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doi:10.6552/JOAR.2007.45.s.4

會計評論, (45_s), 2007

International Journal of Accounting Studies, (45_s), 2007

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頁數/Page： 77-120

出版日期/Publication Date：2007/05

The International Journal of Accounting Studies
2006 Special Issue
pp. 77-120

An Examination of SFAS No. 35: Adoption Timing Motives, Write-Off Characteristics, and Market Reaction

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ABSTRACT

This paper adds to the growing body of literature on managers' discretionary accounting choices in general by specifically studying several issues related to Statement of Financial Accounting Standards (SFAS) No. 35, "Accounting Treatment of Asset Impairment." The empirical investigation starts by examining whether the managers' adoption timing choice is associated with various managerial motives. The results show that early adopters are more likely to be in industries with favorable performance in the pre-adoption period, larger in firm size and in the magnitude of asset write-offs, and acting in a manner consistent with "big bath" behavior. Additionally, this paper provides evidence that reporting incentives determine the amount of asset write-offs reported by firms upon the adoption of SFAS No. 35, after the actual asset impairment is controlled. Specifically, both early and late adopting firms with extremely low earnings tend to take a "big bath" by reporting a larger magnitude of asset write-offs. The empirical analyses also reveal that the amount of asset write-offs is significantly greater for firms with a management change relative to the firms with no such change, and that late adopters tend to apply the reporting flexibility in the determination of write-off amounts to report a smoother stream of earnings. Finally, this study investigates stock price responses to write-off announcements by partitioning write-offs into expected and unexpected portions. The results reveal that all of the asset write-offs announced by early adopters and the unanticipated portion of the impairment losses for late adopters both convey information of a reduction in future performance to market participants. The above implications are robust to a number of alternative specifications and variables definitions.

Keywords: *Impairments, Write-offs, Earnings management, Market reaction.*

Data Availability: *Data are available from public sources as indicated in the text.*

* I am grateful for the research assistance of Meng-Fen Wu and Chi-Jang Wang and for helpful comments received from Li-Chin Jennifer Ho (the editor) and the anonymous reviewer.

1. INTRODUCTION

On July 1, 2004, the Financial Accounting Standards Board (FASB), governed by the Accounting Research and Development Foundation (ARDF) in Taiwan, issued Statement of Financial Accounting Standards (SFAS) No. 35, "Accounting Treatment of Asset Impairment." The objective of this pronouncement is to prescribe the procedures that an entity applies to ensure that its assets are carried at no more than their recoverable amount. In line with International Accounting Standard (IAS) No. 36, "Impairment of Assets," the new provisions had to be applied by companies with fiscal years beginning on or after January 1, 2005, with early adoption permitted. Because impairment losses are likely to occur at irregular interval and in varying amounts, the new standard may introduce volatility in corporate earnings. Specifically, the large discretion involved in making the impairment decision makes asset write-downs potential candidates for earnings management. Therefore, it is essential for standard setters, in their evaluation of the accounting treatment for asset impairment, to establish the reasonable amount of discretion that allows for higher accounting information value.

SFAS No. 35 developed a new approach to impairment reviews. It was intended to reduce managerial discretion and to enhance financial reporting for asset impairment. However, some factors may weaken the new standard's promises. For instance, under the rules in SFAS No. 35, companies must first distinguish so-called cash generating units. Then, they must review each cash-generating unit for possible asset impairment. However, due to the lack of definitive standard for differentiating cash-generating units, the identification of asset impairments is highly subjective (Chou 2005). Different companies may reach completely different conclusions. Specifically, the lack of specificity in the definition of a cash-generating unit and assignment of assets to those cash-generating units seem to allow for substantial discretion and influence over the impairment decision. For instance, allocating goodwill to a losing or overvalued cash-generating unit will warranty its impairment. On the other hand, allocating the same goodwill to a profitable or undervalued cash-generating unit will guarantee that no impairment loss will be recognized.

Moreover, when an enterprise tests for signs of asset impairment, various kinds of external and internal information must be considered (e.g., adverse change in technological, market, economic, or legal factors; adverse change in the extent or manner in which an asset is being used or will be used). However, SFAS No. 35 provides no measurable means about how to determine when a change is considered

"adverse" to require an impairment test. Alternatively, why would the FASB not include in the list of impairment indicators an item such as "a loss of key personnel?" The loss of key personnel is always a concern due to its potentially adverse effect on an entity's ability to generate revenues or develop new products, technology, or services as planned. The impairment indicators are highly subject to interpretation and are not intended to represent an exhaustive list. This suggests an alternative possibility: after adoption of SFAS No. 35, managers may apply even greater discretion in their impairment decisions for assets, as the standard's subjective criteria provide an avenue for managers to justify their reporting choices for asset impairment that was unavailable prior to the standard. Because the new statement seems to provide a significant amount of flexibility in regard to managerial judgment and discretion, critics argued that managers may choose to manage earnings through review of asset impairment, should such opportunities be desired.

Given the pervasive and dramatic effects of SFAS No. 35, it is important to investigate several issues related to this standard. My investigation starts by examining whether the adoption timing choice of SFAS No. 35, which allows an 18-month adoption window, is associated with various managerial motives. The results show that firms in industries with favorable performance in the pre-adoption period have a higher propensity to adopt the new standard early. Conversely, firms in industries with poor past performance are more likely to delay adoption, perhaps in the hope of a stock market rebound so that the impairment amounts can be lowered. Moreover, the results indicate that early adopters appear to be larger, report a greater magnitude of asset write-offs, and tend to time the adoption of SFAS No. 35 in order to take a "big bath" rather than smooth earnings, as extremely low earnings have a negative impact on the adoption decision.

This paper further examines management discretionary behavior in measuring asset impairment losses. The results indicate that the amount of asset write-offs reported under SFAS No. 35 in the adoption period has a significant association with reporting incentives after the actual asset impairment is controlled, supporting the contention that the magnitude of asset write-offs is used to manage earnings. Specifically, both early and late adopting firms with extremely low earnings tend to take a "big bath" by reporting a larger magnitude of asset write-offs. The amount of asset write-offs is significantly greater for firms with a management change relative to the firms with no such change. The results also reveal that late adopting firms with extremely high earnings report a larger magnitude of asset write-offs, consistent with income smoothing behavior.

Next, this study examines stock price responses to write-off announcements as a result of the initial adoption of SFAS No. 35. The empirical analysis partitions write-offs into expected and unexpected portions and examines their associations with the announcement period returns. The results suggest that the investors view both the anticipated and unanticipated impairment losses announced by early adopters as conveying negative information about future profitability. Due to the short time period allowed for early adoption, it is likely that initial impairments are unanticipated by the market. On the other hand, for late adopters, the market's reaction is not significantly associated with the expected portion of impairment loss, whereas the association is significantly negative for the unexpected portion. The latter result implies that investors regard the unanticipated portion of asset write-offs announced by late adopters as value relevant. Also, the higher the amount of unexpected impairment loss, the more negative the market reaction.

This study contributes to and extends prior research on asset write-offs in two substantive ways. First, the research will contribute to the earnings management literature by empirically examining managers' discretionary behavior in determining the amount of asset impairment upon the adoption of SFAS No. 35. The FASB argues that the benefit of writing down assets (including goodwill) on the impairment basis is that users of accounting information will be provided with greater transparency regarding the economic value of assets and the amount of its effect on earnings. However, the extent of benefit will be mitigated if managers use discretion opportunistically to mislead stakeholders about the underlying economic value of assets. An asset impairment charge may be an important signal of a decline in a business for reasons not obvious to financial statement users and policymakers. Thus, the information gained from this study may provide a better understanding of the earnings management potential permitted by the FASB, through multiyear adoption policy and managerial discretion over impairment-loss recognition, and may provide insights to standard setters in their assessment of alternative methods to calculate and report asset impairments.

Second, this study contributes to the literature on the stock market reactions to asset write-offs. Most prior studies (e.g., Elliott and Shaw 1988; Francis, Hanna and Vincent 1996) examine the entire amount of the asset write-off as the explanatory variable rather than estimating the unexpected portion, assuming that write-offs are fully unanticipated. However, it is unlikely that the entire amount of impairment losses is a total surprise to the market. This paper extends this line of research by examining how investors react to announcements of asset write-offs, partitioned into the anticipated and unanticipated portions, and whether the market reaction

varies with the timing of adoption. The research provides timely evidence to consider whether asset impairments denote economic events that capture important information for ongoing firm value.

The remainder of this paper is organized as follows. Section 2 provides the background of financial reporting for asset write-offs and related prior search. Sections 3, 4, and 5 outline the research methodology for the adopting timing, write-off characteristics, and market reaction analyses, respectively. Section 6 reviews the sample selection and industry breakdowns. This is followed by separate sections reporting the empirical results of the three analyses. Section 10 presents sensitivity analyses. Section 11 concludes and offers directions for future research.

2. BACKGROUND

2.1 ACCOUNTING FOR ASSET IMPAIRMENTS

There was little guidance on accounting for asset impairments until the issuance of SFAS No. 35. Taiwan's regulations previously had specified when to recognize losses and required that monetary amounts be used when valuations of fixed asses were performed. However, the valuation method and the basis for the amount of the valuation were not clearly specified. SFAS No. 35 was intended to give entities more specific rules to follow.

SFAS No. 35 had to be applied by companies with fiscal years beginning on or after January 1, 2005, with early adoption permitted. The new provisions prompted the review of assets at each balance sheet date as to whether there is any indication, based on various kinds of internal and external circumstances, that an asset (individual asset or cash-generating unit other than goodwill) may have been impaired. While SFAS No. 35 is intentionally general in defining "external and internal circumstances," the standard does provide a list of examples to serve as guidance (e.g., a significant decrease in the market value of an asset; adverse change in technical, market, economic, or legal factors; book value of net assets greater than their total market value; adverse change in the extent or manner in which an asset is being used or will be used). If any such circumstance exists, the recoverable amount of the asset will be estimated. The impairment loss will then have to be recognized for an asset whose carrying value is greater than the recoverable amount. Specifically, an entity should assess the cash-generating unit (the smallest identifiable group of assets capable of independently generating a cash flow) to which goodwill is allocated on an annual basis and recognize an

impairment loss on the excess of carrying value over the recoverable amount. The impairment test may be performed at any time during a company's fiscal year, provided the test is performed at the same time every year. These new provisions may cause periodic adjustments to a company's financial statements.[1]

2.2 PRIOR LITERATURE

Several prior U.S.-based studies examine managers' early adoption decisions related to the FASB's pronouncements and provide evidence that the timing of adoption is associated with various managerial motives. Ayres (1986) examines the characteristics that differentiate among firms that elect early adoption of SFAS No. 52, which pertains to foreign currency translation, from those that defer adoption until the mandatory date. He finds that firms adopt the income-increasing standard early in order to improve reported earnings and to alleviate financial constraints. On the other hand, Langer and Lev (1993) document that debt constraints and smoothing incentive are not significant to the adoption timing decision, although all of the early adopters in their sample have increased their reported earnings with the adoption of SFAS No. 87 on pensions. Simon and Costigan (1996) show that 70 percent of companies that choose to early-adopt SFAS No. 96 on deferred income taxes have experienced earnings increases upon adoption, and that this group of companies is more highly leveraged and more likely to have suffered an earnings decline than a control group. Amir and Livnat (1996) indicate that companies are more likely to early-adopt SFAS No. 106 on other postretirement benefits in an attempt to decrease income when their earnings are extremely low, consistent with "big bath" behavior. Finally, Long (2005) provides further evidence of earnings management in the early adoption of SFAS No. 142 on goodwill and other intangible assets. Results in her study suggest that the adoption timing strategies are associated with incentives to reduce the likelihood of violation of debt covenants and to smooth income.

