121 and APB Opinion 30.
[2] IFRS data at pre-reconciliation amounts was confirmed by taking a sample of 12 IFRS firms and matching Compustat data with IFRS data from the companies' form 20-F filed with the SEC at www.sec.gov. All IFRS information matched the Compustat data without exception.

To obtain market returns data, we use CRSP Monthly Data. We use equally weighted market returns to calculate buy-hold abnormal market returns. Then, we combine Compustat data with CRSP data. After excluding firms with any missing values for any variables that we need to test models 1 and 2, our final sample has 3,962 firm-year observations. When we divide the sample companies into two groups according to accounting standard, IFRS reporting companies and U.S. GAAP reporting companies, consist of 177 and 3,785 firms, respectively. Table 1 contains a summary of the sample by year.

Table 2 summarizes the demographics of the IFRS sample. While the firms represent many different countries, over 75 percent come from Europe. Great Britain is the most represented country with 47 companies, or over 26 percent of all IFRS reporting firms in the sample. The IFRS reporting companies found in the Compustat North America dataset represent diverse industries according to the Standard Industrial Classification (SIC) and Global Industry Classification Standard (GICS). The most common industry among the companies according to SIC is SIC 2000-2999 manufacturing of food, tobacco, textile, lumber, chemicals, and petroleum, accounting for 51 companies. The most frequent industry among the IFRS according to GICS is materials (GICS 15), making up 49 companies in the sample.

5. RESULTS

To further examine the characteristics of our IFRS and U.S. GAAP sample, we report a summary of the firm characteristics including profitability and leverage measures between IFRS and U.S. GAAP write-off companies in Table 3. When compared with U.S. GAAP conforming firms with recorded write-downs, IFRS reporting companies with recorded write-downs have significantly better profitability ratios. Return on assets (*ROA*) of the IFRS sample is significantly higher than that of U.S. GAAP sample firms (significance level of 0.01 using the parametric t-test and the non-parametric Wilcoxon test).

In addition, earnings (*E*) are higher for IFRS conforming firms with write-downs compared to U.S. GAAP conforming firms with recorded write-downs. This is true even after adding back impairment losses to earnings, demonstrating that firms reporting according to IFRS have earnings higher than U.S. GAAP conforming firms, independent of impairment loss amount. On average, firms reporting according to IFRS taking write-downs report positive earnings, both before and after the write-down. U.S. GAAP conforming companies, on the other hand, report negative earnings both before and after the impairment loss. After performing the t-test and the non-parametric Wilcoxon test, this difference is found to be statistically significant with a significance level of 0.01.

A better ROA for IFRS conforming firms makes sense because under FAS 144 the assets are more severely impaired than under IAS 36. Thus IAS 36 assets are in better condition and consequently produce a better return. In addition, operating cash flow (CFO) is statistically significantly better for IFRS conforming firms. In summary, the profitability comparison analysis provides evidence that the firms reporting according to IFRS that have recorded write-downs are generally more profitable than U.S. GAAP conforming firms having likewise recorded write-downs.

Table 3 also reports the comparison statistics relating to market value (*lnSIZE*), impairment loss amounts (*WD*), book-to-market (*BTM*), and stock returns (*AR*) of the IFRS and U.S. sample firms. A univariate comparison of the two sample groups reveals statistically significant

TABLE 2
IFRS Firm Demographics

Panel A: Country of Origin

Country	Number of Observations	Percentage in the Sample
Great Britain	47	26.6%
France	14	7.9%
Australia	13	7.3%
South Africa	13	7.3%
Canada	12	6.8%
Ireland	10	5.6%
Switzerland	10	5.6%
Luxemburg	9	5.1%
Others	49	27.7%
Total	177	100%

Panel B: Industry Representation

SIC Code	
1000-1999	39
2000-2999	51
3000-3999	22
4000-4999	42
5000-5999	5
6000-6999	9
700-7999	9
Total	177

GICS Code	
10	14
15	49
20	7
25	16
30	14
35	28
40	9
45	7
50	29
55	4
Total	177

SIC Codes	
1000-1999	Mineral, Construction Industries, etc.
2000-2999	Manufacturing : Food, Textile, Furniture, etc.
3000-3999	Manufacturing : Rubber, Metal, Machinery, etc.
4000-4999	Transportation, Communication, Utilities, etc.
5000-5999	Wholesale Trade, Retail Trade, etc.
6000-6999	Financial Services, Insurance, etc.
700-7999	Service Industries, Business Services, etc.

