An evaluation of asset impairments by Australian firms and whether this was impacted by AASB 136

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Abstract

This paper evaluates how managers of Australian firms are implementing the regulation requiring the impairment of assets and whether asset impairments can be categorised as non-discretionary. Consistent with asset impairments being non-discretionary, we find some evidence that realised asset impairments are reflective of regulatory requirements. However, for the majority of firms exhibiting at least one externally observable indicator of impairment we find no evidence that they are recognising asset impairments, and recognition is often delayed. Accordingly, while realised asset impairments might be categorised non-discretionary, when to recognise them is highly discretionary. There is some evidence that realisation of asset impairments increased subsequent to transition to IFRS, however the majority of firms with indicators of impairment are still not recognising asset impairments. This suggests potential issues with either compliance with the regulation, or that firms exhibiting indicators of impairment are not making sufficient financial statement disclosures relating to the determination of recoverable amount to enable resolution of uncertainty about firm value.

1.   Introduction

Conservatism is considered by many to be an important attribute of information contained in financial statements (Watts 2003), and regulation requiring asset impairment contributes to the realisation of what is commonly labelled non-discretionary conservatism (Ahmed *et al.* 2002). With this in mind, the objective of this paper is to evaluate how managers of Australian firms are implementing the regulations requiring asset impairment through an examination of realised asset impairments in publically available financial statements. This is undertaken between 2000 and 2012, because it includes periods when the requirement for asset impairments were addressed by AASB 1010 *Recoverable amount of non-current assets*, as well as the period subsequent to transition to International Financial Reporting Standards (IFRS) when they were addressed by the more prescriptive AASB 136 *Impairment of assets.*[1] Of particular interest is whether there is evidence of firms implementing the regulation requiring the impairment of assets in a manner consistent with the economic circumstances, financial performance and asset values of the firm as intended by the regulators.[2] In essence, is the regulation being complied with and contributing to non-discretionary conservatism. Furthermore, did the realisation of asset impairments change with transition to IFRS and the implementation of AASB 136 which is much more prescriptive in the measurement of 'recoverable amount' and is central to the determination of asset impairments? Finally, is information being disclosed in financial statements that resolves uncertainty about firm value?

The first motivation for this paper is to enhance our understanding of the realisation of asset impairments by Australian firms, and the extent to which this is consistent with the

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[1] The Australian equivalents to IFRS were adopted for financial years beginning on or after 1 January 2005. For most firms with 30 June year ends, 30 June 2006 was the first year of applying the Australian equivalents to IFRS. Hence, in the interests of simplicity, we will refer to 2006 onwards as the IFRS period, although it does include 31 December 2005 year ends.
[2] An example of this intent is provided by introduction to IAS 36 *Impairment of Assets* (Para IN7). Amendments to the regulation are discussed and the requirement for assumptions in determining recoverable amount to recognise actual historic performance is identified.

regulations requiring asset impairment. In an efficient market (Fama 1991) prices reflect all publicly available information and so when book values are in excess of market values this suggests information in financial statements is not conservative, so firms are either overvaluing their assets, or there may be insufficient public (as opposed to private) information available to enable determination of a more informed market value. The later would include information about future returns (i.e. private information) not being reflected in current period returns and related disclosures (i.e. public information).

Support for this study is provided by a number of high profile firms that have persistently reported book values in excess of market values, and where the realisation of the asset impairments has been delayed. Furthermore, there are scant public disclosures explaining why the impairments did not occur, and there are no subsequent increases in market values. Both are matters of concern in relation to the implementation of AASB 136. Examples include Qantas Limited, which had a market value substantially less than book value for five years, in some case by as much as 50%. This persisted from 2009 until 2013, a period where profitability and operating cash flows were at best marginal. These factors would all be considered indicators of impairment and collectively suggest the recognition of asset impairments. Additionally, they would be relevant to the determination of recoverable amount and the measurement of asset impairments. It was not until 2014 that asset impairments of $2.947 billion were eventually realised and aligning book value with market value. Similarly, Fairfax Media Limited reported poor financial performance and a market value significantly less than book value for a number of years. Asset impairments of $2.865 billion were finally realised in the 30 June 2012 financial report. Seven West Media Limited also had a market value substantially less than book value from 2011, declining to as much as 64%. The firm eventually realised asset impairments of $1.090 billion in its 2015 financial year. In each of these cases, based on comparison of book value to market value asset impairments appeared to be delayed,

and there were scant public disclosures supporting the decision not to impair assets other than to say that the regulation was complied with (i.e. trust me).

