Reversals of impairment charges under IAS 36: evidence from Malaysia

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Executive Summary

We report that firms reversing impairments under IAS 36 are not more incentivised to engage in earnings management and don't actually engage in more earnings management than a control sample matched on size and industry. We observe that reversals are positively associated with stock market valuation changes but not with future operating performance. Bifurcating our reversal firms into earnings managers and other firms, we report that the impairment reversals of the latter are positively associated with future firm performance and current stock market returns while those of the former are negatively associated with future operating performance and are unrelated to stock valuation. Thus while on average impairment reversals are undertaken in an unbiased manner, a minority of firms exploit the latitude provided by this fair value accounting standard to manage earnings upward. This research provides useful information to accounting standard setters pertaining to the adoption of fair value accounting methods. It also assists investment analysts by demonstrating how to detect opportunistic reversals of impairments.

Keywords: Reversal of impairment losses; firm performance; financial reporting standard; abnormal accruals; Earnings management, Malaysia

1.0 Introduction

This study evaluates unbiased versus opportunistic motives for reversing impairment charges in Malaysia. Malaysia is chosen as the location for the study since the vast majority of its public firms disclose the accumulated balance of impairment charges as a distinct item, unlike in the UK, where firms tend to aggregate accumulated impairment charges with accumulated depreciation. The paper tests if the reversal of impairment losses by Malaysian companies under the Malaysian equivalent of IAS 36 is associated with future firm operating performance and current stock price performance. Such reversals of impairments in terms of their impact on the balance sheet are analogous to the upward revaluation of fixed assets. Aboody Barth and Kaznik (1999) report that the upward revaluation of fixed assets in the UK is positively associated with future firm performance and current stock performance. Aboody et al. (1999) conclude that their evidence suggests that revaluations of fixed assets in the UK are not unreliable as argued by those who support the US position of not allowing upward revaluations of fixed assets. Just as the primary contribution to the revaluation literature claimed by Aboody et al. (1999) is testing whether revaluations are associated with future realized operating performance, the primary contribution of this study is the same for the reversal of impairment literature. However, the reversal of an asset impairment under IAS 36 differs from the revaluation of a fixed asset under UK GAAP in one crucial respect: the impairment reversal under IAS 36 increases current earnings whereas the upward revaluation of a fixed asset has no effect on current income. Accordingly, it has been mooted that while upward revaluation of fixed assets are reliable, reversals of impairments are not (Chen, Wang and Zhao, 2009). Accordingly, we also examine the impact that the potential use of impairment reversals for earnings management purposes has on the relations outlined above.

IAS 36 provides comprehensive guidance on the treatment of asset impairment. This standard ordains that if the carrying amount (book value) of a non-current asset is greater than its recoverable amount the asset should be impaired. The recoverable amount is defined as the higher of *fair value* less cost of disposal or *value in use*. Malaysian Financial Reporting Standard (FRS) 136, which is based on IAS 36, was issued in 2005 and became effective for financial years beginning after 1 January 2006. Reversal recognition is allowed as outlined under FRS 136 when the recoverable amount, as defined above, of the impaired asset has increased. It is clear that the valuations of assets that have been impaired and subsequently re-valued upwards are not anchored on their historical costs and their values are based largely

on estimations. This affords management the opportunity to disclose timely and relevant information or to obfuscate financial performance.

Duh et al. (2009) is the only study that we are aware of which specifically examines the reversal of impairments under an accounting standard based on IAS 36. Duh et al. (2009) claim that their results support the use of the reversal of impairments to manage earnings. Specifically, they test if firms with large impairments in the prior year reverse their impairments when their pre-reversal earnings would be lower than prior year earnings are managing earnings using the reversal. They find that companies that have made larger impairments in a prior period reverse more of these impairments and this tendency to reverse is associated with a failure to achieve an earnings benchmark. They also provide evidence that the Taiwanese stock market does not react to the reversal of impairments and infer that it sees through the earnings management behaviour. As pointed out by Aboody et al. (1999) the stock return can be influenced by a firm's financing and other decisions so stock return only provides indirect evidence of future operating performance and hence whether the impairment reversal is biased or unbiased.

The current study is based in Malaysia which is a common law country whereas the Duh et al. (2009) study is undertaken in a jurisdiction that follows a civil law system and prior research reports that earnings management is more prevalent in code law countries (Leuz Nanda and Wysocki, 2003). Like Duh et al. (2009) we examine if the reversal of impairments is related to stock market performance. However, we also use a more direct test of the association of the reversal of asset impairments with changes in the economic value of the previously impaired assets that does not rely on the assumption of a reasonably efficient stock market. Drawing on the literature pertaining to the revaluation of fixed assets (Bernard, 1993; Easton Edey and Harris, 1993; Aboody et al. 1999): we predict that if a firm is motivated to accurately reflect the economic value of an asset by reversing an impairment charge and does so in a timely manner, the reversal will be associated with current stock market performance and future operating performance. If reporting incentives underlie the decision to reverse the impairment we should not observe these relations. Furthermore, we expect that the reversal of impairment losses will be positively associated with other manifestations of earnings management. In particular, we suggest that firms with high abnormal working capital accruals are more likely to have opportunistic impairment reversals of non-current assets. The study contributes to the burgeoning literature pertaining to the

adoption of IFRS as well as to the literature on asset impairment. In the former regard the study is unusual in that it addresses a specific accrual under IFRS and links its findings with respect to this accrual to the more general earnings management literature.

We test our predictions using a sample of 182 Malaysian firms that reported reversals of their impairments during the period 2006-2009. Reversal-firms in the sample are matched with firms that have impairment balances available to reverse but choose not to do so. Firms in the control sample must be similar in industrial classification and size to the reversal firms. We report that in the year of the reversal firms that reverse impairments are more profitable (having controlled for the reversal) than their matched firms. We also report that, on average, the Malaysian stock market values the reversal of impairments positively. However, we find that the reversals on average do not predict future operating performance. This may be a result of some reversal firms delaying the reversal so it is related to current, rather than future, operating performance. Further, it is likely that some of the reversal firms are using the reversal of impairments to manage earnings. Having separated our sample into firms that are likely earnings managers and those that are not we provide evidence that the impairment reversals of 'earnings-managers' are not value relevant and are negatively associated with future operating performance. This contrasts with the results pertaining to firms that we do not classify as earnings managers. For the latter group of firms reversals are positively associated with both future operating performance and current stock price performance.

The remainder of the paper is organized as follows. Section 2.0 reviews the extant literature and develops our predictions. Section 3.0 describes our data sources, the sample selection procedure and the empirical models. Section 4.0 reports the results of the empirical analyses. Section 5.0 concludes with a summary of our findings.

2.0 Background and Development of Testable Predictions

Before the release of FRS 136, the accounting treatment of asset impairment in Malaysia was diverse and little guidance was provided regarding when, how and how much impairment should be recognised. The standard deals with the impairment of assets and allows for the reversal of impairments whenever appropriate. The main objective of Malaysian FRS 136 is to ensure that the carrying amount of an asset does not exceed its recoverable amount. The carrying value is the book value of the assets while the recoverable amount is the higher of an asset's net selling price and value in use. An impairment loss occurs when the carrying value

is higher than the recoverable amount. This difference should be recorded as a loss in the income statement and such losses should be accrued whenever the situation arises.

Under IFRS an enterprise should assess at each balance sheet date whether there is any indication that the carrying value of an asset is not equal to the recoverable amount. If there is an indication that an impairment loss previously recognized for a particular asset (other than goodwill) no longer exists, the company is required to recalculate the recoverable amount for the asset and if the recoverable amount in the current period is higher than its carrying amount, the impairment loss previously recognized needs to be reversed or partly reversed. The recoverable amount for the impaired asset might increase due to internal or external factors. Indications for reversals include an increase in the asset's market value or finding that significant changes, with a favorable effect on the entity, have taken place during the period. These changes may pertain to the firm's technological, market, economic or legal environment, a reduction in the market interest rate, significant changes in the extent or manner in which the asset is used and lastly indications that the economic performance of the asset is now improved or is set to do so in the future.

Most of the early research on asset impairment has been done in contexts other than IFRS where impairments cannot be reversed. Accounting for asset impairment has been claimed as giving management substantial flexibility to exercise judgments in determining and reporting impairment losses (Titard and Pariser, 1996; Healy and Wahlen, 1999; Alciatore et al. 1998; Riedl, 2004). For example, the determination of an appropriate discount rate that reflects current market expectations and the appropriate risks is often difficult and requires consideration and input from financial management, line management and, perhaps, valuation professionals. Input from these parties is also required to formulate assumptions regarding growth rates used to project future cash flows until the end of the asset's useful life. These forecasts also require significant judgment. Titard and Pariser (1996) argue that FASB statement no. 121, Accounting for the Impairment of Long-lived Assets and for Long-Lived Assets to be Disposed Of, gives managers considerable discretion in the timing and the amount of write-downs of impaired assets. Similarly, the use of estimates in projecting future cash flows allows managerial discretion in determining the amount of an impairment (Sevin and Schroeder, 2005). When managers are provided with choices in determining the value of assets, expenses and the profit of their firms, the risk that creative or aggressive accounting is employed increases (Healy and Wahlen, 1999). Francis et al. (1996) also describe asset

impairment as discretionary for the lack of authoritative guidance on accounting for asset write-down. They argue that management may take advantage of the discretion afforded by accounting rules to manipulate earnings either by not recognizing an impairment when it has occurred or by recognizing it only when it is advantageous (to them) to do so. Jordan and Clark (2004) reach a similar conclusion by examining the Fortune 100 companies that report goodwill impairments. They report that firms taking goodwill impairments in the year of study possess significantly lower earnings than their counterparts not recording the write-down, suggesting that these firms adopt a 'big bath' strategy.