A number of U.S.-based studies have examined whether asset write-offs are used for strategic/opportunistic management purposes. Most of them have looked at write-offs of several assets lumped together, including inventories, property plant and equipment (PP&E), and restructuring charges. Strong and Meyer (1987)

[1] The FASB does not allow recognition of increases in goodwill values and subsequent reversal of a previously recognized impairment loss for goodwill. However, for long-lived assets other than goodwill, the impairment losses can be reversed if market conditions have improved, but to the extent that the book value of the asset after the reversal may not exceed the asset's book value before the impairment loss was recognized, less required provision for depreciation or amortization. As of December 31, 2005, few companies (less than 5% of public firms) have recognized the restoration of previously recognized impairment losses.

provide evidence that a change in senior management (especially if new management comes from outside the firm) is the most important determinant of an impairment decision. Elliott and Shaw (1988) find that firms disclosing large discretionary write-downs are larger than other firms in their industries, suggesting that larger firms are more likely to take big baths than are smaller firms. Cameron and Stephens (1991) reveal that firms with positive adjustments (to smooth income) to earnings triggered more accurate forecasts than those with negative adjustments (to take a "big bath"). On the other hand, Francis et al. (1996) find that reporting incentives play a little or no role in determining inventory and PP&E write-offs, but play a substantial role in explaining more discretionary items such as goodwill write-offs and restructuring charges. Specifically, they provide evidence that the proxy for management change is significant in explaining goodwill write-offs and restructuring charges. However, their results contrast sharply with Zucca and Campbell's (1992) conclusion that write-off firms are more likely to engage in either "big bath" or smoothing behavior. Riedl (2004) contrasts the determinants of write-offs reported before and after the issuance of SFAS No. 121 (accounting for asset impairment) and reveals that firms with private debt are more likely to record smaller write-offs, although not significantly different in the two regimes, and that "big bath" reporting incentive has a higher association with write-offs reported after the standard's implementation. Furthermore, Sevin and Schroeder (2005) provide evidence that a significantly greater proportion of small firms reported negative earnings in the adoption year of SFAS No. 142 as opposed to the prior year. Their finding implies that the negative reporting impact of the standard's adoption is used more by small firms as part of a big bath strategy, contrary to Elliott and Shaw's (1988) finding.

The results of extant research of the market effects of asset write-offs are generally mixed. Zucca and Campbell (1992) reveal no significant evidence of stock market reaction to the write-down announcement. On the other hand, results in Elliott and Shaw (1988) and Bunsis (1997) indicate a significant two-day negative security return on average when the write-downs are disclosed. In addition, Elliott and Hanna (1996) provide evidence that the "unexpected earnings before write-downs" are more significant in explaining market-adjusted returns than are the "unexpected earnings after write-downs." They also find a significant association between the amount of the impairment loss and the movement in market-adjusted stock prices around earnings announcements. Francis et al. (1996) provide evidence that the market reaction to write-downs is overall negative, conditional on the type of asset written down. Specifically, their results indicate a

negative reaction to inventory write-downs (perceived as declines in economic value), but a positive reaction to restructuring charges (regarded as signals for future performance). Lastly, Long (2005) separately examines the market reactions for early and late adopters of SFAS No. 142 and finds that while investors view the impairment announcements of early adopters as conveying negative information about future performance, they react much more negatively to the impairment losses announced by late adopters.

To my knowledge, this paper represents one of the first attempts in accounting literature to investigate the effects of SFAS No. 35 on the characteristics of asset write-offs and to examine the stock market reactions to the announcements of asset impairment as a result of the initial application of the new standard. This study extends prior literature by indicating that, although the provisions of SFAS No. 35, with more specific guidance on impairment evaluation, might improve impairment recognition for long-lived assets, mangers can still manipulate earnings by strategically choosing the adoption period and the amount of asset write-offs.

3. HYPOTHESIS DEVELOPMENT AND RESEARCH DESIGN FOR THE ADOPTION TIMING ANALYSIS

My first analysis investigates the motives for timing the adoption of SFAS No. 35. Although no justification is offered for the multi-year adoption window of the new standard, the FASB's underlying reasoning for granting flexibility in adoption period is to allow sufficient time for firms to implement complex accounting changes. However, extending the adoption window allows firms to shift the effects of accounting changes to an earlier or a later period. It is of concern to standard setters, regulators, and investors whether managers take strategic advantage of the flexibility in the adoption period to manage earnings. Thus, the first research question addressed in this paper is whether adoption timing choice is associated with various possible reporting incentives.

3.1 HYPOTHESIS DEVELOPMENT

3.1.1. Leverage Hypothesis

Positive accounting literature documents that managers of firms facing higher contracting and monitoring costs of debt are more likely to make income-increasing accounting decisions than managers of firms facing lower contracting and monitoring costs of debt (Watts and Zimmerman 1986). Specifically, increases in earnings ease dividends, interest coverage, and leverage restrictions. If the

restrictiveness of debt covenants can be used to explain managerial discretion over asset impairment, then it can be argued that managers of firms that are closer to violating the accounting-based constraints contained in debt covenants have a larger propensity to delay adoption of SFAS No. 35, given that they might want to gain time for contracting negotiation with debtholders so as not to violate their debt covenants by the accounting changes. Thus, the first hypothesis to be tested, stated in alternative form, is:

H_1: Firms with higher leverage are more likely to adopt SFAS No. 35 late.

3.1.2. Earnings Performance Hypotheses

Companies that miss earnings targets, even by small margins, receive unpleasant reactions from the investors. Kirschenheiter and Melumad (2002) present a model wherein a larger earnings surprise reduces the inferred precision of reported earnings and thus diminishes the effect on firm value, providing a natural demand for smoother earnings. That is, for sufficiently "bad" news, the manager under-reports earnings by the maximum, preferring to take a "big bath" in the current period in order to reduce the inferred precision of the reported earnings. If the news is "good", the manager smoothes earnings in an attempt to raise the inferred precision of his/her earnings report. Both reporting behaviors imply that managers use reporting discretion either to reveal their private information about the true underlying value of the firm or to manage earnings in an opportunistic fashion. In the latter case, such "big bath" charges and/or income smoothing would serve to distort the underlying economics of the firm (Riedl 2004).

The earnings management literature suggests that in periods when performance is poor, management may take the opportunity to report other discretionary bad news. That is, if a manager cannot manipulate earnings to reach a "target" level, he/she will attempt to decrease current earnings in favor of increasing future earnings and, therefore, future bonuses.[2] Based on the "big bath" hypothesis, firms are more likely to early-adopt SFAS No. 35 if earnings performance for the year is expected to be poor even without adoption. This leads to the second hypothesis to be tested, stated in alternative form:

H_{2a}: Firms with unfavorable earnings performance in the year of adoption are more likely to adopt SFAS No. 35 early (big bath).

[2] Proxy for management compensation could also be included in the analysis. However, prior research (e.g., Healy 1985) indicates that the details of the bonus calculations vary across plans. Managers' incentives to report higher earnings in a given year may vary with these details. Since it is difficult to get

The income smoothing literature posits that managers have incentives to reduce earnings volatility. The claim here is that managements take write-offs in periods when they have unusual increases in earnings. In the context of early versus late adoption of SFAS No. 35, managers facing the prospect of high profits subsequent to the adoption decision would adopt the new provisions early. This leads to the following hypothesis to be tested, stated in alternative form:

H_{2b}: Firms with favorable earnings performance in the year of adoption are more likely to adopt SFAS No. 35 early (income smoothing).

3.1.3. Senior Management Change Hypothesis

The last hypothesis in the adopting timing analysis asserts that a recent change in management may be associated with the magnitude of the impairment loss. Change in top management is often perceived as an opportune time to recognize large asset write-downs because the impact of taking these write-downs can be blamed on the outgoing management, and because investors' perceptions of future financial performance can be much improved. Accordingly, this study will examine whether firms with recent changes in top management are more likely to choose early adoption so as to blame the impairment losses on the preceding management. The next hypothesis to be tested, stated in alternative form, is:

H_3: Firms that experience changes in senior management in the year prior to adoption are more likely to adopt SFAS No. 35 early.

3.2 EMPIRICAL MODEL

To test hypotheses H_1 - H_3, I perform multivariate logit analysis, combing the samples of early and late adopters and considering all the adoption motives simultaneously. Specifically, I estimate the following logistic regression model:

$$\begin{aligned} EARLY_i = {} & \alpha_0 + \alpha_1 LEV\_1_i + \alpha_2 POOR\_1_i + \alpha_3 GOOD\_1_i + \alpha_4 MGT\_1_i + \alpha_5 RET\_1_i \\ & + \alpha_6 MB\_1_i + \alpha_7 \Delta ROA\_1_i + \alpha_8 INDRET\_1_i + \alpha_9 INDMB\_1_i \\ & + \alpha_{10} \Delta INDROA\_1_i + \alpha_{11} SIZE\_1_i + \alpha_{12} IMP\_1_i + \varepsilon_i \end{aligned} \quad (1)$$

where the dependent variable, $EARLY_i$, is an indicator variable that equals 1 if firm i is an early adopter, and 0 otherwise.[3] I devote the remainder of this section to defining the independent variables in Equation (1) and describing their measurement.

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enough details about compensation arrangements, more general proxies for *POOR* and *GOOD* are used in the analyses.

[3] Firms adopting SFAS No. 35 between July 2004 and December 2004 are treated as early adopters, whereas firms adopting the new pronouncements in fiscal year 2005 are classified as late adopters.

3.3 EXPLANATORY VARIABLES

3.3.1. Debt Covenants *(LEV_1_i)*

Some support for the use of the debt/equity ratio to proxy for closeness to debt covenant restrictions is provided by Duke and Hunt (1990) and Press and Weintrop (1990). Duke and Hunt (1990) find that the debt/equity ratio is positively related to the existence and tightness of three common debt covenant restrictions (related to retained earnings, working capital, and net tangible assets). Press and Weintrop (1990) indicate that, for firms with accounting constraints in their debt agreements, the ratio of total debt to the book value of shareholders' equity is correlated with proximity to the actual leverage constraint in debt covenants. H_1 is tested using the variable LEV_1_i, which is defined as firm *i*'s ratio of the book value of total debt to the book value of shareholders' equity at the end of the second quarter of fiscal year 2004, given that managers make adoption timing decisions in the third quarter of fiscal year 2004. H_1 asserts that the coefficient on LEV_1_i should be negative.

3.3.2. Earnings Surprises *($POOR\_1_i$* and *$GOOD\_1_i$)*

To measure earnings performance in the adoption year, a benchmark to which earnings is compared must be specified. Assuming that annual earnings follow a random walk, firms' reported earnings in the prior year is used as the benchmark. Accordingly, earnings performance in the following year is measured by next year's earnings changes. Specifically, I follow Francis et al. (1996) and Riedl (2004) and include separate proxies for favorable and unfavorable earnings performance. $POOR\_1_i$ equals the change in firm *i*'s pre-write-off earnings from fiscal year 2003 to 2004, divided by total assets at the end of fiscal year 2003, when this change is below the median of nonzero negative values of this variable, and 0 otherwise. Similarly, $GOOD\_1_i$ equals the change in firm *i*'s pre-write-off earnings from fiscal year 2003 to 2004, divided by total assets at the end of fiscal year 2003, when this change is above the median of nonzero positive values of this variable, and 0 otherwise. H_{2a} predicts that the coefficient on $POOR\_1_i$ should be negative. According to H_{2b}, the coefficient on $GOOD\_1_i$ should be positive. The definitions of $POOR\_1_i$ and $GOOD\_1_i$ allow for differing relations when the change in earnings is below/above their respective medians to focus on ranges wherein managers are more likely to have incentives to engage in "big bath" or "smoothing" reporting behavior.

3.3.3. Management Changes (MGT_1_i)

Following Riedl (2004), "senior management" is defined as any of the top three compensated positions within the firm. To test H_3, MGT_1_i equals 1 if the firm changed any of the top three executive positions during one year prior to adoption, and 0 otherwise. H_3 predicts that the coefficient on MGT_1_i is positive (i.e., firms with recent change in senior management are more likely to adopt SFAS No. 35 early).