Concerns with how the regulation requiring asset impairment is being implemented have also been expressed recently with the Australian Securities and Investments Commission (ASIC) noting problems with the mismatching of cash flows, the reasonableness of cash flow assumptions, the identification of cash generating units, and public disclosure.[3] However, ASIC's concerns are largely driven by anecdotal evidence rather than systematic empirical analysis. This suggests evaluation of the financial statements (i.e. public information) of firms to provide insights into how the regulation is being implemented and asset impairments are realised in practice.

The second motivation for this paper is to provide insights into the nature and cause of conservatism. While conservatism is no longer explicitly recognised as a qualitative characteristic of financial information in the IASB *Conceptual Framework for Financial Reporting*, it remains a feature of financial reporting regulation and practice and this has been evaluated empirically in general terms (Basu 1997). Consideration has been given to the contracting incentives for conservatism (Watts 2003), and these have been evaluated empirically in a range of contexts (e.g., Ahmed *et al.* 2002; Nikolaev 2010). The focus in these studies is typically on discretionary conservatism, and a concern is that limited attention has been given to how the results are impacted by non-discretionary conservatism. Non-discretionary conservatism arises as a consequence of the application of regulation such as AASB 136 rather than the exercise of management discretion and professional judgement. A notable exception is Lawrence *et al.* (2013) who find evidence of asset impairments giving rise to non-discretionary conservatism, but they also identify limitations in distinguishing discretionary and non-discretionary conservatism. By focusing more closely on firms where

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[3] ASIC Media Release 13-160 ASIC's area of focus for 30 June 2013 financial reports.

book value exceeds market value, evaluation of asset impairment will more likely provide new insights into the identification and level of non-discretionary conservatism.

A third motivation for this study is to evaluate the impact of differences in the style of regulation on its implementation. With transition to IFRS and the implementation of AASB 136 the regulation requiring asset impairment while maintaining the same concepts was much more prescriptive in the measurement of recoverable amount, and hence the determination of asset impairments. An evaluation of differences in the recognition and measurement of asset impairments across the two periods is relevant for regulators who may be concerned with how regulatory style impacts the implementation of regulation.

This paper extends a growing stream of research which evaluates asset impairments. Asset impairments have been the subject of extensive investigation internationally (e.g. Jarva 2009; Riedl 2004) as well as in Australia (Cotter *et al.* 1998). However, this research has generally focused on the identification of opportunistic motivations for the realisation of asset impairments and these have been required by regulation and so considered as discretionary, rather than non-discretionary. The implementation of AASB 136 has also been considered with respect to the impairment of goodwill, and in particular the discount rates used and disclosed (e.g. Bradbury 2010; Carlin *et al.* 2009). However, the issue of how the regulation is being implemented more generally has received little attention. Accordingly, this paper extends the asset impairment literature and provides insights into whether the presence of indicators of impairment observable publicly in financial statements is manifesting in the recognition of asset impairment, and whether the measurement of aggregate asset impairments is reflective of the determinants of recoverable amount. This is of concern to standard setters, financial market regulators, auditors, and financial statement users alike.