With regard to reversals Chen et al. (2009) investigate whether reversals of impairment losses among publicly listed companies in China are associated with economic factors or reporting incentives. Their study is not confined to IAS 36 type impairments since they examine reversals of impairments of current assets and reversals recognized by disposals. They find that reporting incentives, as a proxy for earnings management, dominate economic factors. They also find that asset impairment reversals provide investors with value-relevant information, but this association is significantly weaker than other earnings items. Lastly, they suggest that high quality accounting standards may not necessarily lead to high quality accounting information without the necessary supporting infrastructure for constraining managerial opportunistic behaviour. A more recent study by Zhang et al. (2010) also provides evidence of opportunistic impairment reversal reporting by firms listed on Chinese stock exchanges during the transition period following the announcement of the prohibition of the reversal of impairments by the Chinese regulatory authority. They find that Chinese firms made less impairments during the period after the announcement of the ban than they had previously made. This result indicates that the ban makes impairments less attractive because they can no longer be used as "cookie jar reserves". They also report that firms with previous substantial impairments reversed significantly more impairment losses of long-lived assets between the announcement of the ban and the effective date of the ban, thus using up the "cookie jar reserves" that would not be available to them in the future. Finally, they report that the use of the impairment of long-lived asset was mitigated following the introduction of the ban on impairment reversals. It should be noted that the incentives to manage earnings are uniquely strong in China since profitability is vital in retaining listing status on the Chinese stock market (Chen et al. 2009). Thus it is important that the impact of impairments be considered in other contexts where the motivation to manage earnings is not as strong and the alternative of unbiased impairment reversals is also considered.

In terms of the effect on the balance sheet the reversal of an impairment charge is equivalent to an upward revaluation of a fixed asset. However, the reversal of an impairment can directly influence a firm's income in a way that the upward revaluation on an unimpaired asset cannot. In terms of reflecting the economic fundamentals of the firm the reversal should be a harbinger of enhanced future operating performance (Bernard, 1993). The literature initially tests this relation indirectly by examining the relation between asset revaluation and stock return. Sharpe and Walker (1975) find that a revaluation announcement in Australia is associated with upward share price movements and suggest that the market appears to absorb the information quickly. Easton et al. (1993) investigate the relationship between the revaluation of tangible long-lived assets with stock returns and market prices. They suggest that an upward revaluation of assets increases their alignment with the market value of the firm but the incremental revaluations while value-relevant are not done in a timely manner. Moreover, they report that the balance of the revaluation reserve and the annual revaluation have significant explanatory power for price-to-book ratios when the debt level is relatively high. Easton et al.'s long window return models explain returns as a function of cumulative earnings and revaluation reserve increments (RRIs). A notable feature of Easton et al.'s results is that the incremental additions to the revaluation reserve have significant explanatory power for returns cumulated over 3-year intervals but not for a 9-year interval. The explanation offered is that the incremental contribution of RRI is ultimately subsumed by earnings. Emanuel (1989) finds no association between revaluation announcements and share prices using data from New Zealand. Aboody et al. (1999) investigate the revaluation of assets in UK firms. They report that upward revaluations of fixed assets by UK firms are significantly and positively related to future firm performance. They also report that current year revaluations are significantly and positively related to annual stock returns, indicating that revaluations reflect asset value changes.

Looking specifically at the reversal of asset impairments under IAS 36 we note that Duh et al. (2009) report that Taiwanese companies report larger impairment reversals if they have previously recognized higher impairment losses. They note that the relation between prior impairments and reversals becomes stronger as current pre-reversal performance worsens relative to the earnings of the prior year. However, they do not report any direct relation between pre-reversal earnings changes and reversals. Firms can of course have higher impairment balance for a plethora of reasons and it is no surprise that firms with larger

impairments in the past have greater reversals. Duh et al.'s study (2009) is undertaken in a civil law country. Countries classified as civil or code law countries have higher levels of earnings management than common law countries (Leuz et al. 2003). Malaysia firms as well operating in a common law country also tend to report the accumulated amount of impairments charged against non-current assets. Thus it is very appropriate to undertake this study in Malaysia.

We posit that there are two primary motives for a reversal of an impairment charge. The first is an unbiased one designed to reflect a positive change in the true economic circumstances of the company. Alternatively, the management of the company may be attempting to obfuscate poor current performance using the reversal of a previously created "cookie jar reserve" to manipulate earnings upwards. The extant literature pertaining to the reversal of non-current asset impairments ordained by IAS 36 based standards has found the reversals are done for opportunistic reasons. The extant literature, however, is concentrated in code law countries or where there are extremely strong incentives for earnings management. In this study we consider the possibility of both biased (opportunistic) and unbiased (economic) motives for the reversal of asset impairments in a common law country.

If economic motives are driving the reversal of an impairment charge the reversal should be associated with enhanced current and/or future operating performance and improved current stock price performance. Thus our first prediction is that if firms are reversing impairments for unbiased reasons we will observe that they display superior operating and stock market performance relative to a control sample that does not reverse impairments.

However, if reporting incentives are the main drivers of the reversal of an impairment we would expect the reversals to be associated with other indications of earnings management, for instance, high levels of abnormal accruals or the necessity to beat an earnings benchmark. Thus firms that are using impairment reversals to manage earnings will be simultaneously employing other methods of artificially increasing earnings. Importantly, the impairment reversals of these earnings managers are not predicted to be positively associated with operating performance and stock market returns.

3.0 Data and Methodology

3.1 Data and Sample Selection

The annual reports of all public companies listed on the Kuala Lumpur Stock Exchange (KLSE) are used to identify reversal firms. Reversal firms are those recognizing at least one reversal of an impairment loss in their income statements during the period 2006 to 2009. Financial institutions are excluded because they have different accounting and regulatory systems for the preparation of companies' annual reports.

Reversal firms are identified through a keyword search. The keywords used are 'reversal of impairment loss, 'write back of impairment loss', 'written back impairment loss' and 'reversal of diminution in value'. If the search fails to find any of the keywords in the annual reports, cash flows statements are further examined in detail to allow for situations where companies use different terms to represent the reversal accrual. The reversal amount and the type of assets in relation to the reversal are cross-checked in the notes to the account. Only impairment reversals pertaining to non-current assets excluding goodwill are collected. This is because FRS 136 is only applicable to non-current assets and it disallows the reversal of impairments to goodwill. Impairment reversals of non-current assets are reported for four types of assets: property, plant and equipment (PPE); investment in associates; other investment; investment properties. Reversal recognitions from the disposal of fixed assets are excluded from the sample as the motivation for the reversal of the impairment may be different in the context of a disposal. Following the above procedure, this study initially identifies a sample of 242 reversal firm-year observations relating to 151 distinct non-financial firms.

3.2 Control group selection procedure

In order to examine whether firms report impairment reversals opportunistically, we construct a control group. The control firms are those firms which had a beginning balance in the accumulated impairment losses account in any of four types of non-current assets and did not reverse the impairment recognized during the four years of study (2006-2009). The one-to-one pairing procedure is performed for the 242 observations according to industry classification and then firm size. We control for industry class since the market, and hence valuation, of most non-current assets will be industry specific. Firm size is perhaps the most widely used control variable in financial research since it is related to risk and earnings volatility. Importantly size is also related to earnings management measured by either signed or unsigned discretionary accruals (Hribar and Nichols, 2007). We define firm size as total

assets and the difference in firm size between the two paired companies cannot exceed 30% of the reversal company's total assets. This pairing procedure ensures that the final sample of reversal firms and non-reversal firms are from in the same industry and are of the comparable size. We fail to find a match for 60 of our original sample of 242 firm-years. Thus, our final sample comprises 364 observations made up of 182 reversal firm-years and 182 control firm-years. There are 118 distinct reversal firms in the sample and 108 distinct control firms[1]. The sample size of the current study is about twice as large as that used by Duh et al. (2007) in a study over a similar time span. Table 1 illustrates how the sample is selected.