3.4 CONTROL VARIABLES

Eight control variables are included: three variables to proxy for past asset/stock performance, three variables to proxy for industry trends, and two variables to proxy for firm size and magnitude of impairment. The choice of the control variables in Equation (1) is informed by the literature that aids the prediction of managers' adoption timing choice of the write-off pronouncement (in particular, Long 2005). I have no prediction regarding their signs, but I include them to mitigate problems of potentially omitted correlated variables.

3.4.1. Firm Performance (RET_1_i, MB_1_i, and ΔROA_1_i)

To control for recent stock price performance, I include the firm's stock return over the four quarters prior to the third quarter of fiscal year 2004 (RET_1_i). I also examine the market-to-book ratio (MB_1_i), measured at the end of the second quarter of fiscal year 2004, as well as the change in the firm's return on assets (ΔROA_1_i) from the first two quarters of fiscal year 2003 to the first two quarters of fiscal year 2004. The first variable, RET_1_i, captures the firm's stock price performance. The second variable, MB_1_i, captures the extent to which book value of net assets is greater or less than the market value of the firm. The third variable, ΔROA_1_i, captures the firm's financial performance in the pre-adoption period. The above variables are all measured as of the end of the second quarter of fiscal year 2004, given that managers make adoption timing decisions in the third quarter of fiscal year 2004.

3.4.2. Industry Performance ($INDRET\_1_i$, $INDMB\_1_i$, and $\Delta INDROA\_1_i$)

I also include variables to proxy for the historical performance of the firm's industry. I compute the industry median of stock returns ($INDRET\_1_i$) over the four quarters prior to the third quarter of fiscal year 2004. Additional industry-level control variables include the industry median of market-to-book ratio ($INDMB\_1_i$), measured at the end of the second quarter of fiscal year 2004, and the median

change in industry returns on assets ($\Delta INDROA\_1_i$) from the first two quarters of fiscal year 2003 to the first two quarters of fiscal year 2004.

3.4.3. Firm Size ($SIZE\_1_i$) and Impairment Magnitude (IMP_1_i)

Firm size is a comprehensive variable used to proxy for various aspects of the firm. It could control for the frequency and amount of previous acquisitions. Firm size ($SIZE\_1_i$) is measured as the logarithm of firm *i*'s total assets at the end of the second quarter of fiscal year 2004, given that managers make adoption timing decisions in the third quarter of fiscal year 2004. Moreover, prior research (e.g., Liu and Mittelstaedt 2002) documents a positive association between materiality and firms' disclosure decisions regarding expenses. While a number of studies examine various reporting items and disclosures, the effect of the item on income continues to be the most significant factor in auditors' materiality and disclosure decisions (see Messier, Martinov-Bennie and Eilifsen 2005). Given that SFAS No. 35 requires recognition of impairment losses after its adoption, I control for the effect of the magnitude of initial impairments on the adoption timing decision with IMP_1_i, which is defined as firm *i's* initial asset impairment loss recognized in the adoption period, deflated by beginning total assets.

4. HYPOTHESIS DEVELOPMENT AND RESEARCH DESIGN FOR THE WRITE-OFF CHARACTERISTICS ANALYSIS

As mentioned earlier, SFAS No. 35 prompts the review of assets at each balance sheet date as to whether there is any indication, based on various kinds of internal and external circumstances, that an asset (individual asset or cash-generating unit other than goodwill) may have been impaired. However, some factors may weaken the new standard's promises. For instance, SFAS No. 35 provides no measurable means about how to determine when a change is considered "adverse" to require an impairment test. In addition, under the rules in SFAS No. 35, companies must first distinguish so-called cash generating units. Then, they must review each cash-generating unit for possible asset impairment. However, due to the lack of definitive standard for differentiating cash-generating units, the identification of asset impairments is highly subjective (Chou 2005). Because the new statement seems to provide a significant amount of flexibility in regard to managerial judgment and discretion, managers may choose to manage earnings through review of asset impairment, should such opportunities be desired.

4.1 HYPOTHESIS DEVELOPMENT

Management has the ability to manipulate the amount of asset impairment losses. Its preferences and incentives will influence the magnitude of the impairment in more significant and direct ways, although this discretion may be limited by auditors. That is, some firms may understate the write-offs while other firms may overstate the write-offs, depending on their reporting incentives. To capture explicit or implicit reporting incentives managers may face in recording write-offs, the following four factors are hypothesized to be associated with the magnitude of impairment. First, managers of firms that are closer to violating the accounting-based constraints contained in debt covenants have stronger incentives to choose to understate asset write-offs (and increase income) and create a debt covenant slack. Second, managers facing explicit incentives (e.g., maximizing long-term bonus payments) or implicit incentives (e.g., maximizing shareholder value) to decrease (via "big bath") or increase (via "smoothing") the inferred precision of reported earnings may tend to record a larger or smaller amount of asset write-offs, respectively (see discussions for Kirschenheiter and Melumad's (2002) model in the previous section). Lastly, firms with recent changes in top management are more likely to record a greater amount of asset write-offs because new managers may consciously overstate the impairment loss in order to reduce the possibility of future write-offs, which will be charged against operating income, during the period of their incumbency.

The above assertions lead to the following hypotheses, stated in alternative form:

H_4: The amount of the asset impairment loss is smaller for firms with higher leverage.

H_{5a}: The amount of the asset impairment loss is greater for firms with unfavorable earnings performance in the year of adoption (big bath).

H_{5b}: The amount of the asset impairment loss is greater for firms with favorable earnings performance in the year of adoption (income smoothing).

H_6: The amount of the asset impairments loss is greater for firms with recent changes in senior management.

4.2 EMPIRICAL MODEL

To test hypotheses $H_4 – H_6$, the following tobit regression model is estimated:

$$IMP_i = \beta_0 + \beta_1 LEV\_2_i + \beta_2 POOR\_2_i + \beta_3 GOOD\_2_i + \beta_4 MGT\_2_i + \beta_5 RET\_2_i + \beta_6 MB\_2_i + \beta_7 \Delta ROA\_2_i + \beta_8 INDRET\_2_i + \beta_9 INDMB\_2_i + \beta_{10} \Delta INDROA\_2_i + \beta_{11} SIZE\_2_i + \beta_{12} LTI_i + \beta_{13} FA_i + \beta_{14} GW_i + \beta_{15} ITA_i + \varepsilon_i \quad (2)$$

where the dependent variable, IMP_i, is the asset impairment loss recognized by firm *i* over the last two quarters of fiscal year 2004 (over the first two quarters of fiscal year 2005) deflated by total assets at the end of the second quarter of fiscal year 2004 (at the end of fiscal year 2004) if firm *i* is an early adopter (a late adopter). The independent variables in Equation (2) are defined below.

4.3 EXPLANATORY VARIABLES

4.3.1. Debt Covenants (LEV_2_i)

I define LEV_2_i as firm *i*'s ratio of the book value of total debt to the book value of shareholders' equity at the end of the second quarter of fiscal year 2004 (at the end of fiscal year 2004) for early adopters (late adopters). My fourth hypothesis (H_4) predicts a negative association between this variable and the magnitude of asset write-offs.

4.3.2. Earnings Surprises ($POOR\_2_i$ and $GOOD\_2_i$)

Following Riedl (2004), $POOR\_2_i$ is defined as the change in firm *i*'s pre-write-off earnings from fiscal year 2003 (the first two quarters of fiscal year 2004) to 2004 (the first two quarters of fiscal year 2005), divided by total assets at the end of fiscal year 2003 (at the end of the second quarter of fiscal year 2004), when this change is below the median of nonzero negative values of this variable, and 0 otherwise, if firm *i* is an early adopter (a late adopter), and $GOOD\_2_i$ equals the change in firm *i*'s pre-write-off earnings from fiscal year 2003 (the first two quarters of fiscal year 2004) to 2004 (the first two quarters of fiscal year 2005), divided by total assets at the end of fiscal year 2003 (at the end of the second quarter of fiscal year 2004), when this change is above the median of nonzero positive values of this variable, and 0 otherwise, if firm *i* is an early adopter (a late adopter). Given the point at which managers have incentives to smooth earnings versus "take a big bath", the definition of $GOOD\_2_i$ ($POOR\_2_i$) should better capture the range in which managers have the greatest incentive to smooth earnings (take a "big bath"). I hypothesize in H_{5a} (H_{5b}) that $POOR\_2_i$ ($GOOD\_2_i$) is negatively (positively) associated with the magnitude of asset write-offs.

4.3.3. Management Changes (MGT_2_i)

This is a dummy variable equal to 1 if the firm changed any of the top three executive positions during one year prior to adoption, and 0 otherwise. My sixth hypothesis (H_6) predicts a positive association between this variable and the magnitude of asset write-offs.

4.4 CONTROL VARIABLES

The creditability of the empirical findings in asset impairment studies relies on the extent to which the research design controls for actual impairment factors (Wilson 1996). However, finding a reliable measure for the real impairment components of the long-lived assets regulated by SFAS No. 35 is not an easy job because some asset accounts (e.g., goodwill) do not have a reference market price in nature, and because firm-specific inside information are required for other measurements. Although each control variable is carefully defined, the hypothesis tests would be biased to the extent that omitted variables have an effect on the magnitude of impairment.

Following prior research (in particular, Francis et al. 1996), I include eleven control variables: three variables to proxy for past asset/stock performance, three variables to proxy for industry trends, and five variables to proxy for firm size and the characteristics of long-lived assets. The control variables attempt to capture cross-sectional variation in the real impairment of long-lived assets before exploring the attributes of manipulation.[4]

4.4.1. Firm Performance (RET_2_i, MB_2_i, and ΔROA_2_i)

The following variables are used to control for historical stock/asset performance: (1) RET_2_i, defined as firm i's stock return over the four quarters prior to the third quarter of fiscal year 2004 (over fiscal year 2004) for early adopters (late adopters); (2) MB_2_i, firm i's market-to-book ratio, measured at the end of the second quarter of fiscal year 2004 (at the end of fiscal year 2004) if firm i is an early adopter (a late adopter); and (3) ΔROA_2_i, measured as the mean change in firm i's return on assets over fiscal years 1999 to 2003 (over fiscal years 2000 to 2004), if firm i is an early adopter (a late adopter). Firms with more favorable

[4] The empirical analyses are based on a sample period of July 2004 to June 2005. My choice of sample period also reflects concerns for the reliability of financial data. After the enactment of Securities Exchange Act in 1968, the annual and semiannual reports of all public companies in Taiwan are required to be audited. The regulation is expected to improve the reliability of the two financial reports by means of audit. Accordingly, instead of using non-audited quarterly reports, I collect the relevant financial data from annual and semiannual reports.

historical performance are less likely to have impaired assets. Accordingly, the coefficients on the variables RET_2_i, MB_2_i, and ΔROA_2_i are expected to be negative.

4.4.2. Industry Performance ($INDRET\_2_i$, $INDMB\_2_i$, and $\Delta INDROA\_2_i$)

The industry of the firm is expected to provide some common effect with respect to asset write-offs as the level of impairment is closely related to competition, deterioration, and other economic factors of the industry. I include the following variables to proxy for the historical performance of the firm's industry: (1) $INDRET\_2_i$, equals the firm *i*'s industry median of stock returns over the four quarters prior to the third quarter of fiscal year 2004 (over fiscal year 2004) for early adopters (late adopters); (2) $INDMB\_2_i$, firm *i*'s industry median of the market-to-book ratio, measured at the end of the second quarter fiscal year 2004 (at the end of fiscal year 2004) for early adopters (late adopters); and (3) $\Delta INDROA\_2_i$, defined the mean change in firm *i*'s industry median return on assets over fiscal years 1999 to 2003 (over fiscal years 2000 to 2004), if firm *i* is an early adopter (a late adopter). Firms in industries with growing trends are less likely to incur impairment losses. Accordingly, the coefficients on the variables $INDRET\_2_i$, $INDMB\_2_i$, and $\Delta INDROA\_2_i$ are expected to be negative.