GICS Codes	
10	Energy
15	Materials
20	Industrials
25	Customer Discretionary
30	Consumer Staples
35	Health Care
40	Financials
45	Information Technology
50	Telecommunication Service
55	Utilities

TABLE 3

Summary Statistics: Comparison between IFRS Firms and US GAAP Firms

Variables		IFRS Only (A)	US GAAP Only (B)	Difference (A – B)	Difference t-value (z-value)	Difference p-value	All Firms
WD	Mean	0.011	0.015	-0.004	-1.24	0.216	0.015
	Median	*0.002*	*0.003*	*-0.001****	*(-3.39)*	*0.001*	*0.003*
AR	Mean	0.022	-0.035	0.057	1.31	0.190	-0.033
	Median	*0.018*	*-0.041*	*0.058*	*(1.41)*	*0.159*	*-0.039*
AR1	Mean	0.040	-0.035	0.075*	1.92	0.055	-0.032
	Median	*0.047*	*-0.044*	*0.090****	*(2.94)*	*0.003*	*-0.039*
E	Mean	0.025	-0.084	0.109***	3.18	0.002	-0.079
	Median	*0.056*	*0.023*	*0.033****	*(6.99)*	*0.000*	*0.026*
∆E	Mean	-0.013	0.025	-0.038	-0.67	0.501	0.024
	Median	*-0.001*	*-0.002*	*0.002*	*(0.45)*	*0.655*	*-0.002*
ROA	Mean	0.012	-0.076	0.089***	3.03	0.003	-0.073
	Median	*0.055*	*0.012*	*0.043****	*(6.6)*	*0.000*	*0.014*
∆ROA	Mean	0.008	-0.022	0.030	1.47	0.143	-0.021
	Median	*-0.001*	*-0.001*	*0.000*	*(0.48)*	*0.633*	*-0.001*
CFO	Mean	0.123	0.098	0.025	0.58	0.564	0.099
	Median	*0.111*	*0.079*	*0.032****	*(4.38)*	*0.000*	*0.080*
∆CFO	Mean	0.017	0.007	0.010	0.29	0.770	0.008
	Median	*0.007*	*0.002*	*0.005*	*(0.67)*	*0.500*	*0.002*
BTM	Mean	0.671	0.758	-0.087	-0.91	0.365	0.755
	Median	*0.448*	*0.590*	*-0.142****	*(-3.33)*	*0.001*	*0.584*
lnSIZE	Mean	8.977	6.268	2.709***	16.49	0.000	6.389
	Median	*9.274*	*6.255*	*3.019****	*(14.21)*	*0.000*	*6.358*
PPE	Mean	0.359	0.245	0.114***	6.42	0.000	0.250
	Median	*0.310*	*0.163*	*0.146****	*(6.43)*	*0.000*	*0.169*
DEBT	Mean	0.198	0.195	0.003	0.18	0.853	0.195
	Median	*0.169*	*0.140*	*0.029***	*(2.48)*	*0.013*	*0.144*
ETR	Mean	0.172	0.226	-0.054	-0.26	0.797	0.224
	Median	*0.250*	*0.234*	*0.016*	*(1.31)*	*0.191*	*0.236*
Number of Observ.		177	3,785				3,962

*** significant at 1%; ** significant at 5%; * significant at 10% for the pooled two-tailed t-test for the mean difference, and for the Wilcoxon two-sided z-test for the median difference.

Variables are as defined in Appendix A.

differences in market value, and tangible long-lived assets (*PPE*). IFRS firms' market value (*lnSIZE*) is larger than that of U.S. GAAP companies recording write-offs. The t-test and the non-parametric Wilcoxon test show the difference in market value and size-adjusted tangible long-lived assets (PPE ratio, PPE divided by total assets) to be statistically significant at a significance level of 0.01. Because international IFRS firms registered to trade in North America are generally larger than the average U.S. GAAP conforming firms, we have controlled for this factor by scaling the earnings and write-downs by market value and average total assets, respectively.

Firms using IFRS record on average write-down amounts (0.011) that appear to be less than U.S. GAAP conforming write-down amounts (0.015). Similarly when compared using median values, U.S. GAAP firms' write-down amounts (0.003) appear to be larger than that of IFRS conforming write-down amounts (0.002), and the Wilcoxon test results show that the median size-adjusted U.S. GAAP conforming firms' write-downs are statistically significantly larger than those of IFRS conforming firms (with a significance level of 0.01). In addition, the U.S. GAAP conforming firms that have recorded write-downs, have a book-to-market ratio that is significantly higher than that of IFRS conforming firms with recorded write-downs, based on the two-tailed Wilcoxon median test. This evidence supports the notion that firms with recorded write-downs reporting according to IFRS are valued higher in the North American stock market than the firms reporting under U.S. GAAP with recorded write-downs.