[Table 1]

Table 2 presents the summary statistics for matched reversal firm-year observations from 2006 to 2009. The difference between the number of reversal firms and the number of reversal firm-years indicates that some companies reversed more than once during 2006-2009. Panel A of Table 2 summarizes the sample breakdown by accounting year end. The numbers of reversal observations are 31, 43, 39 and 69 in the years of 2006, 2007, 2008 and 2009 respectively. They represent 3.45%, 4.98%, 4.56% and 7.19% of the firms listed on KLSE from 2006 to 2009. They generally show an increasing trend of reversal reporting in Malaysia except for the year 2008. Table 2, Panel B shows the distribution of reversal observations classified by the type of fixed assets. There are a total of 66 (36.26%) observations of reversed impairment losses in PPE and 78 (42.86%) firm-years of reversal of impairment in other investments. PPE and other investment reversals represent almost 80% of the total reversal recognition during 2006-2009. There are 19 (10.44%) and 11 (6.04%) firm-years of written-back previously recognized impairment losses in investment in associates and investment in properties respectively.

Panel C of Table 2 shows the reversal firm-years breakdown by industry which is based on Datastream 4.0 level 3 sector index. Some sectors are merged reducing the number of sectors from 16 to 9. This procedure is used to increase the number of non-reversal firms paired with reversal firms. In general, the sample comprises a range of industries with most in property (26 or 14.29%), industry products (57 or 31.32%), construction and materials (27 or 14.83%), travel and leisure (9 or 4.94%) and consumer products (44 or 24.17%). The other 4 sectors

[1] No firm appears in the control sample twice in the same year.

with the lowest frequency are technology and telecommunications (7 or 3.85%), industrial metals, mining, forestry, paper (8 or 4.40%), oil, gas, water and electricity (2 or 1.10%) and media (2 or 1.10%). A comparison between the industry distribution of the sample and the overall industry distribution of the market (Table 2, Panel C) shows that the sample is representative of the Malaysian stock market as a whole with respect to industry class.

[Table 2]

3.3 Reversal of impairment losses and firm performance

FRS 136 allows firms to reverse the impairment recognised previously if the recoverable amount, calculated as the present value of the estimated future cash flows from the use of the assets or its market value, is greater than the carrying amount. Thus, if the impairment is reversed to reflect economic fundamentals, the reversal is expected to be associated with future operating performance as well as contemporaneous stock market performance. Accordingly, the following equations are estimated for our sample of 182 companies that reverse impairments. We test models of changes in operating performance that are similar to those used by Aboody et al. (1999) with respect to the revaluation of fixed assets in the UK as well as models of operating performance.

$$CFO_{t+1} = \alpha + \beta_1 REV_t + \beta_2 CFO_t + \beta_3 WC_t + \beta_4 SIZE_t + \beta_5 MTB_t + \varepsilon_t \quad (1)$$

$$\Delta CFO_{t+1} = \alpha + \beta_1 REV_t + \beta_2 \Delta CFO_t + \beta_3 \Delta WC_t + \beta_4 SIZE_t + \beta_5 MTB_t + \varepsilon_t \quad (2)$$

$$OPIN^*_{t+1} = \alpha + \beta_1 REV_t + \beta_2 OPIN_t + \beta_3 SIZE_t + \beta_4 MTB_t + \varepsilon_t \quad (3)$$

$$\Delta OPIN^*_{t+1} = \alpha + \beta_1 REV_t + \beta_2 \Delta OPIN_t + \beta_3 SIZE_t + \beta_4 MTB_t + \varepsilon_t \quad (4)$$

$$AbReturn_t = \gamma_0 + \gamma_1 REV'_t + \gamma_2 NI_t + \gamma_3 BTM_t + u_t \quad (5)$$

where,

CFO_{t+1} = net cash flow from operations in year t+1 divided by total assets at end of year t;

ΔCFO_{t+1} = the change in net cash flow from operations from year t to year t+1, CFO_{t+1} - CFO_t, divided by total assets at end of year t;

$OPIN^*_{t+1}$ = operating income before depreciation and amortization expenses, reversal amount and AWCA in year t+1 divided by total asset at end of year t;

$\Delta OPIN^*_{t+1}$ = the change in operating income before depreciation and amortization expenses, reversal amount and AWCA from year t to year t+1 divided by total asset at end of year t;

AbReturn$_t$ = control group-adjusted returns beginning eight months before the financial year-end and ending four months after the financial year-end;

REV$_t$ = the reversal amount scaled by total assets at end of year t;

REV'$_t$ = the reversal amount scaled by the market value of equity at the end of year t-1;

CFO$_t$ = net cash flow from operations in year t divided by total assets at end of year t;

Δ**CFO$_t$** = the change in net cash flow from operations from year t-1 to year t divided by total assets at end of year t;

OPIN$_t$ = operating income before reversals in year t divided by total assets at end of year t;

Δ**OPIN$_t$** = the change in operating income before reversals from year t-1 to year t divided by total assets at end of year t;

NI$_t$ = net income before reversal in year t scaled by market value of equity at the end of year t-1;

WC$_t$ = working capital in year t divided by total assets at end of year t;

Δ**WC$_t$** = change in working capital from year t-1 to year t divided by total assets at end of year t;

SIZE$_t$ = the natural log of total sales at end of year t;

MTB$_t$ = the market to book ratio at end of year t;

BTM$_t$ = the book to market value ratio at the end of year t-1.

Operating cash flows and operating income in the reversal year, CFO, ΔCFO, OPIN and ΔOPIN are included in equations (1) – (4) to control for the effect of the time series properties of cash flows and operating income (Aboody et al., 1999). The variable total sales (SIZE) is included in equations (1) – (4) as an additional control for the size effect. The market to book ratio, MTB, is used to control for the potential effects of risk and growth (Fama and French, 1992; Aboody et al, 1999). Working capital is included in equations (1) and (2) as previous research documents a significant relationship between working capital and cash flow from operations (Dechow, 1994).

OPIN*$_{t+1}$ is calculated as net operating income in year t+1 before depreciation and amortization expenses, any impairment reversal in t+1 and AWCA. Operating income is income before interest and income tax. Interest and income tax are excluded in the performance measure because Equation 3A focuses on operating performance (Aboody et al., 1999). Depreciation and amortization expenses are added back as reversal recognition affects the determination of future depreciation. The higher the reversal amount, the larger the new

carrying amount of the assets and the new depreciation expense is calculated based on this new carrying amount. Aboody et al. (1999) argue that the exclusion of depreciation and amortization in the determination of operating income eliminates any mechanical effects of reversal on the performance measure. Any reversal of an impairment in year t+1 is also excluded since it is not a performance effect derived from the recognition of a reversal in year t. The amount of abnormal accruals does not represent the economic effect of reversal recognition. Accordingly, the amount of abnormal working capital accruals is excluded to ensure that the performance measure is not contaminated by earnings management.

It is possible that our Malaysian sample includes some firms that are exploiting FRS 36 to manage earnings while others are using it in an unbiased manner. Thus, we divide the reversal sample firms into a group that are likely earnings managers and another that are not. We expect earnings managers to use other accruals as well as the reversal of impairments to non-current assets to manage earnings upwards. We assume that it is easier for a firm to avoid the detection of earnings management by using smaller accrual adjustments and it therefore prefers several small adjustments to a single large adjustment. We also note that the disclosures required by IAS 36 with respect to the reversal of an impairment makes this accrual a far less subtle vehicle for earnings management than working capital accruals such as inventory value. For example, firms may undertake the reversal of an impairment of a non-current asset using IAS 36 and simultaneously reverse the impairment of current assets which are not dealt with by IAS 36. Therefore, our proxy for earnings management is based on the level of abnormal working capital accruals (AWCA) measured by the DeFond and Park (2001) model. This metric captures earnings management using current accruals, including impairment reversal of current assets. We consider this model preferable to a Jones type model which includes both current and non-current accruals and is thus contaminated by the reversal of impairments of non-current assets. We confirm the ability of our AWCA measure to identify earnings managers by examining its relation with earnings benchmarks such as the avoidance of losses and declines in earnings.

DeFond and Park (2001) define abnormal working capital accruals as the difference between the current year's realized working capital accruals and the expected level of working capital accruals, where the historical relation between working capital and sales captures expected working capital. The difference is the portion of working capital accruals that are unlikely to be sustained and are expected to reverse against future earnings. Their empirical model is:

$$AWCA_t = WC_t - [(WC_{t-1}/S_{t-1}) * S_t] \quad (6)$$

where:

$AWCA_t$ = abnormal working capital accruals in year t;

WC_t = non-cash working capital in year t that is defined as

(current assets - cash and cash equivalent) – (current liabilities – short-term debt);

WC_{t-1} = working capital in the previous year;

S_t = sales in year t;

S_{t-1} = sales in the previous year.