4.4.3. Firm Size ($SIZE\_2_i$)

To proxy for firm size, $SIZE\_2_i$ is measured as the logarithm of firm *i*'s total assets at the end of the second quarter of fiscal year 2004 (at the end of fiscal year 2004) for early adopters (late adopters). Prior U.S.-based research provides some evidence that firms disclosing large discretionary write-downs are larger than other firms in their industries (see Elliott and Shaw 1988). However, large firms generally experience a greater number of mergers and acquisitions, resulting in more complicated structures. As more frequent acquisitions affect the operations of large firms, their asset impairment pattern, especially for goodwill, may be different from that in smaller firms. While large firms attract analysts' and politicians' attention, this may lead to more efficient processing of accounting information (i.e., information efficiency) and fewer managerial incentives to manipulate the impairment charge. Thus, I have no prediction pertaining to the coefficient on the variable $SIZE\_2_i$.

4.4.4. Characteristics of Assets (LTI_i, FA_i, GW_i, and ITA_i)

The extent of impairment is expected to vary with the magnitude of asset components. In addition, compared to tangible assets, the valuation of intangible

assets is more vulnerable to manipulation. Therefore, I include four variables to control for the characteristics of the long-lived assets regulated by SFAS No. 35. Specifically, LTI_i, FA_i, GW_i, and ITA_i represent long-term investment based on the equity method, fixed assets, goodwill, and intangible assets excluding goodwill, respectively, at the end of the second quarter of fiscal year 2004 (at the end of fiscal year 2004) divided by total assets at the end of the second quarter of fiscal year 2004 (at the end of fiscal year 2004), if firm *i* is an early adopter (a late adopter). The coefficients on this set of variables are expected to be positive.

The set of variables included in Equation (2) is clearly not exhaustive of the possible proxies available, especially for the control variables. With respect to the latter group, the proxies are chosen to capture varying levels of activities that may map into write-offs (firm- and industry-specific) as well as varying performance measures (ROA and stock prices). Because asset write-offs are reported at the firm level, firm-specific variables may provide the most relevant attributes to asses the underlying performance of the firm.[5]

5. HYPOTHESIS DEVELOPMENT AND RESEARCH DESIGN FOR THE MARKET REACTION ANALYSIS

5.1 HYPOTHESIS DEVELOPMENT

The stock market is expected to react to the announcement of asset impairments, to the extent that it is unanticipated. An impairment charge greater than expected may play a role as a signal of indispensable changes in the firm's future profit-making potential and in the intangible dimension of firm value. As a result, a firm's stock price would be affected as investors' forecasts of future cash flows have significantly changed. This lead to the following hypothesis:

H_7: There is a negative association between unexpected impairment loss and the changes in a firm's stock price.

5.2 EMPIRICAL MODEL

To implement the analysis of hypothesis H_7, the following regression model is estimated:

[5] For those factors that are (potentially) omitted from the model, I notice that their effect must be orthogonal to my chosen proxies. My choice of explanatory variable also takes into account concerns for multicollinearity, which was an issue in Francis et al. (1996) study. However, multicollinearity does not appear to be significant within my specification as the variance inflation factors (VIFs) on my explanatory variables are all less than 4.

$$CAR_i = \delta_0 + \delta_1 SURPRISE_i + \delta_2 BM_i + \delta_3 SIZE_i + \delta_4 BETA_i + \delta_5 MOM_i + \delta_6 EIMP_i + \delta_7 UIMP_i + \varepsilon_i \quad (3)$$

where the dependent variable, CAR_i, is the cumulative abnormal stock return over the announcement period. It reflects the market's contemporaneous reaction to the news of earnings after adoption. Proxies for the independent variables in Equation (3) are described in the following section.

5.3 EXPLANATORY VARIABLES

After controlling for other contemporaneous information (as discussed in the next section), Equation (3) tests the stock price reaction to the information of IMP_i (portioned into the expected ($EIMP_i$) and the unexpected ($UIMP_i$) components). However, operationalizing a reasonable benchmark for the market's expectation of impairment losses is a difficult task. Given this difficulty, most prior studies (e.g., Elliott and Shaw 1988; Francis et al. 1996) examine the entire amount of the asset write-off as the explanatory variable rather than estimating the unexpected portion, assuming that write-offs are fully unanticipated. However, it is unlikely that the entire amount of impairment losses is a total surprise to the market. To the extent that the market partially anticipates asset impairments prior to the announcement, using the entire amount of impairment losses could lead to inconsistent estimates of the market reaction. Therefore, the expected write-off, $EIMP_i$, is estimated using the proxy variables in Equation (2), whereas the unexpected write-off, $UIMP_i$, equals the residual term (ε) in that Equation. To the extent that Equation (2) is a reasonable proxy for the unobservable market expectations of write-off amount, the test results revealing a significant negative coefficient on $UIMP_i$ and an insignificant coefficient on $EIMP_i$ would be consistent with H_7.

Note that testing H_7 is essentially a joint test of market efficiency and the expectation model of impairment loss. Thus, the validity of testing H_7 depends on the predictive power of the expectation model. My expectation model (i.e., Equation (2)) assumes that investors simply consider the firms' past stock/operating performance, industry trends, firm-level characteristics of long-lived assets, and discretionary reporting incentives to derive their expectations of asset write-off amount. To the extent that my expectation model fails to capture the entire information set investors use to form their expectations, the results of H_7 should be interpreted with caution.

5.4 CONTROL VARIABLES

The earnings surprise variable, $SURPRISE_i$, is calculated as the change in firm *i*'s pre-write-off earnings from fiscal year 2003 (the first two quarters of fiscal year 2004) to 2004 (the first two quarters of fiscal year 2005), divided by total assets at the end of fiscal year 2003 (at the end of the second quarter of fiscal year 2004), if firm *i* is an early adopter (a late adopter). Furthermore, four previously documented determinants of stock returns are included: (1) BM_i, constructed as firm *i*'s book value of shareholders' equity divided by the market value of equity at the end of the second quarter of fiscal year 2004 (at the end of fiscal year 2004) for early adopters (late adopters); (2) $SIZE_i$, measured as the logarithm of firm *i*'s market value of equity at the end of the second quarter of fiscal year 2004 (at the end of fiscal year 2004) for early adopters (late adopters); (3) $BETA_i$, is the market beta estimated using firm *i*'s daily returns over one year prior to the adoption of SFAS No. 35; (4) MOM_i, calculated as firm *i*'s market-adjusted stock return for the six months prior to the adoption. The first three variables, BM_i, $SIZE_i$, and $BETA_i$, are frequently used as risk factors, whereas MOM_i, is often used to control for the so-called momentum anomaly (see Jegadeesh and Titman 1993).[6]

6. SAMPLE SELECTION AND INDUSTRY COMPOSITION

Table 1 summarizes the sample selection process. All firms listed in the domestic stock market or traded over-the-counter and included in the Taiwan Economic Journal (TEJ) Data Bank and the Market Observation Post System (MOPS) for fiscal year 2004 and 2005 are searched to identify firms that elected to early adopt SFAS No. 35 and firms that did not. This study first locates firms having the necessary TEJ/MOPS data during the sample period 2004-2005 and not falling within the banking or financial services industries. I exclude financial institutions from my sample because the characteristics of financial firms likely differ from nonfinancial firms, and because the motivation for earnings management is unclear in these industries relative to unregulated industries. I then access the annual report on MOPS and hand-collect the amount and characteristics of any reported asset write-offs, as well as the adoption year of SFAS No. 35. After deleting observations at the initial public offering (IPO) stage (70), with fiscal year-

[6] Jegadeesh and Titman (1993) find evidence that poor stock performers over the prior three to twelve months continue to perform badly over the future period of the same length, whereas past good performers continue to perform well. This evidence on return behavior, called *momentum*, implies that future stock returns can be predicted based on a set of certain information, namely past returns.

end other than December 31 (4), and with changes in year-end (1), my sample comprises a total of 1,063 observations as shown in Table 1. Prior studies (e.g., Teoh, Welch and Wong 1998; Roosenboom, Goot and Mertens 2003) reveal that firms manipulate their earnings in the first year as a public company. I exclude the IPO firms from my sample because these firms may behave differently as a result of the added incentives in the IPO year. Using calendar year-end criterion in selecting the sample eliminates potential bias associated with differing time periods such as varying economic circumstances. I further delete firms that changed their year-ends to December 31 during the sample period. Of the 1,063 observations, 409 firms (38.48%) reported a non-zero impairment charge. After firms with missing variables and outliers are deleted, 1,020 firms are used in the write-off characteristics analysis; 400 firms with non-zero asset impairment losses are used in the adoption timing analysis; and 763 firms with available daily stock return data are used in the market reaction analysis.[7.8] Relevant financial data pertaining to this study are gathered from the aforementioned two databases for the years ended 1999-2005.[9.10]

The industry breakdowns for the sample observations (not reported) indicate a fairly uneven distribution across the various industries, with firms in the Electronic Components and Products industry representing the largest percentage, nearly 55%, of the entire sample (66 early adopters and 519 late adopters). This is a unique structural difference between Taiwan and many other countries: High-tech companies comprise the majority of public companies. Moreover, all industries have a greater number of late adopters than early adopters, probably because a short early-adoption window of six months has limited sample firms' ability to adopt

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[7] The number of sample firms is unequal for the analyses due to differing data requirements. In order to examine only firms where early adoption would have a material effect on financial statements, the sample firms for the adoption timing analysis are limited to those that reported non-zero impairment losses. On the other hand, I use the full sample for the write-off characteristics and market reaction analyses.

[8] I identify outliers by plots of each dependent variable against each independent variable. In addition, I locate outliers with an absolute value of the r-student larger than 3 in each regression. As a result, 13, 2, and 15 unduly influential observations are deleted from the sample for the write-off characteristics, adoption timing, and market reaction analyses, respectively. Moreover, 30, 7, and 242 firms with missing variables are deleted from my samples for the three analyses, respectively. A significant number of firms (242) are deleted from the sample for the market reaction analysis because their daily stock return data over the estimation and/or event period are not available on TEJ.

[9] Given the nature of the debt/equity ratio, negative values are set to missing and values larger than 5 are set to 5. The univariate and multivariate analyses are performed using a maximum of 3, 5, and 7, respectively, without a significant change in the estimated coefficients. The reported results use the maximum of 5.

[10] Any firm with a negative market-to-book ratio is given a missing value. In addition, the values of the market-to-book ratio larger than 5 are set to 5. The empirical analyses are performed using a maximum of 5 and 7, respectively, without a significant change in the estimated coefficients. The reported results use the maximum of 5.

SFAS No. 35 early, and because firms with complicated reporting issues took longer to adopt due to mechanical reasons.[11]

TABLE 1 Sample Selection

Description	Firms
Available observations with the necessary TEJ data over the period 2004-2005, excluding insurance and financial institutions	1,138
Observations deleted due to:	
- IPO firms	(70)
- firms not using December 31 as their year-end	(4)
- firms with fiscal year-end changed to December 31	(1)
Final sample	1,063
Observations used in the write-off characteristics analysis: [a]	
Early adopters	116
Late adopters	904
	1,020
Observations used in the adoption timing analysis: [a]	
Early adopters	102
Late adopters	298
	400
Observations used in the market reaction analysis: [a]	
Early adopters	102
Late adopters	661
	763

The number of observations is unequal for the analyses due to differing data requirements.