The mean annual buy-hold abnormal stock market returns (*AR*) for IFRS reporting firms of positive 0.022% is higher than mean annual stock returns for U.S. GAAP reporting firms of negative 0.035%. However, this difference is not significant at the conventional level. Nevertheless, for IFRS reporting firms, the mean (median) annual buy-hold abnormal stock market returns of the year *preceding* the write-down year (*AR1*), 0.040% (0.047%), is statistically significantly higher than that of U.S. GAAP conforming firms that report impairment losses (the mean *AR1* is negative 0.035%, the median is negative 0.044%).

In Table 4, we present the results of the "*fully interacted*" market response regressions using Model (1) in the last column, "All." In addition, in other two columns in Table 4, we report the results of the market regressions separately for two samples, IFRS and U.S. GAAP reporting firms that recorded write-downs. This approach allows us to compare the coefficients for each variable across the sample firms using the different accounting standards.

We measure firms' annual abnormal stock market returns, as buy-hold abnormal returns beginning the fourth month of the current fiscal year through the third month of the next fiscal year. We use equally-weighted market returns to calculate buy-hold abnormal market returns in Model (1). In addition, for the robustness check, we also have performed the regression analyses using value-weighted market returns to calculate buy-hold annul stock returns. The test results of the regressions using two different annual abnormal stock returns are qualitatively similar. Table 4 shows the results using only equally-weighted market returns to calculate buy-hold abnormal market returns (*AR*).

Earnings (income before extraordinary items) have already taken into account all expenses and losses (other than extraordinary items), which means that the earnings number has already been reduced by the impairment loss amount. In order to completely separate the write-down amount from the earnings number, a regression using Model (1) is performed on income before extraordinary items after adding back write-downs.

After controlling the level of earnings, E, (scaled by beginning market value, MV), we find that the change in earnings (ΔE) is significantly positively related to market returns. Specifically,

TABLE 4
Association between Market Returns and Asset Write-Downs under IFRS and US GAAP

$$AR_{it} = \beta_0 + \beta_1 IFRS_{it} + \beta_2 WD_{it} + \beta_3 IFRS_{it}*WD_{it} + \beta_4 E_{it} + \beta_5 IFRS_{it}*E_{it} + \beta_6 \Delta E_{it} + \beta_7 IFRS_{it}*\Delta E_{it} + \beta_8 CFO_{it} + \beta_9 IFRS_{it}*CFO_{it} + \beta_{10} \Delta CFO_{it} + \beta_{11} IFRS_{it}*\Delta CFO_{it} + \beta_{12} BTM_{it} + \beta_{13} IFRS_{it}*BTM_{it} + \beta_{14} lnSIZE_{it} + \beta_{15} IFRS_{it}*lnSIZE_{it} + \varepsilon_i$$

Variables	IFRS Only	US GAAP Only	All (Model 1)
IFRS			-0.380*
			0.078
WD	0.804	-0.900***	-0.900***
	0.620	<.0001	<.0001
IFRS*WD			1.704
			0.350
E	-1.004**	-0.039*	-0.039*
	0.036	0.054	0.052
IFRS*E			-0.965*
			0.069
ΔE	1.479***	0.188***	0.188***
	0.003	<.0001	<.0001
IFRS*ΔE			1.290**
			0.019
CFO	0.385	0.080***	0.080***
	0.220	<.0001	<.0001
IFRS*CFO			0.306
			0.383
ΔCFO	-0.035	0.090***	0.090***
	0.905	<.0001	<.0001
IFRS*ΔCFO			-0.125
			0.701
BTM	0.079**	-0.053***	-0.053***
	0.021	<.0001	<.0001
IFRS*BTM			0.132***
			0.001
lnSIZE	0.057***	0.029***	0.029***
	0.004	<.0001	<.0001
IFRS*lnSIZE			0.029
			0.206
Constant	-0.558***	-0.178***	-0.178***
	0.004	<.0001	<.0001
# Observations	177	3,785	3,962
Adjusted R^2	0.0541	0.1323	0.1296

*** significant at 1%; ** significant at 5%; * significant at 10%
Variables are as defined in Appendix A.

the coefficient of 0.188 in Model (1) implies that the increase of 1 (scaled by beginning *MV*) in change in earnings will increase 0.188% market returns for U.S. GAAP firms. In addition, the coefficient of *IFRS**Δ*E* is 1.290, and is statistically significant. This positive coefficient of the interaction term suggests that the incremental effect of IFRS reporting firms over U.S. GAAP reporting firms regarding the association between the change in earnings, (Δ*E*), and annual abnormal market returns (*AR*), is positive and significant. Therefore, IFRS conforming firms show higher stock returns with the same amount of change in earnings. Specifically, the coefficient of 1.290 means that the increase of 1 (scaled by beginning *MV*) in earnings will increase 1.478% (=1.290% + 0.188%) abnormal market returns for firms reporting according to IFRS.