The paper also extends the literature evaluating accounting conservatism (e.g., Ahmed *et al.* 2002; Basu 1997; Lawrence *et al.* 2013; Roychowdhury *et al.* 2007; Ruddock *et al.* 2006;

Watts 2003). A feature of this literature is that it identifies the effects of conservatism on financial statements, and it generally identifies the incentives for conservatism as discretionary. Little attention has been directed to conservatism arising from the application of regulation which we categorised as non-discretionary. This is problematic if poor financial performance which necessitates asset impairments is associated with the incentives for discretionary conservatism (e.g. management change). Critically, not controlling for non-discretionary conservatism may bias tests of discretionary conservatism. Accordingly, the paper extends this literature by considering the nature and cause of non-discretionary conservatism for which controls are necessary in the studies evaluating discretionary conservatism.

For a sample of 5,842 Australian firm-years between 2000 and 2012 we find 1,764 firm-years (30.2%) that report at least one indicator of impairment (i.e. the book value exceeding market value).[4] In only 475 (8.1%) firm-years are asset impairments recognised, and the impact of the asset impairments on book value is generally immaterial. For the subsample of firms with a book value in excess of market value (1,764 firm-years) the majority report poor performance, suggesting the presence of more indicators of impairment. However, only 201 of these firm-years (11.4%) recognise asset impairments. There is only limited evidence of asset impairments being associated with indicators of impairment more generally and this is a consequence of the limited number of firms recognising asset impairments. There is some evidence that this increased with the application of the more prescriptive requirements of AASB 136, but there is little evidence of an association between the recognition of asset impairments and indicators of impairment.

Hence, the first contribution of this paper is to identify the problem of many firms exhibiting indicators of impairment not recognising asset impairments. While there is an

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[4] While the incidence of firm-years with a book value greater than market value is higher than the 25.9% reported by Lawrence *et al.* (2013) this is expected and likely a consequence of their measuring book to market one year prior to impairment, together with the more recent time period considered in this paper and there being smaller firms listed on the Australian stock market.

increase in the recognition of asset impairments subsequent to the adoption of more prescriptive regulation the problem of many firms appearing not to comply with the regulatory requirements for recognising asset impairments persists. This identifies a limitation of the present disclosure requirements by focusing on firms making impairments (i.e. AASB 136, para 126), and the need to extend these requirements to situations where there are indicators of impairments and management is applying its discretion and deciding to not recognise impairment. Additional disclosures on the determination of asset values is relevant not only for regulation relating to asset impairment, but also to regulation prescribing asset values other than historic cost, such as fair values. This may resolve measurement uncertainty in relation to asset values and improve financial statement relevance.

The second contribution of this paper is that with so few firms-years recognising asset impairments, even when indicators of impairment are present, this makes it difficult to categorise the recognition of asset impairments as non-discretionary. Furthermore, with asset impairments recognised where there are no externally observable indicators of impairment it is also difficult to categorise these as non-discretionary. However, a limitation is that asset impairments are determined at the individual asset or cash generating unit, and our evaluation is limited to firm-level information which likely overstates the problem. On this basis it is more likely that the decision on when to recognise (or alternatively when not to recognise) is highly discretionary. Additional disclosures along the line suggested above would allow for more accurate evaluation of the decision to recognise asset impairments.

For the full sample of 5,842 firm-years there is some evidence that asset impairments are associated with factors relevant to the determination of asset impairments, although this result is not as strong as expected given the role of regulation. This may however be a consequence of using firm level information, although the infrequency of firms recognising asset impairments is likely more problematic. For the 1,764 firm-years where there is at least one

publicly observable indicator of impairment, there is some evidence that asset impairments are associated with factors relevant to the measurement of asset impairments. This result is much stronger than for the full sample as determinants of asset impairments are less likely to be obscured in firm-level information. However, the result is a consequence of a relatively small number of material asset impairments being reflective of factors associated with the measurement of asset impairments. While this is supportive of amounts realised as asset impairments being categorised as non-discretionary conservatism, the overwhelming majority of firms are not recognising asset impairments. To provide insights, expected asset impairments are modelled and this suggests that 93.4% of firm-years with at least one indicator of impairment ostensibly should have been realising asset impairments (i.e., there was little difference between firms realising asset impairments and those not). This result may be biased as it is limited to using publicly available, and management decisions might be justified by additional information. However, using aggregate firm level information is likely to understate the result.