AWCA captures the deviation of the current year's working capital accruals from the normal level of working capital accruals required to support current sales. Thus extremely high levels of AWCA are interpreted as indicative of opportunistic income increasing earnings management and earnings managers are defined as those reversal companies which are above the 70th percentile in terms of AWCA. Firms that are not earnings managers are those who lie in the range between 31st and 70th percentile. This procedure yields 55 reversal earning managers and 73 reversal non-earning managers: 128 firms in total. Reversal companies whose AWCA levels are below the 30th percentile are not included because their level of AWCA could be interpreted as income decreasing earnings management. We modify equations (1) to (5) to examine the relation between reversals and the future operating performance of earnings managers and firms that are not earnings managers.

$$CFO_{t+1} = \alpha + D + \beta_1 REV_t + \beta_2 D*REV_t + \beta_3 CFO_t + \beta_4 WC_t + \beta_5 SIZE_t + \beta_6 MTB_t + \varepsilon_t \quad (1A)$$

$$\Delta CFO_{t+1} = \alpha + D + \beta_1 REV_t + \beta_2 D*REV_t + \beta_3 \Delta CFO_t + \beta_4 \Delta WC_t + \beta_5 SIZE_t + \beta_6 MTB_t + \varepsilon_t \quad (2A)$$

$$OPIN^*_{t+1} = \alpha + D + \beta_1 REV_t + \beta_2 D*REV_t + \beta_3 OPIN_t + \beta_4 SIZE_t + \beta_5 MTB_t + \varepsilon_t \quad (3A)$$

$$\Delta OPIN^*_{t+1} = \alpha + D + \beta_1 REV_t + \beta_2 D*REV_t + \beta_3 \Delta OPIN_t + \beta_4 SIZE_t + \beta_5 MTB_t + \varepsilon_t \quad (4A)$$

$$AbReturn_t = \gamma_0 + D + \gamma_1 REV'_t + \gamma_2 D*REV'_t + \gamma_3 NI_t + \gamma_4 BTM_t + u_t \quad (5A)$$

where,

D = 1 if the firm is a not an earnings manager, i.e. its AWCA lies in the range between 31st and 70th percentile among reversal firms. D takes the value 0 if the firm is an earning manager, i.e. its AWCA is above 70th percentile;

Equation 1A estimates the relationship between reversal recognition by both earnings managers and firms that are not earnings managers and one-year future cash flow from operations. The coefficient on REV, β_1, represents the relation between the level of impairment reversals by earnings managers and one-year future cash flow from operations. β_2 captures the difference between the effect of reversals on performance for firms that are not earnings managers relative to earnings managers. The sum of $\beta_1 + \beta_2$ represents the impact of reversals by firms that are not earnings managers on future cash flow. We do not expect reversal recognition by earnings managers to explain future cash flow: β_1 is not expected to be significantly different from zero. We expect that the reversals of firms that are not earnings managers to be more positively associated with future operating performance: β_2 is expected to be positive and significant. Similarly we predict that $\beta_1 + \beta_2$ is significantly positive. Equation 2A, 3A and 4A are similar to Equation 1A. Thus our predictions regarding β_1, β_2 and $\beta_1 + \beta_2$ are the same. Finally, equation 5A is used to examine the relationship between contemporaneous abnormal returns and impairment reversals by earnings managers and firms that are not earnings managers. If the reversal information is of sufficient size and is value relevant, it should be positively associated with stock returns; whereas, if firms report reversals opportunistically, assuming that the Malaysian market is reasonably efficient, the information should not be relevant for the determination of stock prices. The sample size is reduced to 125 observations for the estimation of equation 5A as the stock market prices for three observations are not available in Datastream. The coefficient on REV' in Equation 5A represents the relation between impairment reversals by earnings managers and abnormal returns, while the sum of $\gamma_1 + \gamma_2$ captures the effect of reversals for firms that are not earnings managers. We expect that reversal recognition by firms that are not earnings managers provide timelier value-relevant information to investors as compared to earnings managers. Thus γ_2 and $\gamma_1 + \gamma_2$, are expected to be positive and significant. We also predict γ_3 and γ_4 to be positive (Ohlson, 1995).

4.0 Results

4.1 Descriptive Statistics and Univariate Analyses

Table 3 presents descriptive statistics for reversal firms and control firms and also includes the test of differences in means and medians for all relevant continuous variables. The mean (median) of total assets are 20.096 (20.029) for the reversal firm sample and 20.054 (19.985) for the control sample. The differences are not statistically significant. We infer that the

reversal firm sample and the control sample are similar in size suggesting that the pairing procedure is successful. Unsurprisingly, the beginning balance of accumulated impairment losses of reversal firms is significantly larger than non-reversal firms.

Interestingly, a number of indicators show that reversal firms actually perform better than non-reversal firms. Table 3 shows that both the adjusted profit margin (PMadj), and ROEadj, the adjusted return on equity ratio of reversal firms, are higher than that of non-reversal firms. The mean (median) profit margin of reversal firms, i.e. 0.0633 (0.0544), is different from the one of non-reversal firms, i.e. 0.0010 (0.0183), significant at the 5% (10%) level. The adjusted mean (median) return on equity ratio of reversal firms, i.e. 0.0733 (0.0814), is also significantly, at the 1% (5%) level, different from that of non-reversal firms, i.e. 0.0166 (0.0540).

Tests (not tabulated) show that 34.6% of reversal firms would have reported earnings declines without the reversals whereas 42.9% of non-reversal firms have earnings declines, although the difference is not statistically different. Further, control firms are more likely to be loss making. 19.8% of reversal firms have a pre-reversal loss but the proportion of loss making control firms is higher at 27.5%. The difference is significant at the 10% level. In addition, according to our earnings manager indicator reversal firms are not more likely to be earnings managers than control firms either. The mean and median of abnormal working capital accruals of reversal firms are not significantly different from those of the control firms. Assuming that underperforming firms and firms failing to reach a recognized earnings benchmark have more incentives to manage earnings upward than firms that are performing well, it appears that the reversal firms on average don't have greater incentives to manage earnings upwards than the control firms.

[Table 3]

We now estimate equations (1) to (5) using data on reversal firms only. As a prelude to this analysis Table 4 presents the descriptive statistics of all variables used in equations (1) to (5). It is noticeable that REV and REV' which are reversal scaled by total assets and the market value of equity respectively have the same mean and very similar medians.

[Table 4]

The regressions results in Table 5 show that while the Malaysian stock market values impairment reversals this value relevance is not confirmed by the relationship between impairment reversals and future operating performance. A possible explanation for this 'puzzling' result could be that firms do not reverse their impairments in a timely manner. The reversal firms in our sample have superior current performance relative to the control firms (see Table 3). Thus, their superior stock market performance may be explained by the superior contemporaneous operating performance rather than future operating performance. Furthermore, returns may reflect a firm's financing and investing decisions in addition to future operating performance, therefore it is possible to observe a positive relation between stock returns and the reversal of impairment losses (revaluation) even though this relation does not exist between the reversal and future operating performance (Aboody et al, 1999). Aboody et al. (1999) offer an example of highly leveraged firms reduce the probability of default by revaluing their assets upward influencing stock returns (regardless of future operating performance). Finally, the sample firms are unlikely have similar motivations for the reversal of impairment losses: some may be motivated by economic reasons and others by reporting incentives. This may also confound the relation between impairment reversals and abnormal returns/future operating performance.

[Table 5]

In summary, the analysis above shows that reversal firms are more profitable than non-reversal firms. They also generate more sales than non-reversal firms. Both groups (reversal and non-reversal firms) have similar levels of abnormal working capital accruals. Reversals are positively valued by the Malaysian stock market but do not predict improved operating performance. The beginning balance of accumulated impairment losses (BACC) of reversal firms is significantly larger than non-reversal firms. Thus, the preliminary evidence indicates that Malaysian firms that reverse impairments are not more likely to be managing their earnings upward than firms that do not. But the failure of the reversal of impairments to predict improved operating performance contrasts with Aboody et al.'s (1999) results for upward revaluations of fixed assets in the UK.

We suspect that the higher level of BACC and the absence of a positive relationship between impairment reversals and improved future operating performance may be indicative of the

presence of earning management in some reversal firms. Our sample reversal firms most likely include both non-earnings managers and earnings managers, i.e. firms that undertake the reversals in an unbiased manner and those that use the reversals as part of (upward) earnings management. We define earnings managers as those reversal firms which have the top 30% levels of abnormal working capital accruals. We confirm the effectiveness of this AWCA-based classification of earnings manager by comparing the proportion of earnings managers that would have had an earnings decline before their reversal of an impairment with the corresponding proportion of reversal firms deemed not to be earnings managers. We find that 47% of the earnings managers would have had a decline in earnings before the reversal compared with only 26% of the other reversal firms. This difference is statistically significant.

Table 6 presents a difference in differences analysis of earnings managers and firms that are not earnings managers in comparison to their corresponding control firms. The table provides the mean and median of the differences between reversal earnings managers and their control firms, the mean and median of the differences between reversal firms that are not earnings managers and their control firms and the difference between the above two differences.

[Table 6]

Table 6 shows that the mean and median differences in accumulated impairment losses between firms that are not earnings managers and their control group firms are significantly smaller than the differences between the earnings managers and their control group firms. The difference in mean (median) differences between firms that are not earnings managers and earnings managers is 0.0130 (0.0024). The difference is significant at the 5% (10%) level. This finding is consistent with the theory that earnings managers use impairments to create a “cookie jar reserve”. Furthermore, firms that are not earnings managers have higher cash flow from operations, CFO, and higher operating income, OPIN, in the reversal year relative to their control group firms than earnings managers. The difference between earnings managers and firms that do not manage earnings relative to their control firms is particularly significant for $OPIN^*_t$, operating income before depreciation, the reversal and AWCA in the year of the reversal. The firms that are not earnings managers also report higher operating income in the subsequent year and the difference in mean and median differences is significant at the 10% level. In short, the performance of earnings managers in

the year of the reversal is poor relative to non-earning managers and there is some evidence that this underperformance remains in the subsequent year.