We also find that the change of operating cash flow (Δ*CFO*) is significantly positively related to market returns after controlling the level of earnings and changes in earnings. Also book-to-market and size (total assets) are statistically significantly associated with the annual abnormal market returns. The results of regression analyses indicate that, after being controlled for financial performance (earnings, operating cash flow, and book-to-market) and company size (total assets), impairment losses under U.S. GAAP have a statistically significantly negative relationship with companies' abnormal stock returns.

We find that the coefficient of the IFRS dichotomous variable is -0.380 (see "All" column). This coefficient is marginally significant (p-value is 0.078). This significant coefficient suggests that annual abnormal market returns (*AR*) is for IFRS firms about 0.38 percent lower than that of U.S. GAAP conforming firms, after controlling for other factors that influence market returns. Our main interest is on the coefficients of the write-down (*WD*) variable and of the interaction variable, *IFRD*WD*. The coefficient of the Write-down (*WD*) is -0.900, and is significant at the one percent level. This negative coefficient suggests that *WD* is negatively related to annual abnormal market returns (*AR*), implying that the larger asset write-down amount, the less annual abnormal market returns (*WD* is defined as positive numbers) for U.S. GAAP conforming companies.

We find that the *WD* coefficient is significantly negative only for U.S. GAAP conforming firms (-0.900), and is not significant for IFRS conforming firms (0.804) when examining the coefficients separately for firms reporting according to U.S. GAAP versus firms reporting according to IFRS. This finding suggests that the market returns are not negatively related to asset impairment write-downs reported under IFRS. This result supports Hypothesis 1 which predicts that U.S. investors will react less harshly to impairment losses taken under IFRS (IAS 36) than they have under U.S. GAAP (FAS 144).

We further compare the two coefficients (0.804 for IFRS and -0.900 for US GAAP) and test whether the difference between the two coefficients are statistically significant. The coefficient of the interaction variable, *IFRS*WD*, shows the incremental effect of IFRS reporting firms over U.S. GAAP reporting firms regarding the association between asset write-downs (*WD*) and annual abnormal market returns (*AR*). The coefficient of *IFRS*WD*, 1.704, is positive as predicted, but it is not statistically significant. This insignificant coefficient of the interaction variable, *IFRS*WD*, is possibly due to the design of Model (1) that combines the two samples, IFRS firms and U.S. GAAP firms, in the regression when the two samples are substantially different in sizes (177 vs. 3,785 firm-year observations.)

The results discussed above in general support our first hypothesis, and provide important insights on the value relevance of impairment losses in a few ways. First, the regression results in Table 4 provide evidence that investors tend to react less harshly to impairment losses taken

under IAS 36 than under FAS 144, independent of earnings. The more favorable investor response to IFRS write-downs stems from the fact that FAS 144 impairment losses indicate more severe impairment conditions than IAS 36, as well as the restriction that U.S. companies cannot reverse impairment losses. Thus, an investor would interpret a U.S. GAAP write-down as worse news relative to an IFRS write-down.

Second, IFRS write-down amounts are less than U.S. GAAP write-down amounts, as reported in Table 3. The nature of IAS 36 results in IFRS reporting companies taking impairment losses more frequently than companies following FAS 144. Since IFRS requires the use of discounted future cash flows (as opposed to undiscounted future cash flows under U.S. GAAP) when performing the asset impairment test, assets are more likely to fail the test and be written down. In addition, a company following IFRS is less reluctant to take an impairment loss because of potential future impairment reversals. Thus, IFRS companies are likely to take more frequent asset write-downs, which results in lower amounts of each write-down. These results support our hypothesis because the lower write-down amount would cause investors to react less harshly to IFRS write-downs than to higher U.S. GAAP write-downs.

Third, IFRS reporting firm earnings are higher than U.S. GAAP reporting firm earnings for companies with recorded write-downs, both before and after the impairment loss is taken. When considering the differences of FAS 144 and IAS 36, this result makes sense. Under U.S. GAAP, an asset must be severely impaired before it is required to be written down. Such harsh impairment conditions are typically related to poor performing firms whose expectations of future profits have been reduced. Thus, the typical firm taking an impairment loss under U.S. GAAP has performed poorly (as indicated in Tables 3) in the write-down year.