Hence, the third contribution of this paper is that while for firms realising asset impairments there is an association between asset impairments and factors relevant to the determination of asset impairments, a majority of firms are not recognising any asset impairments. Furthermore, many asset impairments realised are not material. This suggests expansion of the disclosure requirements for firms making impairment decisions, including the decision not to recognise asset impairments, to provide financial statement users with relevant information to explain how either fair value or recoverable amounts have been determined. It also suggests the need for greater regulatory oversight of asset impairment decisions.

The fourth contribution of this paper is to identify that while the requirements for asset impairment may persist for a number of periods, when it is finally realised it might be considered non-discretionary. However, based on public information many asset impairments

appear to be delayed or are not recognised on a timely basis, with a catalyst typically required before it is finally recorded. This likely explains the strength of results for opportunistic incentives to recognise asset impairments (e.g., Wells 2002) relative to economic factors. For the literature considering conservatism this suggests that the decision not to recognise asset impairments might be categorised discretionary, but when they are recognised the determination of the amount of asset impairments follows the regulation. Hence, amounts realised might be reasonably considered non-discretionary.

Of the 475 firm-years where asset impairments are realised, only 130 (27.4%) include the impairment of goodwill. This is a consequence of the number of cash generating units in firms and how goodwill is allocated across the cash generating units.[8] There is also some evidence that goodwill impairments are more likely to be associated with CEO changes. Hence, another contribution of this paper is to identify a limitation of the literature that considers impairment of goodwill only, with the recognition of impairments of goodwill being more sensitive to discretionary factors. Given the focus on goodwill impairments in many studies, and the subjectivity of goodwill valuation, the strong findings for opportunistically motivated goodwill impairments are likely expected. For the firms realising asset impairments, only 201 (42.7%) had a book value greater than market value. Therefore, the final contribution of this study is that the evaluation of asset impairments is problematic; impairment decisions are evaluated at the cash generating unit level and this may be obscured in aggregate firm-level information.

The remainder of the paper is organised as follows. Section 2 provides an overview of the regulation and prior research into asset impairment from which our hypotheses are developed. Section 3 describes the research design, while Section 4 provides the sample selection procedure and some preliminary descriptive statistics. Section 5 sets out the main results of the analysis regarding asset impairment. Finally, Section 6 presents the conclusions

of the study.

2.   Regulatory background and theory development

2.1   Regulatory Background

Since 2000 there has been a regulatory requirement in Australia for non-current assets to be recognised at no more than recoverable amount. In the period immediately prior to transition to IFRS this was addressed by AASB 1010 *Recoverable amount of non-current assets* and when this standard was issued in 2000 there was the intention that it should be in general conformity with IAS 36 as it was issued in 1998. This was reflective of a broad strategy of convergence being followed at the time by the AASB[5] and this is evidenced by the terminology used. This includes the use of the term 'recoverable amount' and the stated requirement for an asset to be written down to its 'recoverable amount' when the 'carrying amount' is greater than 'recoverable amount' (para 5.2). However, 'recoverable amount' was not precisely defined, and was merely described as the net amount of cash flows expected to be recovered from continued use of assets and disposal. Little explanation was provided for how this should be determined. Nor was the discounting of cash flows specifically addressed, and there were anecdotes of net cash flows not being discounted.

With transition to IFRS the requirements for asset impairment prescribed in IAS 36 were adopted in AASB 136 *Impairment of assets*. In contrast to the prior standard, AASB 136 is highly prescriptive of how decisions on asset impairments should be made, how 'recoverable amount' is measured, and hence how asset impairments should be determined. It includes specific requirements that firms should undertake impairment testing where there are indicators of impairment, such as: significant decline in firm value; significant changes in technology,

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[5] See Policy Statement 6 International Harmonisation Policy issued by the AASB and PSASB in 1996.

market, economic or legal environments; changes in market interest rates; asset obsolescence; or changes in asset utilisation (AASB 136, para 12).