7. EMPIRICAL RESULTS OF THE ADOPTING TIMING ANALYSIS

7.1 DESCRIPTIVE STATISTICS AND UNIVARIATE RESULTS

Table 2 provides descriptive statistics for the variables used in the adopting timing analysis. Panel A presents the mean, median, and standard deviation of the variables for non-zero write-off firms. The two rightmost columns report mean and median differences between early and late adopters using a two-sample *t*-test and a nonparametric Wilcoxon Mann-Whitney test, respectively. Table 2 reveals that the mean value of $POOR\_1_i$ is significantly smaller (more negative) for early adopters

[11] To examine the industry effect, I conduct a sensitivity analysis by adding a dummy variable, *ELEC*, which is coded 1 if a firm is in the Electronic Components and Products industry, and 0 otherwise. Both the univariate and multivariate results indicate that *ELEC* is not significantly related to the adoption timing indicator, *EARLY,* and the impairment proxy, *IMP*. However, the high correlation between *ELEC* and *INDRET* (not reported) raises the possibility of severe multicollinearity, which may result in unstable regression estimates. Multicollinearity tests using the variance inflation factors (VIFs) reveal that the VIFs on *ELEC* and *INDRET* are 7 and 10, respectively. To reduce the effects of multicollinearity, I repeat the empirical analyses after omitting *ELEC* from all regressions. The results are not sensitive to this test, indicating the multicollinearity has little effect on my analyses. Reported results do not include *ELEC*.

than for late adopters, consistent with H_{2a}. On the other hand, none of the firm-level performance variables are significantly different between the two samples. The mean of and median of $INDMB\_1_i$ and the mean and median of $\Delta INDROA\_1_i$ are both higher for early adopters, although the difference is insignificant. However, early adopters exhibit significantly higher (less negative) means and medians of $INDRET\_1_i$ than late adopting firms. This finding suggests that firms in industries with more favorable stock price performance in the pre-adoption period tend to adopt SFAS No. 35 early. In addition, early adopters are larger in firm size ($SIZE\_1_i$) and the magnitude of asset write-offs (IMP_1_i). The remaining variables in the adoption timing analysis are not significantly different between the two groups.

Panel B of Table 2 reports Pearson correlations between the various pairs of independent variables used in the adopting timing analysis. The strongest correlation is 0.587 between ΔROA_1_i and $POOR\_1_i$. As expected, most firm- and industry-specific performance measures are positively correlated among themselves. The results also provide evidence of significant correlations across different groups of variables. For example, $GOOD\_1_i$ is positively correlated with all firm-specific performance proxies. The degree of intercorrelation among the variables suggests that a multivariate analysis is an appropriate means to consider the simultaneous effect of the variables on the adoption timing decisions.

TABLE 2 Descriptive Statistics

Panel A. Adoption Timing Motives - Univariate Analysis

	Early Adopters (N=102)			Late Adopters (N=298)			Probability Value	
Variable[a]	Mean	Median	Std. Dev.	Mean	Median	Std. Dev.	t-test	W-test
LEV_1_i	1.189	0.871	1.008	1.079	0.825	0.896	0.297	0.258
$POOR\_1_i$	-0.039	0.000	0.090	-0.025	0.000	0.059	0.066	0.042
$GOOD\_1_i$	0.028	0.000	0.059	0.032	0.000	0.076	0.594	0.936
MGT_1_i	0.486	0.000	0.502	0.536	1.000	0.500	0.371	0.371
RET_1_i	-0.042	-0.083	0.353	-0.051	-0.066	0.263	0.777	0.564
MB_1_i	1.176	0.960	0.724	1.224	1.030	0.737	0.571	0.314
ΔROA_1_i	0.002	0.007	0.060	0.003	0.005	0.046	0.853	0.476
$INDRET\_1_i$	-0.028	-0.036	0.122	-0.049	-0.079	0.102	0.097	0.024
$INDMB\_1_i$	1.188	1.354	0.218	1.154	1.223	0.240	0.213	0.333
$\Delta INDROA\_1_i$	0.009	0.007	0.008	0.008	0.007	0.007	0.299	0.676
$SIZE\_1_i$	6.831	6.759	0.558	6.634	6.601	0.573	0.002	0.002
IMP	0.031	0.014	0.049	0.014	0.006	0.024	0.000	0.000

TABLE 2 (Continued) Descriptive Statistics

Panel B. Adoption Timing Motives - Pearson Correlations (N = 400)

Variable[a]	LEV_1_i	$POOR\_1_i$	$GOOD\_1_i$	MGT_1_i	RET_1_i	MB_1_i	ΔROA_1_i	$INDRET\_1_i$	$INDMB\_1_i$	$\Delta INDROA\_1_i$	$SIZE\_1_i$
$POOR\_1_i$	-.020										
$GOOD\_1_i$	.180***	.177***									
MGT_1_i	.100**	-.083**	.060								
RET_1_i	-.041	.294***	.199***	-.098**							
MB_1_i	.272***	-.084**	.244***	.071	.093**						
ΔROA_1_i	.010	.587***	.359***	-.032	.427***	-.035					
$INDRET\_1_i$	.219***	.181***	.036	-.160***	.434***	.094**	.085**				
$INDMB\_1_i$	-.098**	-.191***	.021	.138***	-.002	.159***	-.060	-.019***			
$\Delta INDROA\_1_i$	.079*	.103**	.142***	-.053	.189***	-.052	.145***	.153***	-.021		
$SIZE\_1_i$	-.034	.168***	-.066*	-.085**	.100**	-.018	.169***	.092**	-.100**	.144***	
IMP	.109**	-.226***	-.012	.110**	-.073*	-.063	-.076*	-.029	.027	-.003	-.083**

a.***, **, * denote significance at the 0.01, 0.05, and 0.10 level, respectively.

b.[a] Variable definitions:

LEV_1_i = firm *i*'s ratio of the book value of total debt to the book value of shareholders' equity at end of the second quarter of fiscal year 2004;

$POOR\_1_i$ = the change in firm *i*'s pre-write-off earnings from fiscal year 2003 to 2004, divided by total assets at the end of fiscal year 2003, when this change is below the median of nonzero negative values of this variable, and 0 otherwise;

$GOOD\_1_i$ = the change in firm *i*'s pre-write-off earnings from fiscal year 2003 to 2004, divided by total assets at the end of fiscal year 2003, when this change is above the median of nonzero positive values of this variable, and 0 otherwise;

MGT_1_i = an indicator equal to 1 if a firm changed any of the top three executive positions during one year prior to adoption, and 0 otherwise;

RET_1_i = firm *i*'s stock return over the four quarters prior to the third quarter of fiscal year 2004;

MB_1_i = firm *i*'s market-to-book ratio, measured at the end of the second quarter of fiscal year 2004;

ΔROA_1_i = the change in firm *i*'s return on assets from the first two quarters of fiscal year 2003 to the first two quarters of fiscal year 2004;

$INDRET\_1_i$ = firm *i*'s industry median of stock returns over the four quarters prior to the third quarter of fiscal year 2004;

$INDMB\_1_i$ = firm *i*'s industry median of market-to-book ratio, measured at the end of the second quarter of fiscal year 2004;

$\Delta INDROA\_1_i$ = the median change in firm *i*'s industry return on assets from the first two quarters of fiscal year 2003 to the first two quarters of fiscal year 2004;

$SIZE\_1_i$ = the logarithm of firm *i*'s total assets at the end of the second quarter of fiscal year 2004; and

IMP_1_i = firm *i's* initial asset impairment loss recognized in the adoption period, deflated by beginning total assets.

7.2 MULTIVARIATE RESULTS

Table 3 presents the results of the multivariate logit analysis of adoption timing motives. The results do not indicate a negative association between the leverage ratio (LEV_1_i) and early adoption. The coefficient on $POOR\_1_i$ is negative and significant (p-value = 0.097), providing support for H_{2a} ("big bath" hypothesis), whereas the coefficient on $GOOD\_1_i$ has the predicted sign but is insignificant. Taken together, the results imply that managers time the adoption of SFAS No. 35 in order to take a "big bath" rather than smooth earnings. The results also show that MGT_1_i does not have a significant coefficient, suggesting that early adopters did not experience a higher incidence of management changes in the pre-adoption year than late adopters. Moreover, none of the firm-level performance variables are significant, whereas the coefficients on two industry-level performance variables, $INDMB\_1_i$ and $INDRET\_1_i$, are both positive and significant at the 0.05 level. The coefficients on $SIZE\_1_i$ and IMP_1_i are both significantly positive (p-value < 0.001), suggesting that early adopters are larger in size and the magnitude of asset write-offs. Overall, the multivariate results are consistent with the findings in the univariate tests.

TABLE 3 Logistic Regression Analysis of Adoption Timing Motives

$$EARLY_i = \alpha_0 + \alpha_1 LEV\_1_i + \alpha_2 POOR\_1_i + \alpha_3 GOOD\_1_i + \alpha_4 MGT\_1_i + \alpha_5 RET\_1_i + \alpha_6 MB\_1_i + \alpha_7 \Delta ROA\_1_i + \alpha_8 INDRET\_1_i + \alpha_9 INDMB\_1_i + \alpha_{10} \Delta INDROA\_1_i + \alpha_{11} SIZE\_1_i + \alpha_{12} IMP\_1_i + \varepsilon_i \quad (1)$$

Variable[a]	Predicted Sign	Parameter Estimate	Wald Chi-Square
Intercept	?	-8.649	23.116***
LEV_1_i	-	0.167	1.148
$POOR\_1_i$	-	-3.773	2.761*
$GOOD\_1_i$	+	0.142	0.004
MGT_1_i	+	-0.291	1.312
RET_1_i	?	0.116	0.046
MB_1_i	?	-0.192	0.768
ΔROA_1_i	?	1.984	0.328
$INDRET\_1_i$	?	3.872	6.379**
$INDMB\_1_i$	?	1.870	6.449**
$\Delta INDROA\_1_i$	?	-8.974	0.296
$SIZE\_1_i$	?	0.795	12.869***
IMP_1_i	?	17.887	12.833***
Number of Observation		400	
Pseudo-R^2		0.168	
% Correctly Predicted		76.1%	
Model χ^2		29.385	

a.***, **, * denote significance at the 0.01, 0.05, and 0.10 level, respectively.
b.Variable definitions:
$EARLY_i$ = an indicator variable equal to 1 if firm *i* is an early adopter, and 0 otherwise.
c.All other variables are defined in Table 2.

8. EMPIRICAL RESULTS OF THE WRITE-OFF CHARACTERISTICS ANALYSIS

8.1 DESCRIPTIVE STATISTICS AND UNIVARIATE RESULTS

Table 4 presents descriptive statistics for the observations used the analysis of write-off amounts. Panel A partitions the observations by write-off and non-write-off (i.e., the write-off amount is zero) firms. The two rightmost columns report mean and median differences between the write-off and non-write-off firms using a two-sample *t*-test and a nonparametric Wilcoxon Mann-Whitney test, respectively. The test of differences reveals that write-off firms are more highly leveraged (*LEV_2*) and are significantly greater in firm size ($SIZE\_2_i$), long-term investment (LTI_i), and goodwill (GW_i) than non-write-off firms in the year prior to the adoption. Moreover, as expected, the write-off firms exhibit a significantly higher mean value of positive earnings changes ($GOOD\_2_i$) and management turnover (MGT_2_i). The mean value of the "big bath" variable ($POOR\_2_i$) is marginally more negative, although the difference is insignificant, for write-off firms than for non-write-off firms. All of firm and industry-specific performance variables except $\Delta INDROA\_2_i$ are significantly lower (or more negative) for write-off firms. This suggests that the stock performance of the write-off firms and their industries is inferior to the performance of the non-write-off firms and their industries, and that the impairment announcements have come after a period of underperformance.

Panels B and C of Table 4 report Pearson correlations among all the variables used in the analysis of write-off amounts for early and late adopters, respectively. The strongest correlation is 0.515 (0.799) between MB_2_i and $GOOD\_2_i$ ($INDRET\_2_i$ and $\Delta INDROA\_2_i$) for early adopters (late adopters). As expected, most firm- and industry-specific performance measures are positively correlated among themselves. Based on the sample of early adopters, as predicted, $POOR\_2_i$, MB_2_i and ΔROA_2_i are negatively correlated with IMP_i, and MGT_2_i, FA_i, GW_i, *and* IA_i is positively correlated with IMP_i. Turning to the late adopting group, I find that all of the firm and industry-specific performance measures are negatively correlated with IMP_i with the exception of $\Delta INDRET\_2_i$ and $\Delta INDROA\_2_i$. With respect to the proxies for the characteristics of long-lived assets, only FA_i is positively corrected with IMP_i. Contrary to the prediction, LEV_2_i is positively correlated with IMP_i. There may be two explanations for higher leveraged firms to record a greater magnitude of asset write-offs. First, some managerial motives other than contract renegotiations are the predominant considerations in reporting the write-off amount. Second, debt covenants may adjust for asset (including

goodwill) related income effects. The remaining reporting incentive variables (i.e., $POOR\_2_i$, $GOOD\_2_i$, and MGT_2_i) are correlated with IMP_i in the hypothesized directions.