Under IFRS on the other hand, an asset need not be significantly impaired for a firm to take an impairment loss. Thus, an IFRS conforming firm recording an asset write-down is not necessarily performing poorly; indeed asset write-downs are taken by IFRS reporting firms from all over the spectrum of financial condition. For this reason, firms reporting write-downs in accordance with IFRS show better financial performance, on average, than U.S. GAAP conforming firms recording write-downs (as indicated in Tables 3). Accordingly, investors tend to react less harshly to impairment losses under IAS 36 because investors are usually less worried about an IFRS reporting company's future performance.

Table 5 provides the results of Model (2) that we use to test Hypothesis 2. Model (2) investigates the association between asset write-downs and various variables identified in prior research to influence write-downs for all sample firms (shown in "All" column). Also, Table 5 presents the results separately for the IFRS sample and the US GAAP sample, so that we can compare the coefficients across the two different accounting standards. First, the coefficient of *ROA* for the IFRS sample and the U.S. GAAP sample is consistently significantly negative (-0.085 for IFRS, and -0.050 for U.S. GAAP). This finding provides evidence that both IFRS conforming firms and U.S. GAAP conforming firms report higher asset write-downs as their earnings prior to impairment losses become lower. In addition, we find that the coefficient of *IFRS*ROA* is negative, -0.028, and it is marginally significant (p-value of 0.123). Therefore, the incremental effect of IFRS reporting firms over U.S. GAAP reporting firms regarding the association between ROA and WD is marginally significant.

We also find that the coefficient of ΔROA for the IFRS sample is significantly negative (-0.064). In addition, we find that the coefficient of $IFRS*\Delta ROA$ to be negative, -0.044, and it is statistically significant. This significantly negative coefficient for the interaction term, $IFRS*\Delta ROA$, implies that there is an incremental effect of IFRS firms over U.S. GAAP reporting

firms regarding the association between the change in *ROA* (Δ*ROA*) and *WD*. Examining the coefficient of Δ*ROA* separately for IFRS and U.S. GAAP samples, we find that the coefficient is significant only for the IFRS sample. Our findings provide evidence that marginally supports our second hypothesis, which predicts that the association between asset write-downs and earnings differs in the IFRS asset write-down firms compared to that in the U.S. GAAP asset write-down firms. In addition, *AR1*, prior year's stock return, is negatively related to asset write-downs, which suggests that better performance in prior year (*AR1*) is associated with lower write-downs in the current period.

TABLE 5
Association between Write-downs and Earnings under IFRS and US GAAP

$$WD_{it} = \beta_0 + \beta_1 IFRS_{it} + \beta_2 ROA_{it} + \beta_3 \Delta ROA_{it} + \beta_4 IFRS_{it}*ROA_{it} + \beta_5 IFRS_{it}*\Delta ROA_{it} + \beta_6 AR1_{it} + \beta_7 PPE_{it} + \beta_8 DEBT_{it} + \beta_9 BTM_{it} + \beta_{10} lnSIZE_{it} + \beta_{11} ETR_{it} + \varepsilon_i \quad (2)$$

Variables	IFRS Only	US GAAP Only	All
IFRS			0.008***
			0.006
ROA	-0.085***	-0.050***	-0.049***
	<.0001	<.0001	<.0001
ΔROA	-0.064***	-0.002	-0.005
	<.0001	0.603	0.202
IFRS*ROA			-0.028
			0.123
IFRS*ΔROA			-0.044**
			0.035
AR1	0.011**	-0.003***	-0.005***
	0.012	0.009	0.000
PPE	0.003	0.005*	0.005**
	0.740	0.058	0.042
DEBT	-0.010	-0.001	-0.002
	0.265	0.610	0.452
BTM	-0.002	0.000	0.000
	0.262	0.562	0.388
lnSIZE	-0.002**	-0.003***	-0.003***
	0.041	<.0001	<.0001
ETR	0.001	0.000	0.000
	0.744	0.721	0.757
Constant	0.041***	0.032***	0.031***
	0.001	<.0001	<.0001
# Observations	177	3,785	3,962
Adjusted R^2	0.1610	0.1550	0.1610