Impairment testing requires the determination of the 'recoverable amount' of the asset, which is defined as the higher of 'fair value' or 'value in use' (AASB 136, para 6). In terms of the volume of regulation, there are 40 paragraphs addressing the determination of 'recoverable amount', of which 28 paragraphs address the estimation of value in use. For some assets, where 'fair value' is observable in an active market, this will be relatively straightforward. For other assets, 'fair value' will need to be estimated using a valuation model, with observable inputs where possible. These inputs are likely to be similar to those that would be relevant to the determination of 'value in use', although they may be subject to fewer constraints. With regard to 'value in use', guidance is provided describing the procedures for estimating future cash flows and discounts rates (AASB 136, para 30). Impairment testing involves the comparison of carrying value with 'recoverable amount', and impairment is required to ensure that 'carrying value' does not exceed 'recoverable amount' (AASB 136, para 59).

When implementing AASB 136 it will often be applied to groups of assets, referred to as cash generating units, rather than individual assets. However, a process consistent with that outlined above is applied to the cash generating unit, and an order is prescribed for the impairment of assets within a group. Goodwill within a cash generating unit is impaired first, and then, subject to conditions, the remaining assets are impaired on a pro-rata basis (AASB 136, para 104). This creates a number of issues when evaluating asset impairments if there is more than one cash generating unit within a business.

First, determination of whether asset impairments are required within particular cash generating units may not always be possible from aggregate firm-level information.[6] At the

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[6] Although AASB 136, para 132, encourages firms to disclose how they come to such decisions within cash generating units, unlike other paragraphs used to determine the calculations, the disclosure regulation is not prescriptive. Accordingly, this information about the relative size and loss of value within the separate cash generating units is not disclosed.

firm-level, where market value exceeds book value, it is possible that there will be no cash generating units where recoverable amount is less than carrying amount and no impairment is necessary. However, there may be individual cash generating units where recoverable amount is less than carrying amount. Accordingly, impairment may be necessary notwithstanding there being no externally identifiable indicators.[7] Where aggregate firm-level market value is less than book value, it is likely that there will be at least one cash generating unit where recoverable amount is less than carrying amount and impairment will be necessary. In this study the focus is on how firms are implementing the regulation, so while considering all firms, particular attention is focussed on those where market value is less than book value (an indicator of impairment, AASB 136, para 12(d)) and impairment testing is necessary.

Second, whether impairment within a cash generating unit is applied to goodwill or other assets will depend on the allocation of goodwill across the cash generating units of the firm. If no goodwill has been allocated to the cash generating unit for which impairment is required, assets other than goodwill will be subject to impairment. This is an issue for studies that evaluate impairment of goodwill only (e.g. Ramanna *et al.* 2012)) and it is for this reason that the focus is on impairment generally rather than goodwill alone.[8]

Critically, how this regulation is being implemented and whether asset impairments are realised, where necessary, is a major concern for standard setters, financial market regulators, and financial statement users. Furthermore, with transition to IFRS a more prescriptive approach was taken to the measurement of 'recoverable amount', and the concern is whether this impacted the realisation of asset impairments.

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[7] Consistent with this we observe that of the 475 observations where asset impairments are realised 57.6% arise where book value is less than market value.

[8] In this regard we note that in our sample of firms recognising impairment, only 130 (27.4%) are impairing goodwill, and most asset impairments relate to tangible assets (70.1%).. Furthermore, of the 345 firms recognising impairment but not goodwill impairment, 212 firms had goodwill on the balance sheet. This confirms the that goodwill is not been allocated to the cash generating unit where impairment occurs and supports our focus on impairments generally.