TABLE 4 Descriptive Statistics

Panel A. Determinants of Write-off Amounts - Univariate Analysis

	Write-off Firms (N = 400)			Non-write-off Firms (N = 620)			Probability Value	
Variable [a]	Mean	Median	Std. Dev.	Mean	Median	Std. Dev.	t-test	W-test
IMP_i	0.015	0.007	0.024	0.000	0.000	0.000	0.000	0.000
LEV_2_i	1.100	0.820	0.987	0.836	0.690	0.692	0.000	0.000
$POOR\_2_i$	-0.024	0.000	0.056	-0.019	0.000	0.038	0.156	0.867
$GOOD\_2_i$	0.017	0.000	0.044	0.010	0.000	0.031	0.004	0.042
MGT_2_i	0.200	0.000	0.400	0.070	0.000	0.256	0.000	0.000
RET_2_i	-0.079	-0.097	0.383	-0.040	-0.080	0.380	0.020	0.027
MB_2_i	1.196	0.980	0.735	1.548	1.290	0.908	0.000	0.000
ΔROA_2_i	-0.008	-0.003	0.033	-0.002	-0.001	0.033	0.003	0.001
$INDRET\_2_i$	-0.067	-0.150	0.191	-0.102	-0.238	0.190	0.004	0.000
$INDMB\_2_i$	1.111	1.170	0.212	1.198	1.270	0.156	0.000	0.000
$\Delta INDROA\_2_i$	-0.003	-0.007	0.009	-0.003	-0.007	0.006	0.911	0.704
$SIZE\_2_i$	6.669	6.636	0.585	6.477	6.417	0.532	0.000	0.000
LTI_i	0.270	0.144	1.635	0.154	0.111	0.157	0.076	0.000
FA_i	0.259	0.239	0.179	0.250	0.202	0.290	0.600	0.047
GW_i	0.000	0.000	0.005	0.000	0.000	0.001	0.035	0.216
IA_i	0.003	0.000	0.013	0.002	0.000	0.014	0.593	0.181

TABLE 4 Descriptive Statistics(Continued)

Panel B. Determinants of Write-off Amounts for Early Adopters – Pearson Correlations (N = 116)

Variable[a]	IMP_i	LEV_2_i	$POOR\_2_i$	$GOOD\_2_i$	MGT_2_i	RET_2_i	MB_2_i	ΔROA_2_i	$INDRET\_2_i$	$INDMB\_2_i$	$\Delta INDROA\_2_i$	$SIZE\_2_i$	LTI_i	FA_i	GW_i
LEV_2_i	.007														
$POOR\_2_i$	-.224***	.053													
$GOOD\_2_i$	-.067	.117	.184**												
MGT_2_i	.232***	.092	-.101	-.110											
RET_2_i	-.107	-.109	.064	.070	-.102										
MB_2_i	-.139*	-.070	.124*	.515***	-.145*	.367***									
ΔROA_2_i	-.256***	-.094	.016	.123*	-.164**	.407***	.127*								
$INDRET\_2_i$	-.023	.153**	.075	.240***	-.043	.164**	.047	.040							
$INDMB\_2_i$	.016	.013	-.062	.200**	-.029	.149*	.138*	.061	.358***						
$\Delta INDROA\_2_i$	-.051	.191**	.181**	.168**	-.136	.241***	-.046	.249***	.392***	.178**					
$SIZE\_2_i$	-.036	-.146*	.142*	-.113	-.042	-.084	-.037	.065	-.004	-.013	.148*				
LTI_i	.082	-.381***	.010	-.125*	-.056	-.116	-.061	-.029	-.192**	-.102	-.139*	.299***			
FA_i	.192**	.190**	.060	-.047	.157**	.043	-.175**	-.015	.017	-.142*	.186**	.105	-.376***		
GW_i	.268***	-.009	.007	-.065	.147*	-.090	-.058	.018	-.020	-.011	-.084	-.107	-.098	.168**	
IA_i	.335***	-.037	-.230***	-.087	-.030	-.119	-.039	-.027	.004	.043	-.127*	.045	.035	-.078	-.027

TABLE 4 Descriptive Statistics (Continued)

Panel C. Determinants of Write-off Amounts for Late Adopters – Pearson Correlations (N = 904)

Variable[a]	IMP_i	LEV_2_i	$POOR\_2_i$	$GOOD\_2_i$	MGT_2_i	RET_2_i	MB_2_i	ΔROA_2_i	$INDRET\_2_i$	$INDMB\_2_i$	$\Delta INDROA\_2_i$	$SIZE\_2_i$	LTI_i	FA_i	GW_i
LEV_2_i	.234***														
$POOR\_2_i$	-.046*	.004													
$GOOD\_2_i$	.126***	.026	.178***												
MGT_2_i	.092***	.076***	.016	.054**											
RET_2_i	-.100***	-.085***	.130***	.089***	-.016										
MB_2_i	-.182***	-.141***	-.025	.181***	-.057**	.330***									
ΔROA_2_i	-.171***	-.134***	.018	.086***	-.019	.398***	.293***								
$INDRET\_2_i$	.021	.103***	.191***	-.012	.030	.472***	-.076**	.246***							
$INDMB\_2_i$	-.103***	-.044*	-.114***	-.017	.004	-.134***	.213***	-.084***	.286***						
$\Delta INDROA\_2_i$	-.006	.067**	.161***	.031	.043*	.379***	-.050*	.262***	.799***	.152***					
$SIZE\_2_i$	-.039	.051*	.032	-.126***	-.048*	.225***	.090***	.124***	.167***	-.049*	.176***				
LTI_i	-.002	-.052*	.017	-.025	-.013	.008	-.027	.025	.018	-.030	.035	.027			
FA_i	.083***	.010	-.012	-.037	-.007	.079***	-.111***	.102***	.147***	-.065**	.130***	.095***	-.033		
GW_i	-.011	-.028	.027	-.002	-.012	.002	-.009	-.025	-.002	-.016	.013	-.003	-.006	.005	
IA_i	-.015	-.059**	-.026	.151***	.008	-.034	.075**	-.080***	-.059**	.036	-.051*	-.046*	-.014	-.026	.030

a.***, **, * denote significance at the 0.01, 0.05, and 0.10 level, respectively.

b.[a] Variable definitions:

TABLE 4 Descriptive Statistics (Continued)

IMP_i = the asset impairment loss recognized by firm i over the last two quarters of fiscal year 2004 (over the first two quarters of fiscal year 2005) deflated by total assets at the end of the second quarter of fiscal year 2004 (at the end of fiscal year 2004) if firm i is an early adopter (a late adopter);

LEV_2_i = firm i's ratio of the book value of total debt to the book value of shareholders' equity at the end of the second quarter of fiscal year 2004 (at the end of fiscal year 2004) for early adopters (late adopters);

$POOR\_2_i$ = the change in firm i's pre-write-off earnings from fiscal year 2003 (the first two quarters of fiscal year 2004) to 2004 (the first two quarters of fiscal year 2005), divided by total assets at the end of fiscal year 2003 (at the end of the second quarter of fiscal year 2004), when this change is below the median of nonzero negative values of this variable, and 0 otherwise, if firm i is an early adopter (a late adopter);

$GOOD\_2_i$ = the change in firm i's pre-write-off earnings from fiscal year 2003 (the first two quarters of fiscal year 2004) to 2004 (the first two quarters of fiscal year 2005), divided by total assets at the end of fiscal year 2003 (at the end of the second quarter of fiscal year 2004), when this change is above the median of nonzero positive values of this variable, and 0 otherwise, if firm i is an early adopter (a late adopter);

MGT_2_i = an indicator equal to 1 if a firm changed any of the top three executive positions during one year prior to adoption, and 0 otherwise;

RET_2_i = firm i's stock return over the four quarters prior to the third quarter of fiscal year 2004 (over fiscal year 2004) for early adopters (late adopters);

MB_2_i = firm i's market-to-book ratio, measured at the end of the second quarter of fiscal year 2004 (at the end of fiscal year 2004) if firm i is an early adopter (a late adopter);

ΔROA_2_i = mean change in firm i's return on assets over fiscal years 1999 to 2003 (over fiscal years 2000 to 2004), if firm i is an early adopter (a late adopter);

$INDRET\_2_i$ = firm i's industry median of stock returns over the four quarters prior to the third quarter of fiscal year 2004 (over fiscal year 2004) for early adopters (late adopters);

$INDMB\_2_i$ = firm i's industry median of market-to-book ratio, measured at the end of the second quarter fiscal year 2004 (at the end of fiscal year 2004) for early adopters (late adopters);

$\Delta INDROA\_2_i$ = mean change in firm i's industry median return on assets over fiscal years 1999 to 2003 (over fiscal years 2000 to 2004), if firm i is an early adopter (a late adopter);

$SIZE\_2_i$ = the logarithm of firm i's total assets at the end of the second quarter of fiscal year 2004 (at the end of fiscal year 2004) for early adopters (late adopters);

LTI_i = long-term investment based on the equity method at the end of the second quarter of fiscal year 2004 (at the end of fiscal year 2004), divided by total assets at the end of the second quarter of fiscal year 2004 (at the end of fiscal year 2004), if firm i is an early adopter (a late adopter);

FA_i = fixed assets at the end of the second quarter of fiscal year 2004 (at the end of fiscal year 2004), divided by total assets at the end of the second quarter of fiscal year 2004 (at the end of fiscal year 2004), if firm i is an early adopter (a late adopter);

GW_i = goodwill at the end of the second quarter of fiscal year 2004 (at the end of fiscal year 2004), divided by total assets at the end of the second quarter of fiscal year 2004 (at the end of fiscal year 2004), if firm i is an early adopter (a late adopter); and

IA_i = intangible assets excluding goodwill at the end of the second quarter of fiscal year 2004 (at the end of fiscal year 2004), divided by total assets at the end of the second quarter of fiscal year 2004 (at the end of fiscal year 2004), if firm i is an early adopter (a late adopter).

8.2 MULTIVARIATE RESULTS

Table 5 reports the results of the tobit analysis of the importance of incentive variables, after controlling for the proxies for actual asset impairment, in explaining asset write-off amounts and partitions the observations by early and adopters. The model's overall explanatory power has an adjusted-R^2 of 32.4% (20.7%) for early adopters (late adopters). The empirical results show that, for early adopters, the coefficient on $POOR\_2_i$ (p-value = 0.061) is significantly negative, whereas the coefficient on $GOOD\_1_i$ has the predicted sign but is insignificant, providing support for H_{5a} (big bath hypothesis) but not for H_{5b} (income smoothing hypothesis). The coefficient on MGT_2_i is positive and marginally significant (p-value = 0.082), consistent with H_6. With respect to the actual impairment factors, while most firm and industry-level performance variables for the sample of early adopters have the predicted negative sign, only ΔROA_2_i (p-value < 0.001) is significant. Consistent with the prediction, the proxies for characteristics of long-lived assets significantly explain the level of asset write-offs. The coefficients on LTI_i, FA_i, GW_i, *and* IA_i are significantly positive.

Turning to the late adopting group, all of the reporting incentive variables, except LEV_2_i, have the predicted sign and are significant at the 0.10 or better level. Specifically, the coefficients on $GOOD\_2_i$ (p-value = 0.054) and MGT_2_i (p-value = 0.019) are both significantly positive, and the coefficient on $POOR\_2_i$ (p-value = 0.011) is significantly negative, providing supporting for H_{5a}, H_{5b}, and H_6, respectively. LEV_2_i (p-value = 0.022) is significant, but takes a sign (+) opposite to that expected (-). While I find that most firm and industry-level performance variables have the predicted negative sign, only MB_2_i (p-value < 0.001), ΔROA_2_i (p-value = 0.043), and $INDMB\_2_i$ (p-value = 0.011) are significant. $SIZE\_2_i$ (p-value < 0.01) is significantly positive, whereas the coefficients on LTI_i, FA_i, GW_i, and IA_i are all insignificant, implying that the characteristics of long-lived assets do not appear to capture the asset deterioration pattern for the late adopting firms.