4.2 The Relation between Reversal of Impairment Losses and Firm Performance

Future cash flow from operations

We now turn to the estimation of equations (1A) to (5A) to establish if the impairment reversals of earnings managers and firms that are not earnings managers have similar effects with respect to current stock market performance and future operating performance. The first two columns of Table 7 present the regression results which display the results from estimating equations 1A and 2A which use reversals to predict one-year future cash flow from operations and change in cash flow from operations. The results show that the coefficient on reversals, REV, is negative and significant at the 1% level. This result indicates that larger reversals by earnings managers are associated with lower future cash flows. This suggests that reversal recognition by earnings managers does not reflect asset value changes and is probably opportunistic. The coefficient on D*REV, β_2, is positive and significant at the 1% level, indicating that the reversals reported by firms that are not earnings managers have a significantly more positive impact on future performance than the reversals reported by earnings managers. The latter coefficient is larger in absolute terms than β_1 and the sum of $\beta_1 + \beta_2$ (not tabulated) is significantly positive at the 1% level (i.e. the positive non-earnings manager effect on performance is more pronounced), suggesting that reversal recognition by firms that are not earnings managers predicts higher future cash flows. This finding provides strong evidence that the reversal reporting by firms that are not earnings managers is an efficient choice of accruals recognition. The results also indicate that, as expected, the cash flow from operations in the reversal year is significantly (at the 1% level) and positively associated with future cash flows.

[Table 7]

SIZE, measured by the natural log of total sales, is also positively and significantly related to future cash flow from operations. WC and MTB are insignificantly associated with future performance. The results pertaining to ΔCFO_{t+1} are consistent with those above with respect to of β_1, β_2, and $\beta_1 + \beta_2$. Accordingly, we infer that the reversals of impairment by firms that are not earnings managers are positively reflected in future cash flow performance but those

of earnings managers are not. It is that the reversals of earnings managers have negative relation with subsequent performance which confirms their opportunistic nature.

Future Operating income

Net operating income ($OPIN^*_{t+1}$) is calculated as net income reported in the income statement before depreciation and amortization, the reversal of impairment losses and abnormal working capital accruals. Consistent with the results in relation to future cash flow (change) from operations, the coefficient on REV, β_1, is negative and significant at the 1% level. This result shows that future operating income is reduced when impairment losses are used to increase current earnings and is consistent with the prediction that earnings managers recognising reversals opportunistically.

The table also provides strong evidence that reversals recorded by firms that are not earnings managers explain future profitability measured by net operating income. $\beta_1 + \beta_2$ is positive and significant at the 1% level (not tabulated). As predicted, the coefficient on the interaction between REV and dummy variable D. β_2, is significantly positive. This suggests that the effect of reversals reported by firms that are not earnings managers on future operating income is in the opposite direction as compared to earnings managers and this effect is significantly stronger. These findings provide further evidence that reversal firms with average abnormal working capital accruals report reversal recognition as stipulated under FRS 136 Impairment of Asset to reflect the true economic state of the assets. Regarding the control variables, the operating income in the reversal year (OPIN) is positively and significantly associated with one-year-ahead adjusted operating income ($OPIN^*_{t+1}$). However, SIZE and MTB are not significantly related with one-year future operating income. Column Equation 4A displays similar results to those in Column Equation 3A pertaining to $\Delta OPIN_{t+1.}$ REV is negatively associated with change in future operating income while D*REV is positively associated with change in future operating income. Both associations are significant at the 10% level.

To sum up, the association between the recognition of reversal gains and future performance is conditional on the level of abnormal accruals. Firms that are not classified as earnings managers report reversals which explain future profitability, whereas earnings managers'

reversal recognitions are negatively related to future performance. In the case of (one-year-ahead) future operating income this finding is likely to be related to the tendency of working capital accruals, which are high for earnings managers, to reverse in the future.

Reversal of impairment losses and stock market returns

The final column in Table 7 presents the findings related to the value relevance of reversals made by earnings managers and firms that are not earnings managers. Reversals reported by earnings managers are not associated with abnormal returns, indicating that the reversal of impairment by earnings managers is not reflected in stock prices. Consistent with our prediction, the coefficient on D*REV is positive and significant (at the 5% level). This result suggests that reversals recognized by firms that are not earnings managers are more value-relevant to investors as compared with reversals information provided by earnings managers. Furthermore, the sum of the coefficients on REV and D*REV (not tabulated) is significantly positive, indicating that the reversal information provided by firms that are not earnings managers is positively valued in the market. As predicted, the coefficient on NI is significantly positive.

4.3 Robustness check

Regression analysis incorporating the beginning balance of accumulated impairment losses

Equations 1A, 2A, 3A, 4A and 5A are constructed without considering the effect of previous impairment recognition. Descriptive statistics show that the beginning balance of accumulated impairment losses is higher among reversal firms. We conduct additional tests on the relationship between impairment reversals and future performance after controlling for the beginning balance of accumulated impairment losses, BACC. The number of observations in the sample is reduced to 108 (107 for equation 5A) as the amount of beginning balance of accumulated impairment losses in relation to 20 reversals are not available in the annual reports.

Table 8 shows that BACC does not affect the relationship between reversals and future performance. The size of the beginning balance of accumulated impairment losses does not explain future performance either. The coefficients on reversals, REV, in relation to four operating performance measures are significantly negative. Similar to the ones in Table 7, the

coefficients on D*REV are positive and significant. The results in relation to all other variables, CFO, ΔCFO, OPIN, ΔOPIN, SIZE and MTB are unchanged.

[Table 8]

Regressions with clustered standard errors

As explained above, the reversal sample of this study consists of 182 firm-year observations from 2006 to 2009, associated with 118 firms. The difference in the number of firms and firm-years indicates that some reversal firms recognized the reversals more than once during the period of this study. Multiple observations of the same firm can affect the estimation results as the observations may correlate with each other, creating possible correlated residuals (Lang et al., 2006). Hence, we conduct another robustness check where all standard errors are clustered at the firm level in the regression analyses. The results of these analyses are consistent with those reported above.

5.0 Summary and conclusions

Financial Reporting Standard (FRS) 136 was issued in Malaysia in 2005 and became effective for the financial years beginning after 1 January 2006. FRS 136 is an adoption of International Financial Reporting Standards in Malaysia. Such standards being market based should allow accounting to better reflect the economic position of the company (Barth et al. 2008). However, like any principles based standard the latitude allowed by FRS 136 may be exploited by opportunistic management to obfuscate the performance of a company. In particular, the reversal of an impairment which is allowed under FRS 136 may be undertaken to better reflect the underlying economic situation of the company or to manage earnings upwards.

This study tests if both of the above motivations to undertake the reversal of an impairment charge are present in Malaysia with respect to FRS 136. We follow a paired sample approach where reversal firms are matched with non-reversal firms on the basis of size and industry class. We document that in the year of the reversal, firms that reverse all or part of an impairment perform better than their matched firms as measured by their profit margin and ROE ratio adjusted for the reversal. The levels of abnormal working capital accruals of both

groups are similar. Thus, on average there is no evidence that reversal firms manage earnings more than those who do not undertake reversals. We also find that impairment reversals are positively valued by the stock market. However, we note that reversal firms have higher impairment balances than control firms and that the superior current operating and, particularly stock price, performance of reversal firms is not reflected in enhanced subsequent operating performance. While a possible explanation is that the enhanced stock performance is justified by the current superior operating performance we also suspect that not all reversals are a result of managers appropriately responding to a recovery in the value of impaired assets and some may be due to earnings management. Thus, we partition the reversal firms into potential earnings managers and firms that are not managing earnings. This classification is based on the level of their abnormal working capital accruals in the year of the reversal. For firms we deem not to be managing earnings we confirm that the reversal of impairment accruals is positively related to future profitability. Additional tests produce similar results on the association between reversals and contemporaneous stock returns, providing further support to the notion that manager's discretion provides useful information to the market concerning firm value. In contrast the reversals of firms that we classify as earnings managers are negatively related to future operating income/cash flows and are not related to stock performance. Thus, the information content of the reversal of impairments is conditional on indications of the existence of earnings management in the firm.