2.2   Empirical research

There is a significant literature evaluating asset impairment. This has considered the realisation of asset impairments (e.g Strong *et al.* 1987) and there is evidence that asset impairments are associated with firm economic characteristics and performance (e.g. Cotter *et al.* 1998). However, evidence on price reactions to asset impairment is mixed and this has been attributed to the nature of the assets being impaired and concerns about timeliness in the realisation of asset impairments (e.g. Collins *et al.* 2004; Francis *et al.* 1996; Jarva 2009; Muller *et al.* 2010). The determination of asset impairment requires the use of considerable discretion, hence many studies consider only whether they are opportunistically motivated (e.g. Beatty *et al.* 2006; Christensen *et al.* 2008; Cotter *et al.* 1998; Elliott *et al.* 1988; Francis *et al.* 1996; Garrod *et al.* 2008; Jarva 2009, 2014; Riedl 2004). The results are broadly consistent across different countries and regulatory environments, and suggest asset impairment is frequently opportunistically motivated. Furthermore, there is evidence that effective corporate governance mechanisms may constrain opportunism (e.g. AbuGhazaleh *et al.* 2011).[9]

In many of these studies controls are included for the financial position and performance of the firm. This includes many factors that would, in terms of the current regulation, be labelled indicators of impairment and relevant to the recognition of asset impairments, as well as factors relevant to the determination of recoverable amount and the measurement of asset impairments. However, these factors are not the focus of the prior studies and their relevance to the realisation of asset impairments has received scant separate consideration. Furthermore, sample firms have been broadly selected. This reflects concerns with identifying the association between asset impairments and opportunistic motivations, rather than the extent to which asset

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[9] Much of this literature focuses on goodwill impairment as it is motivated by how *SFAS 142 Goodwill and other intangible assets* was implemented, and how it impacted reporting behaviour. Notwithstanding, there are exceptions such as AbuGhazaleh *et al.* (2011).

impairments are consistent with the requirements of the relevant regulation. Furthermore, if asset impairments are not consistent with the indicators of impairment, whether firm disclosures are plausible and sufficient to explain the excess of book value over market value has not been considered. This is important as the asset impairment realised, and the accompanying disclosures, would provide information about expected future performance and future cash flows. This would lead to lower parameter uncertainty in estimating firm value (Lewellen *et al.* 2002; PÁstor *et al.* 2003) and reduce uncertainty about firm value in the same manner as management earnings forecasts (Rogers *et al.* 2009).

Concurrently, a significant literature has developed evaluating conservatism in financial report information. There has been criticism of conservatism introducing bias, and hence it is no longer included in the IASB's *Conceptual Framework for Financial Reporting.* Notwithstanding, it remains a feature of financial reporting (Basu 1997), and in response to criticism of conservatism representing bias, arguments have been advanced for why this is desirable or efficient (e.g., Watts 2003). Supporting these arguments is a growing empirical literature (e.g., Ahmed *et al.* 2002; Nikolaev 2010), and there are parallels between these studies and the impairment literature. Both emphasise the impacts of management discretion on financial reporting outcomes, as well as the impacts of governance mechanisms (e.g., AbuGhazaleh *et al.* 2011; Ruddock *et al.* 2006), although it is noted that the incentives are generally characterised as efficient in the conservatism literature and opportunistic in the impairment literature. It is also a consequence of the focus on the exercise of management discretion that conservatism in this context is labelled discretionary.

A challenge in studies evaluating discretionary conservatism is distinguishing non-discretionary conservatism which arises from compliance with financial reporting regulation and this has received scant attention. An exception is (Lawrence *et al.* 2013) who through the partitioning of firms on the basis of book to market ratios attempt to discern non-discretionary

conservatism. However, they find that their model of non-discretionary conservatism has limited explanatory power and there is considerable error in the determination of non-discretionary conservatism (and hence discretionary conservatism).

Hence, the focus of this study is on whether there is evidence that financial statement disclosures are consistent with the regulatory requirements for asset impairment, which would also be relevant in determining non-discretionary conservatism. Specifically, whether firms are recognising asset impairments as suggested by the presence of indicators of impairment, and whether the impairments are reflective of factors relevant to the determination of the magnitude of the impairment. This should be distinguished from where firms are recognising impairment, or excessive impairment, for entirely opportunistic reasons.