*** significant at 1%; ** significant at 5%; * significant at 10%
Variables are as defined in Appendix A.

The results provide evidence that IFRS reporting companies take more "big baths" than U.S. GAAP companies. Both the statistically significantly negative coefficient of *IFRS**Δ*ROA* and the marginally significantly negative coefficient of *IFRS***ROA*, together support this finding. That is, for low level of earnings (*ROA*) and for decrease in earnings (Δ*ROA*), IFRS conforming write-down firms take higher asset write-downs, implying larger 'big baths' compared to U.S. GAAP conforming write-down firms. This finding is consistent with our alternative conjecture on "big baths": A company under IFRS rule having a poor year has an incentive to take as much impairment losses as possible in a "big bath" to effectively create a "cookie jar" reserve, and then subsequently reverse the losses in future years as needed in order to recognize gains and meet analyst expectations. Conversely, under FAS 144 U.S. GAAP companies are strictly prohibited from reversing impairment losses and do not have the same incentive to take a "big bath." This finding is also consistent with the findings provided by Duh et. al. (2009). Using a sample of listed companies in Taiwan reporting under IFRS asset impairment rule (IAS 36), their study has provided evidence that companies who have previously recognized more impairment losses are more likely to reverse impairment losses in future years to meet firms' financial targets.

6. CONCLUSION

Our results do not imply that by switching to IFRS asset impairment rule, U.S. companies will dramatically increase their earnings, that company stock price will increase in value, or that assets will be any less impaired. Although such differences exist in our results between IFRS and U.S. companies, these dissimilarities represent differences in the *types* of firms captured under the different rules, and not necessarily how the impairment rules and associated losses have affected the firms. Due to the distinctions between FAS 144 and IAS 36, companies taking asset write-downs under FAS 144 have typically performed worse in the write-down year than companies taking asset write-downs under IAS 36. IFRS conforming firms have statistically significantly higher earnings, higher abnormal stock returns, and smaller write-downs that are the natural results of a strong performing firm when compared to a poor performing firm. Thus, the different impairment rules capture businesses of different financial condition.

Our findings suggest that after the convergence to IFRS the *signal* sent by U.S. GAAP conforming companies when taking an impairment loss will no longer be seen by investors as a significant indication of poor financial performance in and of itself. U.S. investors will no longer closely associate impairment losses with *only* poor performing firms, but with firms of varying financial condition, including financially strong and healthy firms. As a result, U.S. GAAP conforming companies will not be as reluctant to recognize impairment losses because the write-down will no longer have a statistically significant adverse effect on stock price, as it does under FAS 144. In summary, a company performing poorly before the adoption of IFRS will most likely be performing poorly after the adoption of IFRS. The difference will be in the *signal* sent by impairment losses and the less harsh *reaction* to that signal by investors. Of course, there will still be many strong indicators of poor financial performance, but impairment losses will not be one of them.

REFERENCES

Alciatore, M., C. Dee, P. Easton, and N. Spear. 1998. Asset Write-Downs: a Decade of Research. *Journal of Accounting Literature* 17: 1-39.

Alciatore, M., P. Easton, and N. Spear. 2000. Accounting for the Impairment of Long-lived Assets: Evidence from the Petroleum Industry. *Journal of Accounting and Economics* 29: 151-172.

Alshabani, W.M. 2002. An investigation of the effects of SFAS No. 121 on asset impairment reporting and stock returns. *Ph.D. diss., University of North Texas.* In ABI/INFORM Global [database on-line]; available from http://www.proquest.com/ (publication number AAT 3073698; accessed July 12, 2008).

Baker, P.D. 2000. Impairment Write offs: Truth or Manipulation? *National Public Accountant* 45 (5): 36.

Barlev, Benzion, Dov Fried, Joshua Rene Haddad, and Joshua Livnat. 2007. Reevalutionof Revaluations: A Cross-Country Examination of the Motives and Effects on Future Performance. *Journal of Business Finance & Accounting* 34 (7): 1025-1050.

Bartov, E., F. Lindahl, and W. Ricks. 1998. Stock Price Behavior Around Announcements of Write-offs. *Review of Accounting Studies* 3 (4): 327-346.

Bunsis, S. 1997. A Description and Market Analysis of Write-off Announcements. *Journal of Business, Finance, and Accounting* 24: 1385-1399.

Chaney, P., C. Hogan, and D. Jeter. 1999. The Effect of Reporting Restructuring Charges on Analysts' Forecast Revisions and Errors. *Journal of Accounting and Economics* 27 261-284.

Chen, C. J.P., S. Chen, X. Su, and Yuetang Wang. 2004. Incentives for and Consequences of Initial Voluntary Asset Write-Downs in the Emerging Chinese Market. *Journal of International Accounting Research* 3 (1): 43-61.

Chen, S., Y. Wang, and Z. Zhao. 2007. Evidence of Asset Impairment Reversals from China: Economic Reality of Earnings Management? *Working Paper China Europe International Business School.*

Choi, T.H. 2008. Asset Write-offs: An Empirical Investigation of Timeliness. *Asia Pacific Journal of Accounting & Economics* 15: 11–28.