The findings of this study contribute to and extend the literature on earnings management using specific accruals. Reversal reporting using FRS 136 is claimed to provide managers with substantial flexibility in recognizing accruals. Thus this study is relevant to the general literature pertaining to the existence of earnings management under IFRS but unlike most other studies (Duh et al. [2009] being a notable exception) it provides evidence based on a specific accrual. We also link earnings management using the specific accrual in question, the reversal of an impairment charge, to a more general model of abnormal accruals, the DeFond and Park (2001) model, as well as the motivation to avoid earnings declines. Most importantly, our findings provide evidence that most reversal firms recognize the unrealized gain that reflects the changes in non-current asset values. Thus, the discretionary element provided in FRS 136 allows managers to communicate their expectations about current and future firm performance and this is the dominant motivation for the reversal of impairments in Malaysia. Nevertheless, there is a substantial minority of Malaysian firms which use the discretion afforded by FRS 136 opportunistically. Based on our Malaysian results the choice

faced by standard setters between allowing or disallowing a the reversal of asset impairments comes down to a trade-off between the enhancement of accounting information on average, versus the fact that a minority of firms show a tendency exploit the latitude afforded by IAS 36 and use it to manage earnings upward. The opportunistic impairment reversers can be identified by their abnormally high working capital accruals as well as their need to achieve an earnings benchmark (prior year's earnings). Their opportunistic use of FRS 136 is confirmed by the negative relation of their reversals of impairments with future operating performance and the absence of any association between their reversals and stock price performance. The results of our capital markets-based test show that the market in Malaysia is reasonably astute in separating those firms which reverse impairments in an unbiased manner from those that are exploiting FRS 136 opportunistically. However, the positive response to reversals in general which is not supported by subsequent enhanced performance suggests that the market does not fully appreciate the extent of earnings management using FRS 136.

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Table 1. Sample selection

Sample period: 2006-2009	*Number of firm-years*
Initial identified observations	274
Less: Banks and other financial institutions	(11)
Reversals made for the disposal of fixed assets	(21)
Reversal observations before matching procedure	242
Less: Unmatched firms	(60)
Final sample of firms that reverse impairments	182
Size and Industry Matched control sample	182
Total Sample	364

Table 2. Summary statistics of matched reversal firm-years from 2006-2009

	Number of matched firm-years		**Percentage of matched firm-years (%)**	
Panel A: Year breakdown				
2006	31		17.03	
2007	43		23.63	
2008	39		21.43	
2009	69		37.91	
Total	**182**		**100.00**	
Panel B: Type of assets breakdown				
Property, plant and equipment	66		36.26	
Investment in associates	19		10.44	
Other investments	78		42.86	
Investment properties	11		6.04	
Multiple	8		4.40	
Total	**182**		**100.00**	
Panel C: Industry breakdown*				
Technology and telecommunications	7	(37)	3.85	(4.45)
Industrial metals, mining, forestry, paper	8	(52)	4.40	(6.25)
Oil, gas, water and electricity	2	(38)	1.10	(4.57)
Media	2	(7)	1.10	(0.84)
Property	26	(100)	14.29	(12.02)
Industry products	57	(222)	31.32	(26.68)
Construction and materials	27	(112)	14.83	(13.46)
Travel and leisure	9	(29)	4.94	(3.48)
Consumer products	44	(235)	24.17	(28.25)
Total	**182**	**(832)**	**100.00**	**(100.00)**

* Figures in the parentheses in Panel C refer to the overall industry distribution in Malaysian stock market 2006-2009

Table 3. Descriptive statistics of reversal firm-years and control firms, 2006-2009.

Variables	Assets	REV	AWCA	Sales	BACC[a]	PMadj	ROEadj
Test sample: Firm-years with impairment loss and reversals (n=182)							
Mean	20.096	0.0037	0.0007	19.594	0.0176	0.0633	0.0733
Median	20.029	0.0012	-0.0009	19.406	0.0058	0.0544	0.0814
SD	1.2746	0.0057	0.0933	1.4535	0.0274	0.1421	0.1386
Min	17.268	0.0000	-0.2558	16.005	0.0000	-0.4437	-0.3540
Max	24.286	0.0271	0.2667	24.250	0.0981	0.4717	0.5232
Skew	0.5642	2.7461	0.2538	0.4396	2.0583	-0.2201	-0.1040
Kurtos	3.5439	7.8388	4.4581	3.2466	6.0890	6.2709	6.1498
Control sample :Firm-years with impairment, without reversal (n=182)							
Mean	20.054	-	-0.0041	19.301	0.0087	0.0010	0.0166
Median	19.985	-	0.0011	19.299	0.0011	0.0183	0.0540
SD	1.2628	-	0.1022	1.5934	0.0157	0.2006	0.2356
Min	17.543	-	-0.2768	9.3056	0.0000	-1.3814	-0.8454
Max	24.091	-	0.2553	23.284	0.0845	0.4078	0.8745
Skew	0.6189	-	-0.4363	-1.1461	2.1752	-3.0857	-1.5067
Kurtosis	3.5941	-	4.5302	10.627	6.7934	10.355	8.5524
Diff in means	0.0418	-	0.0048	0.2930	0.0089	0.0623	0.0567
(p-value)	(0.754)		(0.639)	(0.068)	(0.001)	(0.012)	(0.005)
Diff in medians	0.0440	-	-0.0020	0.1070	0.0047	0.0361	0.0274
(p-value)	(0.640)		(0.968)	(0.091)	(0.000)	(0.083)	(0.017)

The difference (diff) in means and medians between reversal firms and control firms are tested using two-tailed *t*-tests and Mann Whitney test, respectively.

[a]The sample size is 155 reversal observations and 155 control firms. The difference (27) is not traceable as the firms combined accumulated impairment and accumulated depreciation into one account.

All data (except for Assets and Sales) are winsorized at three standard deviations from the mean.

Variable definitions:

Assets = natural logarithm of total assets at end of year t;
REV = amount of impairment loss reversal deflated by total assets at end of year t;
AWCA = abnormal working capital accrual (DeFond and Park, 2001) deflated by total assets at end of year t;
Sales = natural logarithm of total sales at end of year t;
BACC = beginning balance of accumulated impairment loss in year t deflated by total assets at end of year t;
PMadj = net income before reversals in year t divided by total sales in year t;
ROEadj = return on equity (adjusted), calculated as net income minus impairment reversal in year t divided by total equity at end of year t.

Table 4. Descriptive statistics for regression variables, n=182.

Variables	Mean	Median	SD	Min	Max	Skew	Kurtos
Dependent variables							
CFO_{t+1}	0.0657	0.0535	0.0788	-0.1379	0.2736	0.2830	3.4732
ΔCFO_{t+1}	0.0040	0.0093	0.0792	-0.1879	0.1890	-0.3913	3.1741
$OPIN^*_{t+1}$	0.0807	0.0714	0.1428	-0.2911	0.4472	-0.1704	3.8012
$\Delta OPIN^*_{t+1}$	0.0065	0.0042	0.0465	-0.1084	0.1188	0.0168	3.6534
$AbReturn_t$[a]	0.0524	0.0178	0.6197	-1.3895	1.5129	0.2714	0.2951
Independent variables							
REV	0.0037	0.0012	0.0057	0.0000	0.0271	2.7461	7.8388
REV'	0.0037	0.0013	0.0059	0.0000	0.0273	2.7104	10.509
CFO_t	0.0638	0.0575	0.0729	-0.1165	0.2509	0.4267	3.4326
ΔCFO_t	0.0154	0.0158	0.0822	-0.2039	0.2443	0.3567	4.0553
$OPIN_t$	0.0395	0.0375	0.0762	-0.1730	0.26215	-0.0290	4.6022
$\Delta OPIN_t$	0.0084	0.0082	0.0473	-0.1123	0.1272	-0.1663	3.9225
NI	0.0778	0.0844	0.1946	-0.4539	0.4835	-0.8682	4.5200
WC	0.2052	0.2035	0.1954	-0.2169	0.6191	-0.0792	2.6802
ΔWC	0.0191	0.0229	0.0939	-0.1937	0.2320	0.0089	3.4259
SIZE	19.617	19.406	1.4799	16.005	24.251	0.4136	3.1211
MTB	0.9728	0.7400	0.6965	0.1900	2.8700	1.3167	3.9299
BTM	1.4255	1.2500	0.9035	0.1368	3.5714	0.9228	3.2019

[a]The sample size is 178 reversal observations as the data on share price for four reversal observations are not available in Datastream.
All data are winsorized at three standard deviations from the mean.

Variable definitions:

CFO_{t+1} = net cash flow from operations in year t+1 divided by total assets at end of year t;
ΔCFO_{t+1} = change in net cash flow from operations from year t to year t+1, CFO_{t+1} - CFO_t, divided by total assets at end of year t;
$OPIN^*_{t+1}$ = operating income before depreciation and amortization expenses, reversal amount and AWCA in year t+1 divided by total asset at end of year t;
$\Delta OPIN^*_{t+1}$ = change in operating income before depreciation and amortization expenses, reversal amount and AWCA from year t to year t+1 divided by total asset at end of year t;
$AbReturn_t$ = control group-adjusted returns beginning eight months before the financial year-end and ending four months after the financial year-end;
REV_t = reversal amount scaled by total assets at end of year t;
REV'_t = reversal amount scaled by the market value of equity at the end of year t-1;
CFO_t = net cash flow from operations in year t divided by total assets at end of year t;
ΔCFO_t = change in net cash flow from operations from year t-1 to year t divided by total assets at end of year t;
$OPIN_t$ = operating income before reversals in year t divided by total assets at end of year t;
$\Delta OPIN_t$ = change in operating income before reversals from year t-1 to year t divided by total assets at end of year t;
NI_t = net income before reversal in year t scaled by market value of equity at the end of year t-1;
WC_t = working capital in year t divided by total assets at end of year t;
ΔWC_t = change in working capital from year t-1 to year t divided by total assets at end of year t;
$SIZE_t$ = the natural log of total sales at end of year t;
MTB_t = the market to book ratio at end of year t;
BTM_t = the book to market value ratio at the end of year t-1.