TABLE 5 Multivariate Tobit Analysis of the Determinants of Asset Write-Offs

$$IMP_i = \beta_0 + \beta_1 LEV\_2_i + \beta_2 POOR\_2_i + \beta_3 GOOD\_2_i + \beta_4 MGT\_2_i + \beta_5 RET\_2_i + \beta_6 MB\_2_i + \beta_7 \Delta ROA\_2_i + \beta_8 INDRET\_2_i + \beta_9 INDMB\_2_i + \beta_{10} \Delta INDROA\_2_i + \beta_{11} SIZE\_2_i + \beta_{12} LTI_i + \beta_{13} FA_i + \beta_{14} GW_i + \beta_{15} ITA_i + \varepsilon_i \quad (2)$$

		Early Adopters (N = 116)		Late Adopters (N = 904)	
Variable[a]	Predicted Sign	Parameter Estimate	Ch-Square Statistic	Parameter Estimate	Ch-Square Statistic
Intercept	?	0.016	0.21	-0.020	3.67*
LEV_2_i	-	0.007	0.06	0.002	5.29**
$POOR\_2_i$	-	-0.057	3.52*	-0.052	6.50**
$GOOD\_2_i$	+	0.007	0.02	0.049	3.71*
MGT_2_i	+	0.009	3.03*	0.006	5.47**
RET_2_i	-	-0.007	0.54	-0.002	0.55
MB_2_i	-	-0.002	0.17	-0.005	17.53***
ΔROA_2_i	-	-0.244	8.96***	-0.055	4.08**
$INDRET\_2_i$	-	-0.016	0.24	0.007	1.16
$INDMB\_2_i$	-	0.086	0.31	-0.011	6.40**
$\Delta INDROA\_2_i$	-	0.369	2.59	0.030	0.03
$SIZE\_2_i$	?	-0.004	0.81	0.004	9.03***
LTI_i	+	0.061	7.75***	0.001	0.96
FA_i	+	0.044	7.19***	0.001	0.01
GW_i	+	1.172	9.80***	0.157	0.44
IA_i	+	0.736	17.74***	0.019	0.12
Model Adjusted-R^2		0.324		0.207	
Model *F*-test		7.663***		31.696***	

a.***, **, * denote significance at the 0.01, 0.05, and 0.10 level, respectively.
b.See Table 4 for variable definitions.

9. EMPIRICAL RESULTS OF THE MARKET REACTION ANALYSIS

9.1 ESTIMATION OF CUMULATIVE ABNORMAL RETURNS

To examine the short-term market reaction to the announcement of asset impairment, this paper first assumes that daily common stock returns are described by the market model, based on the capital asset pricing model (CAPM). The study then uses a 290-day estimation period that begins 300 trading days before the announcement date and ends 10 trading days prior to the announcement date. The announcement date is defined as day 0 and is either the announcement date or the filing date, whichever is earlier. Review of the average single-day abnormal returns

(AR) and the cumulative abnormal returns (CAR) over various event periods for early and late adopters reveals significantly negative returns for days 0, +1, and +3 for early adopters, and days 0 and +1 for late adopters, as well as significantly negative CAR over various announcement period windows.[12, 13] I use the conventional three-day window from day -1 to day +1 for the market reaction analysis. As the window gets longer, more noise will be introduced.

9.2 TEST OF STOCK MARKET RESPONSE

Panels A and B of Table 6 present the results of multivariate regression analysis of event period returns for early and late adopters. The first model in both Panels A and B assumes that all of the asset write-offs are unanticipated by the market, whereas the second model assumes that the market derives the expectation of write-offs. Based on the sample of early adopters, the results in both models in Panel A reveal that the three-day event period return is positively associated with the earnings surprise ($SURPRISE_i$ with p-value < 0.10), which indicates that the market rewards a positive earnings increases. In the first model of Panel A, the results show that the book-to-market ratio (BM_i with p-value = 0.038) is positively related to the three-day event period return, and that the market reacts significantly negative to asset write-offs (IMP_i with p-value < 0.001) in general. However, when IMP_i is partitioned into two parts, the anticipated ($EIMP_i$) and unanticipated ($UIMP_i$), the market's negative reaction is significant to $EIMP_i$ and $UIMP_i$ at the 0.05 and 0.01 levels, respectively (Model 2). The results suggest that the investors view both the anticipated and unanticipated parts of impairment losses announced by early adopters as conveying negative information about future profitability. There may be two explanations for the significance of the coefficient on $EIMP_i$ as well as $UIMP_i$. First, due to the short time period allowed for early adoption of the new pronouncement, initial asset write-offs are unanticipated by the market. Second, market's expectation of the write-off amount reported by early adopters may also rely on some other information which is not captured by my expectation model.

Based on the late adopting sample, the results in both models in Panel B reveal that the three-day event period return is positively associated with the earnings

[12] I use Brown and Warner's (1985) traditional method and a nonparametric sign test to test the statistical significance of each estimate of AR and CAR. The results of both tests are similar. This study presents the results using the traditional approach.

[13] I have calculated announcement period returns over all possible event intervals from 10 days before to 10 days after the announcement date. The results (not reported) show that mean CAR are negative and significantly different from zero over all announcement period windows.

surprise ($SURPRISE_i$ with p-value < 0.001). Inconsistent with prior literature, firm size ($SIZE_i$ with p-value < 0.10) is positively related to the event period return.[14] Price momentum (MOM_i) is positively related to the event period returns as expected, although it is insignificant in both models. In addition, the results show that the market reacts significantly negative to the entire amount of asset write-offs (IMP_i with p-value = 0.083). The market's reaction is insignificant to the portion of write-offs that is anticipated. However, to the portion that is unanticipated, the market responds more negatively and significantly, as reflected in the coefficients on $UIMP_i$ (p-value = 0.091), providing support for H_7. Taken together, the above evidence implies that investors regard the unanticipated asset write-offs announced by late adopters as containing information about the important changes in the value of the firm.

TABLE 6 Multivariate Analysis of Event Period Return

$$CAR_i = \delta_0 + \delta_1 SURPRISE_i + \delta_2 BM_i + \delta_3 SIZE_i + \delta_4 BETA_i + \delta_5 MOM_i + \delta_6 EIMP_i + \delta_7 UIMP_i + \varepsilon_i \quad (3)$$

Panel A. Early Adopters (N = 102)

	Model 1[b]		Model 2[c]	
Variable[a]	Parameter Estimate	*t*-Statistic	Parameter Estimate	*t*-Statistic
Intercept	-5.450	-1.097	-5.092	-1.002
$SURPRISE_i$	8.661	1.978*	9.397	1.849*
BM_i	1.552	2.101**	1.281	1.236
$SIZE_i$	0.566	0.729	0.514	0.650
$BETA_i$	-0.402	-0.227	0.041	0.021
MOM_i	-0.006	-0.566	-0.008	-0.715
IMP_i	-42.981	-4.238***		
$EIMP_i$			-49.891	-2.603**
$UIMP_i$			-43.838	-3.038***
Model Adjusted-R^2	0.170		0.142	
Model *F*-test	4.455***		3.350***	

[14] Prior studies (e.g., Jensen, Johnson and Mercer 1997) reveal that the stocks of small firms have higher average returns than large stocks. Proponents of the CAPM attribute the results to higher market betas for small firms. However, empirical analysis (not reported) indicates that the beta differences are not large enough to explain the observed return differences for the public firms in Taiwan.

TABLE 6 Multivariate Analysis of Event Period Return (Continued)

$$CAR_i = \delta_0 + \delta_1 SURPRISE_i + \delta_2 BM_i + \delta_3 SIZE_i + \delta_4 BETA_i + \delta_5 MOM_i + \delta_6 EIMP_i + \delta_7 UIMP_i + \varepsilon_i \quad (3)$$

Panel B. Late Adopters (N = 661)

Variable[a]	Model 1[b]		Model 2[c]	
	Parameter Estimate	*t*-Statistic	Parameter Estimate	*t*-Statistic
Intercept	-5.412	-2.985***	-4.619	-2.427**
$SURPRISE_i$	22.458	6.528***	23.064	6.756***
BM_i	0.361	1.027	0.272	0.741
$SIZE_i$	0.732	2.590***	0.642	2.293**
$BETA_i$	-0.146	-0.231	-0.136	-0.217
MOM_i	0.004	0.538	0.004	0.620
IMP_i	-28.990	-1.736*		
$EIMP_i$			-22.389	-1.110
$UIMP_i$			-30.902	-1.693*
Model Adjusted-R^2	0.077		0.080	
Model *F*-test	10.123 ***		9.130 ***	

a.***, **, * denote significance at the 0.01, 0.05, and 0.10 level, respectively.

b.Variable definitions:

CAR_i = three-day (-1 to +1) cumulative abnormal return estimated by the market model approach;

$SURPRISE_i$ = the change in firm *i*'s pre-write-off earnings from fiscal year 2003 (the first two quarters of fiscal year 2004) to 2004 (the first two quarters of fiscal year 2005), divided by total assets at the end of fiscal year 2003 (at the end of the second quarter of fiscal year 2004), if firm *i* is an early adopter (a late adopter);

BM_i = firm *i*'s book value of shareholders' equity divided by the market value of equity at the end of the second quarter of fiscal year 2004 (at the end of fiscal year 2004) for early adopters (late adopters);

$SIZE_i$ = the logarithm of firm *i*'s market value of equity at the end of the second quarter of fiscal year 2004 (at the end of fiscal year 2004) for early adopters (late adopters);

$BETA_i$ = the market beta estimated using firm *i*'s daily returns over one year prior to the adoption of SFAS No. 35;

MOM_i = firm *i*'s market-adjusted stock return for the six months prior to the adoption;

$EIMP_i$ = the expected asset impairment loss, measured using the proxy variables in Equation (2);

$UIMP_i$ = the unexpected asset impairment loss, which equals the residual term (ε) in Equation (2); and

IMP_i = the asset impairment loss recognized by firm *i* over the last two quarters of fiscal year 2004 (over the first two quarters of fiscal year 2005) deflated by total assets at the end of the second quarter of fiscal year 2004 (at the end of fiscal year 2004) if firm *i* is an early adopter (a late adopter).

c.Model 1 assumes that all IMP charges are unanticipated by the market.

d.Model 2 assumes that the market derives the expectation of the IMP using the impairment proxies in Equation (2).

10. SENSITIVITY ANALYSES

In this section, I conduct sensitivity analyses to: (1) consider the appropriateness of the tobit specification in the write-off characteristics analysis, (2) further validate the *POOR*, *GOOD*, and *SIZE* variables, and (3) explore the use of different announcement period windows for the market reaction analysis.

10.1 APPROPRIATENESS OF THE TOBIT SPECIFICATION

Tobit analysis, a model devised by Tobin (1958), assumes that the dependent variable (in this case IMP_i) has a number of observations clustering at a limiting value (zero). In other words, the use of the tobit specification is appropriate when the dependent variable is censored (Maddala 1991; Riedl 2004). For assets other than goodwill in the current context, the impaired losses can be reversed if market conditions have improved, but to the extent that the book value of the asset after the reversal may not exceed the asset's book value before the impairment loss was recognized, less required provision for depreciation or amortization. Moreover, the FASB does not allow recognition of increases in goodwill values and subsequent reversal of a previously recognized impairment loss. Accordingly, firms with write-off value of zero could conceptually record increases in the carrying values of their assets. These unobservable increases comprise the portion of the distribution of the dependent variable (left-censored at zero), which the tobit specification attempts to fill in. However, some or even all of the non-write-off observations may have true values of zero. Under this alternative assumption, the data may not be censored, suggesting that ordinary least squares (OLS) may be the appropriate specification. Following this perspective, a sensitivity analysis is conducted to examine write-off characteristics using OLS.