Dai, D., F. Deng, and M. Xinshu. 2007. A research on impairment of assets in listed firms with negative earnings in China. *Frontiers of Business Research in China* 1 (3): 351-364.

Datta. S. 2008. Is There Information Content in corporate Asset Write-downs? *International Journal of Managerial Finance* 4 (3): 200-219

Datta, S., M. Iskandar-Datta. 2008. Is there information content in corporate asset write downs? *International Journal of Managerial Finance* 4 (3): 200.

Duh, R.R., W.C. Lee, C.C. Lin. 2009. Reversing An Impairment Loss And Earnings Management: The Role Of Corporate Governance. *International Journal of Accounting* 44 (2): 113 - 137.

Easton, P.D., T.S. Harris. 1991. Earnings As an Explanatory Variable for Returns. *Journal of Accounting Research* 29 (1): 19 –36.

Elliott, J.A., and J.D. Hanna. 1996. Repeated Accounting Write-Offs And The Information Content Of Earnings. *Journal of Accounting Research* 34 (3): 135 - 155.

Elliott, J.A., and W.H. Shaw. 1988. Write-Offs As Accounting Procedures to Manage Perceptions. *Journal of Accounting Research* 26: 91-119.

Fields, T.D., T.Z. Lys, and L. Vincent. 2001. Empirical Research on Accounting Choice. *Journal of Accounting and Economics* 31: 255-307.
Francis, J., J.D. Hanna and L. Vincent. 1996. Causes and Effects of Discretionary Asset Write-Offs. *Journal of Accounting Research* 34: 117-134.
Gaber, B., S. Kim, S.S. Kwon. 2008. Voluntary Asset Write-Downs Under SFAS 121: Early Adopters Vis-a-Vis Late Adopters. *International Journal of Accounting and Finance* 1 (1): 83-106.
Jarva, H. 2008. Impairment Write-Offs and the Pricing of Accruals. Working Paper University of Oulu.
Khurana, I.K., B. Lippincott. 2000. Restructuring and Firm Value: The Effects of Profitability and Restructuring Purpose. *Journal of Business Finance and Accounting* 27 (9): 1085-1106.
Loh, A.L.C. and T.H. Tan. 2002. Asset Write-Offs - Managerial Incentives and Macroeconomic Factors. *Abacus* 38 (1): 134 - 151.
Missonier-Piera, F. 2007. Motives for fixed asset revaluation: An empirical analysis with Swiss data. *International Journal of Accounting* 42 (2): 186.
Reinstein, A. and G.H. Lander. 2004. Implementing the impairment of assets requirements of SFAS No. 144: An empirical analysis. *Managerial Auditing Journal* 19 (3): 400-411.
Riedl, E.J. 2004. An Examination of Long-Lived Asset Impairments. *The Accounting Review* 79 (3): 823-852.
Securities and Exchange Commission (SEC): 2002. *Commission Statement in Support of Convergence and Global Accounting Standards.* Release Nos. 33-9109; 34-61578. Available at: http://www.sec.gov/rules/other/2010/33-9109.pdf
Securities and Exchange Commission (SEC). 2007. *Acceptance from Foreign Private Issuers of Financial Statements Prepared in Accordance with International Financial Reporting Standards Without Reconciliation to U.S. GAAP*; *Proposed Rule.* Federal Register 72, No. 132, July 11. Washington, D.C.: Government Printing Office.
Securities and Exchange Commission (SEC). 2008. *Roadmap for the potential use of financial statements prepared in accordance with International Financial Reporting Standards by U.S. issuers*; *Proposed Rule.* Federal Register 73, No. 226, November 14. Washington, D.C.: Government Printing Office.
Securities and Exchange Commission (SEC). 2010. *Commission Statement in Support of Convergence and Global Accounting Standards.* February 24. Washington, D.C.: Government Printing Office.
Securities and Exchange Commission (SEC): Staff Paper. 2011. *A Comparison of US GAAP and IFRS*. Available at: http://sec.gov./spotlight/globalaccountingstandards/ifrs-work-plan-paper-111611-gaap.pdf
Strong, J.S. and J. Meyer. 1987. Asset Write-Downs: Managerial incentives and Security Returns. *Journal of Finance* 42 (3): 643-661.
Trueman, B. and S. Titman. 1988. An Explanation For Accounting Income Smoothing. *Journal of Accounting Research* 26: 127-139.
Tucker, J.W., P.A. Zarowin. 2006. Does Income Smoothing Improve Earnings Informativeness? *The Accounting Review* 81 (1): 251-270.
Zucca, L. and D. Campbell. 1992. A Closer Look at Discretionary Write-downs of Impaired Assets. *Accounting Horizons* (3): 30-41.