Table 5. Relationship between impairment loss reversals and firm performance

$$CFO_{t+1} = \alpha + \beta_1 REV_t + \beta_2 CFO_t + \beta_3 WC_t + \beta_4 SIZE_t + \beta_5 MTB_t + \varepsilon_t \quad (1)$$

$$\Delta CFO_{t+1} = \alpha + \beta_1 REV_t + \beta_2 \Delta CFO_t + \beta_3 \Delta WC_t + \beta_4 SIZE_t + \beta_5 MTB_t + \varepsilon_t \quad (2)$$

$$OPIN^*_{t+1} = \alpha + \beta_1 REV_t + \beta_2 OPIN_t + \beta_3 SIZE_t + \beta_4 MTB_t + \varepsilon_t \quad (3)$$

$$\Delta OPIN^*_{t+1} = \alpha + \beta_1 REV_t + \beta_2 \Delta OPIN_t + \beta_3 SIZE_t + \beta_4 MTB_t + \varepsilon_t \quad (4)$$

$$AbReturn_t = \gamma_0 + \gamma_1 REV'_t + \gamma_2 NI_t + \gamma_3 BTM_t + u_t \quad (5)$$

Variable	Equation 1 Coefficient (p-value)	Equation 2 Coefficient (p-value)	Equation 3 Coefficient (p-value)	Equation 4 Coefficient (p-value)	Equation 5 Coefficient (p-value)
REV	-0.5695	-0.5865	-0.9594	-0.8561	
	(0.527)	(0.382)	(0.402)	(0.621)	
REV'					2.8810
					(0.079)
CFO	0.3562				
	(0.000)				
ΔCFO		-0.6269			
		(0.000)			
OPIN			0.8819		
			(0.000)		
ΔOPIN				-0.5213	
				(0.000)	
NI					0.9860
					(0.001)
WC	0.0296				
	(0.353)				
ΔWC		0.0395			
		(0.383)			
SIZE	0.0128	0.0058	0.0056	0.0253	
	(0.005)	(0.091)	(0.481)	(0.061)	
MTB	0.0050	-0.0042	0.0155	0.0621	
	(0.629)	(0.570)	(0.265)	(0.091)	
BTM					-0.0382
					(0.295)
Intercept	-0.2168	-0.0946	-0.0744	-0.5211	-0.0041
	(0.015)	(0.151)	(0.621)	(0.069)	(0.959)
N	182	182	182	182	178
R^2	0.2406	0.4448	0.3237	0.3011	0.0874

Variable definitions:

CFO_{t+1} = net cash flow from operations in year t+1 divided by total assets at end of year t;

ΔCFO_{t+1} = change in net cash flow from operations from year t to year t+1, CFO_{t+1} - CFO_t, divided by total assets at end of year t;

$OPIN^*_{t+1}$ = operating income before depreciation and amortization expenses, reversal amount and AWCA in year t+1 divided by total asset at end of year t;

$\Delta OPIN^*_{t+1}$ = change in operating income before depreciation and amortization expenses, reversal amount and AWCA from year t to year t+1 divided by total asset at end of year t;

$AbReturn_t$ = control group-adjusted returns beginning eight months before the financial year-end and ending four months after the financial year-end;

REV_t = reversal amount scaled by total assets at end of year t;

REV'_t = reversal amount scaled by the market value of equity at the end of year t-1;

CFO_t = net cash flow from operations in year t divided by total assets at end of year t;

ΔCFO_t = change in net cash flow from operations from year t-1 to year t divided by total assets at end of year t;

$OPIN_t$ = operating income before reversals in year t divided by total assets at end of year t;

$\Delta OPIN_t$ = change in operating income before reversals from year t-1 to year t divided by total assets at end of year t;

NI_t = net income before reversal in year t scaled by market value of equity at the end of year t-1;

Cont'd

$\mathbf{WC_t}$ = working capital in year t divided by total assets at end of year t;
$\Delta\mathbf{WC_t}$ = change in working capital from year t-1 to year t divided by total assets at end of year t;
$\mathbf{SIZE_t}$ = the natural log of total sales at end of year t;
$\mathbf{MTB_t}$ = the market to book ratio at end of year t;
$\mathbf{BTM_t}$ = the book to market value ratio at the end of year t-1.

Table 6. Difference in differences analysis of reversal earnings managers, reversal firms that are not earnings managers and control firms ranked by abnormal working capital accruals

Variables	Difference between reversal earnings managers and control firms (G1)		Difference between reversal firms that are not earnings managers and control firms (G2)		Difference in differences	p-value
	Mean (Median)	n	Mean (Median)	n		
BACC	0.0152 (0.0041)	47[a]	0.0022 (0.0017)	61[a]	0.0130 (0.0024)	0.028 (0.098)
ROEadj	0.0192 (0.0231)	55	0.0741 (0.0304)	73	-0.0549 (-0.0073)	0.179 (0.376)
CFO_t	-0.0219 (-0.0278)	55	0.0142 (0.0210)	73	-0.0361 (-0.0488)	0.059 (0.013)
CFO_{t+1}	-0.0041 (0.0167)	55	0.0222 (0.0159)	73	-0.0263 (0.0008)	0.131 (0.209)
$OPIN_t$	-0.0051 (0.0008)	55	0.0352 (0.0221)	73	-0.0403 (-0.0213)	0.071 (0.138)
$OPIN^*_t$	-0.1450 (-0.1162)	55	0.0252 (0.0220)	73	-0.1702 (0.1382)	(0.000) (0.000)
$OPIN_{t+1}$	0.0255 (0.0192)	55	0.0561 (0.0491)	73	-0.0306 (-0.0299)	0.090 (0.058)
$OPIN^*_{t+1}$	0.0504 (0.0410)	55	0.0625 (0.0668)	73	-0.0121 (-0.0258)	0.609 (0.376)
Return	0.0842 (0.1375)	53[b]	0.0179 (0.0149)	72[b]	0.0663 (0.1226)	0.548 (0.405)

The differences in mean and median differences are tested using two-tailed t-test and Mann Whitney test, respectively.

[a]The sample size is 47 reversal earnings managers firms (61 reversal firms that are not earnings managers firms) and 47 control firms (61 control firms). The sample size is reduced as 8 observations (12 observations) are not traceable as the firms combined accumulated depreciation and accumulated impairment in one account.

[b]The sample size is 53 reversal earnings managers firms (72 reversal firms that are not earnings managers firms) and 53 control firms (72 control firms). The sample size is reduced because the market data for 2 observations (1 observation) are not available in Datastream.

The operating income (OPIN) with * indicates the adjustment for depreciation and AWCA.

Variable definitions:

BACC = beginning balance of accumulated impairment loss in year t deflated by total assets at end of year t;
ROEadj = return on equity (adjusted), calculated as net income minus impairment reversal in year t divided by total equity at end of year t;
CFO_t = net cash flow from operations in year t divided by total assets at end of year t;
CFO_{t+1} = net cash flow from operations in year t+1 divided by total assets at end of year t;
$OPIN_t$ = operating income before reversals in year t divided by total assets at end of year t;
$OPIN^*_t$ = operating income before depreciation and amortization expenses, reversal amount and AWCA in year t divided by total asset at end of year t;
$OPIN_{t+1}$= operating income before reversals in year t+1 divided by total assets at end of year t;
$OPIN^*_{t+1}$ = operating income before depreciation and amortization expenses, reversal amount and AWCA in year t+1 divided by total asset at end of year t;
Return = stock returns beginning eight months before the financial year-end and ending four months after the financial year-end.