In addition, the methodology proposed by McDonald and Moffitt (1980) is used to convert the tobit coefficient estimates to comparable OLS coefficients. Correct regression coefficients for observations are obtained by multiplying the tobit coefficient by the fraction of the mean total response as follows:

$$\partial Ey^* / \partial X_i = \beta_i [1 - zf(z) / F(z) - f(z)^2 / F(z)^2]$$

where Ey^* is the expected value of the dependent variable; X_i is the independent variable of interest; β_i is the tobit regression coefficient; z is equal to $X\beta / \sigma$; $F(z)$ is the cumulative normal distribution function; $f(z)$ is the unit normal density.

Panels A and B of Table 7 present the analyses of write-off characteristics for early and late adopters, respectively, using OLS and the methodology proposed in McDonald and Moffitt (1980). The OLS results are consistent in sign and magnitude with the tobit regressions.

TABLE 7 Sensitivity Analysis of the Determinants of Asset Write-Offs

$$IMP_i = \beta_0 + \beta_1 LEV\_2_i + \beta_2 POOR\_2_i + \beta_3 GOOD\_2_i + \beta_4 MGT\_2_i + \beta_5 RET\_2_i + \beta_6 MB\_2_i + \beta_7 \Delta ROA\_2_i + \beta_8 INDRET\_2_i + \beta_9 INDMB\_2_i + \beta_{10} \Delta INDROA\_2_i + \beta_{11} SIZE\_2_i + \beta_{12} LTI_i + \beta_{13} FA_i + \beta_{14} GW_i + \beta_{15} ITA_i + \varepsilon_i \quad (2)$$

Panel A. Early Adopters (N = 116)

Variable[a]	Predicted Sign	Table 5 TOBIT Parameter Estimate	OLS Equivalent Parameter Estimate	OLS Parameter Estimate
Intercept	?	0.016	0.009	0.013
LEV_2_i	-	0.007	0.004	0.001
$POOR\_2_i$	-	-0.057*	-0.032*	-0.054*
$GOOD\_2_i$	+	0.007	0.004	-0.008
MGT_2_i	+	0.009*	0.005*	0.009*
RET_2_i	-	0.007	0.004	0.009
MB_2_i	-	-0.002	-0.001	-0.001
ΔROA_2_i	-	-0.244***	-0.138***	-0.243***
$INDRET\_2_i$	-	-0.016	-0.009	-0.004
$INDMB\_2_i$	-	0.086	0.049	0.008
$\Delta INDROA\_2_i$	-	0.369	0.209	0.262
$SIZE\_2_i$	?	-0.004	-0.002	-0.004
LTI_i	+	0.061***	0.034***	0.053**
FA_i	+	0.044***	0.025***	0.040**
GW_i	+	1.172***	0.663***	1.149***
IA_i	+	0.736***	0.416***	0.705***

TABLE 7 Sensitivity Analysis of the Determinants of Asset Write-Offs (Continued)

$$IMP_i = \beta_0 + \beta_1 LEV\_2_i + \beta_2 POOR\_2_i + \beta_3 GOOD\_2_i + \beta_4 MGT\_2_i + \beta_5 RET\_2_i + \beta_6 MB\_2_i + \beta_7 \Delta ROA\_2_i + \beta_8 INDRET\_2_i + \beta_9 INDMB\_2_i + \beta_{10} \Delta INDROA\_2_i + \beta_{11} SIZE\_2_i + \beta_{12} LTI_i + \beta_{13} FA_i + \beta_{14} GW_i + \beta_{15} ITA_i + \varepsilon_i \quad (2)$$

Panel B. Late Adopters (N = 904)

Variable[a]	Predicted Sign	Table 5 TOBIT Parameter Estimate	OLS Equivalent Parameter Estimate	OLS Parameter Estimate
Intercept	?	-0.020*	-0.011*	0.008*
LEV_2_i	-	0.002**	0.001**	0.001**
$POOR\_2_i$	-	-0.052**	-0.028**	-0.022***
$GOOD\_2_i$	+	0.049*	0.026*	0.018*
MGT_2_i	+	0.006**	0.003**	0.002**
RET_2_i	-	-0.002	-0.001	-0.001
MB_2_i	-	-0.005***	-0.003***	-0.001***
ΔROA_2_i	-	-0.055**	-0.029**	-0.019*
$INDRET\_2_i$	-	0.007	0.004	0.003
$INDMB\_2_i$	-	-0.011**	-0.006**	-0.005***
$\Delta INDROA\_2_i$	-	0.030	0.016	-0.044
$SIZE\_2_i$	?	0.004***	0.002***	0.000
LTI_i	+	0.001	0.001	0.000
FA_i	+	0.001	0.001	0.001
GW_i	+	0.157	0.083	-0.039
IA_i	+	0.019	0.010	-0.006

a.***, **, * denote significance at the 0.01, 0.05, and 0.10 level, respectively.
b.See Table 4 for variable definitions.

10.2 VALIDATION OF *POOR*, *GOOD*, AND *SIZE* PROXIES

An inferential issue concerns the interpretation of $POOR_i$ and $GOOD_i$ (i.e., $POOR\_1_i$ and $GOOD\_1_i$ in Equation (1); $POOR\_1_i$ and $GOOD\_1_i$ in Equation (2)) as two proxies for reporting incentives. That is, even after controlling for change in earnings, these two variables may alternatively be capturing the residual income effects. Thus, I attempt to better specify $POOR_i$ and $GOOD_i$ by refining these two proxies to provide additional assurance that these two variables are capturing the intended reporting incentives. Such analysis is warranted if $POOR_i$ ($GOOD_i$) as measured in the primary analysis of write-off characteristics does not capture the range in which managers have the greatest incentive to take a "big bath" (smooth earnings). Specifically, I redefine $POOR_i$ to: (1) equal any negative change in pre-write-off earnings scaled by beginning total assets, and 0 otherwise; (2) equal the change in pre-write-off earnings when below the first quartile of nonzero negative values, and 0 otherwise; and (3) equal the change in pre-write-off earnings, when the level of the earnings are negative and lower than the four-quarters-ago earnings, divided by beginning total assets, and 0 otherwise. I also examine alternative threshold for $GOOD_i$, which is redefined to (1) equal any positive change in pre-write-off earnings scaled by beginning total assets, and 0 otherwise; and (2) equal the change in pre-write-off earnings when above the first quartile of nonzero positive values, and 0 otherwise. The inferences on $POOR_i$, $GOOD_i$, as well as the other explanatory variables are consistent with those in the primary analyses for all combinations of alternative definitions. The combined evidence suggests that $POOR_i$ and $GOOD_i$ are more likely picking up reporting incentive behaviors, as opposed to the underlying economics of the firm.

I also examine alternative definitions of firm size (i.e., $SIZE\_1_i$, $SIZE\_2_i$, and $SIZE_i$ in Equations (1), (2), and (3), respectively) to explore the size effect in my empirical analyses. Sensitivity of the results to other measures of firm size is assessed because there is no reason to choose one measure of size over another. For the adopting timing analysis, sensitivity analyses are conducted using net sales (NS_1_i) and market value of equity (MV_1_i) to proxy for firm size, respectively. The results are not qualitatively different, with NS_1_i and MV_1_i both significantly positive as predicted. Concerning the write-off characteristics analysis, I also conduct a battery of sensitivity tests using the same alternative measures of firm size, net sales (NS_2_i) and market value of equity (MV_2_i). Inferences on all variables are unchanged, with both firm size proxies (NS_2_i and MV_2_i) insignificant for early adopters and significantly positive for late adopters. Finally,

two alternative measures of firm size, net sales (NS_i) total assets (TA_i), are tested for the market reaction analysis. The results are consistent with those in the primary analyses, with both alternative size proxies insignificant for early adopters and significantly positive for late adopters. The combined evidence suggests that the results are not sensitive to the definition of firm size.

10.3 TESTS OF DIFFERENT ANNOUNCEMENT PERIOD WINDOWS

Most extant market studies use the conventional three-day window from day -1 to day +1 to measure the event period returns. Including day -1 is meant to capture early news leakage, while including day +1 ensures that the price impact following any announcement is captured. As mentioned earlier, mean CAR are negative and significantly different from zero over all announcement period windows. As a sensitivity test, the announcement period returns are measured using a 4-day window (-2 to +1) and a 2-day window (0 to +1). The results appear consistent with those in the primary market reaction analysis. Specifically, for early adopters, IMP_i, $EIMP_i$, and $UIMP_i$ are all significantly negative. Turning to the late adopters, IMP_i and $UIMP_i$ are both significantly negative as expected; $EIMP_i$, while of the correct sign, is insignificant. Inferences on all other variables are unchanged.

11. CONCLUSION

This paper studies several issues related to SFAS No. 35. The empirical investigation starts by examining, under this recently published standard on asset impairments, how firms exercise discretion on adoption date and their motives for exercising this discretion. Based on a hand-collected sample of early and late adopters, the results show that early adopters are more likely to be in industries with favorable performance in the pre-adoption period. Conversely, firms in industries with poor past performance are more likely to delay adoption, perhaps in hopes that the stock market will rebound in the sequent year so that lower impairment losses can be recognized. The results also indicate that firms greater in size and in the magnitude of asset write-offs have a higher propensity to early-adopt SFAS No. 35, and that the adopting timing strategies are associated with the incentive to take a "big bath," suggesting that earnings management incentives as well as economic factors are the predominant consideration in the adoption timing choices.

This study further investigates management discretionary behavior with respect to the adoption of SFAS No. 35. I found that the proxies for actual asset impairment are significant in explaining the magnitude of asset write-offs. After controlling for

those proxies, I show that the sample firms as a whole appear to be acting in a manner consistent with "big bath" behavior, and that the amount of asset write-offs is significantly greater for firms with a management change relative to the firms with no such change. Furthermore, the empirical analyses reveal that late adopters with favorable earnings performance in the year of adoption tend to apply the reporting flexibility in the determination of write-off amounts to report a smoother stream of earnings. Contrary to the prediction, asset write-offs are greater in magnitude for late adopters that are more highly leveraged. This latter result may be interpreted in two ways. First, some managerial motives other than contract renegotiations are the predominant considerations in reporting the write-off amount. Second, debt covenants may adjust for asset (including goodwill) related income effects. Overall, the results suggest that both the economic impairment of long-lived assets and reporting incentives determine the amount of asset write-offs reported by firms upon the adoption of SFAS No. 35.

Finally, this paper examines stock price responses to write-off announcements. The stock market is expected to react to the announcement of asset impairments, to the extent that it is unanticipated. Employing the parameter estimates generated by the expectation model of impairment loss (i.e., Equation (2)), I partition write-offs into expected and unexpected portions and examine their associations with the announcement period returns. The results suggest that the investors view both the anticipated and unanticipated portions of impairment losses announced by early adopters as conveying negative information about future profitability. One implication of the finding is that, due to the short time period allowed for early adoption, initial impairments are unanticipated by the market. On the other hand, for late adopters, the market's reaction is insignificant to the portion of write-offs that is anticipated, while the market responds more negatively and significantly to the portion that is unanticipated. Taken together, the above evidence implies that investors view the unanticipated portion of asset write-offs announced by late adopters as containing information about the important changes in the value of the firm.

This study may be extended in the following two ways in the future when relevant data are available. First, this study does not address all instances of earnings management. By looking at only one accounting choice, this study provides an incomplete view of the effect of managers' accounting decisions on reported earnings. Further research is warranted to gain insights into how managers make decisions by weighing the diverse effects of accounting choices. These insights could contribute to the ongoing debate concerning the extent to which

managerial discretion over firms' accounting choices is allowed. A second avenue of research would be to compare the association between (1) reported earnings and stock returns and (2) the book value and the market value of equity in pre- and post-SFAS No. 35 periods (namely alignment studies). Because the new pronouncement is intended to provide a better summary of information (i.e., greater transparency regarding the economic value of assets and the income effects of write-offs) which investors can use in setting securities prices, alignment research with market data is merited to explore further questions related to the relevance of asset write-offs.

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