Appendix A. Model and Variable Definition

$$AR_{it} = \beta_0 + \beta_1 IFRS_{it} + \beta_2 WD_{it} + \beta_3 IFRS_{it}*WD_{it} + \beta_4 E_{it} + \beta_5 IFRS_{it}*E_{it} + \beta_6 \Delta E_{it} + \beta_7 IFRS_{it}*\Delta E_{it} + \beta_8 CFO_{it} + \beta_9 IFRS_{it}*CFO_{it} + \beta_{10} \Delta CFO_{it} + \beta_{11} IFRS_{it}*\Delta CFO_{it} + \beta_{12} BTM_{it} + \beta_{13} IFRS_{it}*BTM_{it} + \beta_{14} lnSIZE_{it} + \beta_{15} IFRS_{it}*lnSIZE_{it} + \varepsilon_i \quad (1)$$

where:

AR_{it} = firm *i*'s annual stock market returns for year *t*, measured as buy-hold abnormal returns beginning the fourth month of year *t* through third month of year *t*+1;

$IFRS_{it}$ = an indicator variable equal to 1 for a firm in the IFRS asset write-down rule, and 0 otherwise;

WD_{it} = firm *i*'s after-tax long-lived asset write-down (converted to a positive amount) for year t, divided by average total asset $\{(Asset_t + Asset_{t-1}) / 2\}$

$IFRS_{it}*WD_{it}$ = an interaction variable between IFRS and WD_{it}

E_{it} = firm *i*'s income from continuing operations, with asset write-down (WD) amount added back to reported income from continuing operations, divided by market value (MV) of equity for year *t*-1;

$IFRS_{it}*E_{it}$ = an interaction variable between IFRS and E_{it}

ΔE_{it} = firm *i*'s change in E_{it} from year *t*-1 to *t*, divided by MV_{t-1}. In calculating earnings change, the missing values of the beginning balance of write-downs are replaced by zero to avoid significant sample reduction;

$IFRS_{it}*\Delta E_{it}$ = an interaction variable between IFRS and ΔE_{it}

CFO_{it} = firm *i*'s operating cash flows divided by MV_{t-1};

$IFRS_{it}*CFO_{it}$ = an interaction variable between IFRS and CFO_{it}

ΔCFO_{it} = firm *i*'s change in operating cash flows divided by MV_{t-1};

$IFRS_{it}*\Delta CFO_{it}$ = an interaction variable between IFRS and ΔCFO_{it}

BTM_{it} = firm *i*'s book-to-market ratio, common equity divided by MV at year *t*;

$IFRS_{it}*BTM_{it}$ = an interaction variable between IFRS and BTM_{it}

$lnSIZE_{it}$ = natural logarithm of firm *i*'s MV at year *t*;

$IFRS_{it}*lnSIZE_{it}$ = an interaction variable between IFRS and $lnSIZE_{it}$

$$WD_{it} = \beta_0 + \beta_1 IFRS_{it} + \beta_2 ROA_{it} + \beta_3 \Delta ROA_{it} + \beta_4 IFRS_{it}*ROA_{it} + \beta_5 IFRS_{it}*\Delta ROA_{it} + \beta_6 AR1_{it} + \beta_7 PPE_{it} + \beta_8 DEBT_{it} + \beta_9 BTM_{it} + \beta_{10} lnSIZE_{it} + \beta_{11} ETR_{it} + \varepsilon_i \quad (2)$$

where:

ROA_{it} = firm *i*'s income from continuing operations, with asset write-down (WD) amount added back to reported income from continuing operations, divided by average total asset $\{(Asset_t + Asset_{t-1}) / 2\}$;

ΔROA_{it} = firm *i*'s change in ROA_{it} from year *t*-1 to *t, that is , change in* firm *i*'s income from continuing operations, with asset write-down (WD) amount added back to reported income from continuing operations, divided by average total asset $\{(Asset_t + Asset_{t-1}) / 2\}$. In calculating earnings change, the missing values of the beginning balance of write-downs are replaced by zero to avoid significant sample reduction;

$IFRS_{it}*ROA_{it}$ = an interaction variable between IFRS and ROA_{it};

$IFRS_{it}*\Delta ROA_{it}$ = an interaction variable between IFRS and ΔROA_{it};

$AR1_{it}$ = firm *i*'s annual stock returns of the year preceding the write-down year *t*;

PPE_{it} = firm *i*'s property, plant, and equipment, divided by total asset for year *t*;

$DEBT_{it}$ = firm *i*'s debt to asset ratio for year *t*;

ETR_{it} = firm *i*'s effective tax rate (tax expense divided by pretax income) for year *t*;