Table 7. Relationship between impairment loss reversal and future firm performance, moderated by incentive to manage earnings

$CFO_{t+1} = \alpha + D + \beta_1 REV_t + \beta_2 D*REV_t + \beta_3 CFO_t + \beta_4 WC_t + \beta_5 SIZE_t + \beta_6 MTB_t + \varepsilon_t$ *(1A)*

$\Delta CFO_{t+1} = \alpha + D + \beta_1 REV_t + \beta_2 D*REV_t + \beta_3 \Delta CFO_t + \beta_4 \Delta WC_t + \beta_5 SIZE_t + \beta_6 MTB_t + \varepsilon_t$ *(2A)*

$OPIN*_{t+1} = \alpha + D + \beta_1 REV_t + \beta_2 D*REV_t + \beta_3 OPIN_t + \beta_4 SIZE_t + \beta_5 MTB_t + \varepsilon_t$ *(3A)*

$\Delta OPIN*_{t+1} = \alpha + D + \beta_1 REV_t + \beta_2 D*REV_t + \beta_3 \Delta OPIN_t + \beta_4 SIZE_t + \beta_5 MTB_t + \varepsilon_t$ *(4A)*

$AbReturn_t = \alpha + D + \beta_1 REV'_t + \beta_2 D*REV'_t + \beta_3 NI_t + \beta_4 BTM_t + \varepsilon_t$ *(5A)*

Variable	Equation 1A	Equation 2A	Equation 3A	Equation 4A	Equation 5A
	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)
D	-0.0181	-0.0158	-0.0396	-0.1352	-0.3438
	(0.178)	(0.206)	(0.098)	(0.045)	(0.008)
REV	-1.2406	-1.1170	-3.0601	-6.5221	
	(0.000)	(0.002)	(0.001)	(0.055)	
D*REV	1.5664	1.5459	3.9774	7.1281	
	(0.005)	(0.004)	(0.010)	(0.057)	
REV'					-0.6693
					(0.763)
D*REV'					11.042
					(0.000)
CFO	0.3563				
	(0.000)				
ΔCFO		-0.6709			
		(0.000)			
OPIN			0.9065		
			(0.000)		
ΔOPIN				-0.6582	
				(0.000)	
NI					1.3999
					(0.000)
WC	0.0401				
	(0.188)				
ΔWC		0.0406			
		(0.367)			
SIZE	0.0137	0.0070	0.0083	0.0233	
	(0.002)	(0.060)	(0.287)	(0.090)	
MTB	0.0074	-0.0029	0.0164	0.0415	
	(0.376)	(0.621)	(0.224)	(0.010)	
BTM					-0.0604
					(0.101)
Intercept	-0.2275	-0.1096	-0.1034	-0.2548	0.1929
	(0.010)	(0.116)	(0.485)	(0.124)	(0.126)
N	128	128	128	128	250
Adjusted R^2	0.2626	0.4684	0.3490	0.3021	0.1800

Cont'd

Variable definitions:

CFO_{t+1} = net cash flow from operations in year t+1 divided by total assets at end of year t;
ΔCFO_{t+1} = change in net cash flow from operations from year t to year t+1, CFO_{t+1} - CFO_t, divided by total assets at end of year t;
$OPIN^*_{t+1}$ = operating income before depreciation and amortization expenses, reversal amount and AWCA in year t+1 divided by total asset at end of year t;
$\Delta OPIN^*_{t+1}$ = change in operating income before depreciation and amortization expenses, reversal amount and AWCA from year t to year t+1 divided by total asset at end of year t;
AbReturn $_t$ = control group-adjusted returns beginning eight months before the financial year-end and ending four months after the financial year-end;
REV_t = reversal amount scaled by total assets at end of year t;
REV'_t = reversal amount scaled by the market value of equity at the end of year t-1;
CFO_t = net cash flow from operations in year t divided by total assets at end of year t;
ΔCFO_t = change in net cash flow from operations from year t-1 to year t divided by total assets at end of year t;
$OPIN_t$ = operating income before reversals in year t divided by total assets at end of year t;
$\Delta OPIN_t$ = change in operating income before reversals from year t-1 to year t divided by total assets at end of year t;
NI_t = net income before reversal in year t scaled by market value of equity at the end of year t-1;
WC_t = working capital in year t divided by total assets at end of year t;
ΔWC_t = change in working capital from year t-1 to year t divided by total assets at end of year t;
$SIZE_t$ = the natural log of total sales at end of year t;
MTB_t = the market to book ratio at end of year t;
BTM_t = the book to market value ratio at the end of year t-1;
D = 1 if the firm is a non-earning manager, i.e. its AWCA lies in the range between 31st and 70th percentile among reversal firms. It is equal to 0 if the firm is an earning manager, i.e. its AWCA is above 70th percentile.

Table 8. Relationship between impairment loss reversals, firm performance, and incentive to manage earnings incorporating accumulated impairment loss

$$CFO_{t+1} = \alpha + D + \beta_1 REV_t + \beta_2 D*REV_t + \beta_3 CFO_t + \beta_4 WC_t + \beta_5 SIZE_t + \beta_6 MTB_t + \beta_7 BACC_t + \varepsilon_t \quad (1B)$$

$$\Delta CFO_{t+1} = \alpha + D + \beta_1 REV_t + \beta_2 D*REV_t + \beta_3 \Delta CFO_t + \beta_4 \Delta WC_t + \beta_5 SIZE_t + \beta_6 MTB_t + \beta_7 BACC_t + \varepsilon_t \quad (2B)$$

$$OPIN*_{t+1} = \alpha + D + \beta_1 REVt + \beta_2 D*REV_t + \beta_3 OPINt + \beta_4 SIZEt + \beta_5 MTBt + \beta_6 BACC_t + \varepsilon_t \quad (3B)$$

$$\Delta OPIN*_{t+1} = \alpha + D + \beta_1 REV_t + \beta_2 D*REV_t + \beta_3 \Delta OPIN_t + \beta_4 SIZE_t + \beta_5 MTB_t + \beta_6 BACC_t + \varepsilon_t \quad (4B)$$

$$AbReturn_t = \alpha + D + \beta_1 REV'_t + \beta_2 D*REV'_t + \beta_3 NI_t + \beta_4 BTM_t + \beta_5 BACC'_t + \varepsilon_t \quad (5B)$$

Variable	Equation 1B	Equation 2B	Equation 3B	Equation 4B	Equation 5B
	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)
D	-0.0086	-0.0077	-0.0403	-0.1852	-0.2696
	(0.575)	(0.588)	(0.116)	(0.081)	(0.034)
REV	-1.2268	-1.5608	-2.7483	-6.2561	
	(0.001)	(0.000)	(0.009)	(0.063)	
D*REV	1.4287	1.4357	4.4099	7.8246	
	(0.029)	(0.016)	(0.013)	(0.068)	
REV'					1.4483
					(0.632)
D*REV'					9.0618
					(0.001)
CFO	0.3068				
	(0.004)				
ΔCFO		-0.6302			
		(0.000)			
OPIN			0.9230		
			(0.000)		
ΔOPIN				-0.6059	
				(0.000)	
NI					1.3757
					(0.000)
WC	0.0531				
	(0.161)				
ΔWC		0.0872			
		(0.101)			
SIZE	0.0121	0.0058	0.0108	0.0825	
	(0.013)	(0.167)	(0.280)	(0.082)	
MTB	0.0102	0.0048	0.0156	0.1523	
	(0.269)	(0.467)	(0.289)	(0.075)	
BTM					-0.1516
					(0.002)
BACC	0.0119	0.0560	-0.0138	-0.0362	
	(0.819)	(0.233)	(0.942)	(0.781)	
BACC'					-1.0931
					(0.701)
Intercept	-0.2080	-0.1025	-0.1639	-0.2311	0.2400
	(0.031)	(0.194)	(0.388)	(0.157)	(0.041)
N	108	108	108	108	107
Adjusted R^2	0.2371	0.4714	0.3124	0.2652	0.1889

Cont'd

Variable definitions:

CFO_{t+1} = net cash flow from operations in year t+1 divided by total assets at end of year t;

ΔCFO_{t+1} = change in net cash flow from operations from year t to year t+1, CFO_{t+1} - CFO_t, divided by total assets at end of year t;

$OPIN^*_{t+1}$ = operating income before depreciation and amortization expenses, reversal amount and AWCA in year t+1 divided by total asset at end of year t;

$\Delta OPIN^*_{t+1}$ = change in operating income before depreciation and amortization expenses, reversal amount and AWCA from year t to year t+1 divided by total asset at end of year t;

AbReturn $_t$ = control group-adjusted returns beginning eight months before the financial year-end and ending four months after the financial year-end;

REV_t = reversal amount scaled by total assets at end of year t;

REV'_t = reversal amount scaled by the market value of equity at the end of year t-1;

CFO_t = net cash flow from operations in year t divided by total assets at end of year t;

ΔCFO_t = change in net cash flow from operations from year t-1 to year t divided by total assets at end of year t;

$OPIN_t$ = operating income before reversals in year t divided by total assets at end of year t;

$\Delta OPIN_t$ = change in operating income before reversals from year t-1 to year t divided by total assets at end of year t;

NI_t = net income before reversal in year t scaled by market value of equity at the end of year t-1;

WC_t = working capital in year t divided by total assets at end of year t;

ΔWC_t = change in working capital from year t-1 to year t divided by total assets at end of year t;

$SIZE_t$ = the natural log of total sales at end of year t;

MTB_t = the market to book ratio at end of year t;

BTM_t = the book to market value ratio at the end of year t-1;

$BACC_t$ = beginning balance of accumulated impairment loss scaled by total assets at end of year t;

$BACC'_t$ = beginning balance of accumulated impairment loss scaled by market value of equity at the end of year t-1;

D = 1 if the firm is a non-earning manager, i.e. its AWCA lies in the range between 31st and 70th percentile among reversal firms. It takes the value 0 if the firm is an earning manager, i.e. its AWCA is above 70th percentile.