Hence, attention is first directed towards whether there is evidence that firms realise asset impairments in a manner consistent with the regulation. This is reflected in the following hypotheses addressing recognition and measurement:

H_{1a}: Firms recognise asset impairments where there are indicators of impairment and there is a positive association between the recognition of asset impairments and indicators of impairment.

and:

H_{1b}: The magnitude of the asset impairments realised by firms is consistent with factors relevant to the determination of recoverable amount and there is a positive association between realised asset impairments and factors relevant to the determination of recoverable amount and the measurement of asset impairments.

Distinguishing discretionary and non-discretionary conservatism requires identification of the factors relevant to the realisation of asset impairments. If asset impairments are non-discretionary and only recognised because of the requirements of the regulation there should not be an association with opportunistic incentives for asset impairment or discretionary

conservatism.[10] This is reflected in the following hypotheses considering whether discretionary conservatism arises where the regulation requires the realisation of impairments and conservatism being non-discretionary:

H_{2a}:   Where there are indicators of impairment asset impairments recognised are non-discretionary, there is not a positive association between the recognition of asset impairments and opportunistic incentives for the recognition of asset impairments.

H_{2b}:   Where there are indicators of impairment asset impairments realised are non-discretionary, there is not a positive association between realised asset impairments opportunistic incentives for asset impairments.

The final concern of this paper is whether the style of the regulation impacted its implementation. As discussed in Section 2.1, there was considerable discretion in the application of AASB 1010; this is in stark contrast with the requirements of AASB 136 which would be considered detailed and prescriptive.

While regulators might argue that this is likely to increase compliance, the actual impact is less certain. Shaw (1995) and Beresford (1999) both express concerns about whether accounting and auditing practitioners are able to critically understand and apply complex regulations, because they are likely to contribute to 'standards overload'. These concerns are echoed by Bonner (1994) in relation to auditors. She suggests that more complex tasks, or in this case regulations, are likely to adversely impact auditors judgement as this likely reflects an increasing concern that strict regulatory compliance comes at the expense of being able to exercise professional judgment. This conclusion is supported by Bennett *et al.* (2006) who, based on an analysis of specific regulations, find that more prescriptive regulations require less professional judgement. It is therefore not surprising that Nelson *et al.* (2002) provide evidence that managers are more (less) likely to attempt earnings management, and auditors are less

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[10] Alternatively, if firms recognise asset impairments where there are no indicators of impairment this is more likely to be discretionary conservatism.

(more) likely to constrain it, where accounting regulations are more (less) precise and earnings management actions can be structured to demonstrate compliance with the regulation. This suggests that the change in the regulation relating to asset impairment with transition to IFRS, and the adoption of a more prescriptive regulation, may not have led to greater adherence to the requirements of the regulators.

To provide insights into how the transition to IFRS impacted the realisation of asset impairments and whether this resulted in an increased realisation of asset impairments we test the following hypotheses.

H_{3a}: With the adoption of IFRS and more prescriptive regulation, there is an increase in the recognition of asset impairments.

and:

H_{3b}: With the adoption of IFRS and more prescriptive regulation, there is an increase in the association between realised asset impairments and factors relevant to the determination of recoverable amount and the measurement of asset impairments.

3. Research design

The primary concern of this research is whether there is evidence of firms realising asset impairments as required by the regulation, based on the presence of indicators of impairment and the determinants of recoverable amount (e.g. deteriorating economic circumstances, financial performance, or market capitalisation exceeding asset values). This is reflected in the research design, which addresses the issues of recognition and measurement of asset impairments, whether they are non-discretionary, as well as the impact of regulatory change.

3.1 *Indicators of impairment and the recognition of asset impairments (H_{1a})*

The first stage in the implementation of the regulation is determination of whether there are indicators of impairment and this establishes whether impairment testing is required. The determination of whether asset impairments are necessary requires the exercise of judgement

by management and as a safeguard against over-optimism the regulation identifies specific indicators of impairment. If any of these are present, impairment testing is required (AASB 136, para 12, IAS 36 BCZ24). The presence of indicators of impairment would be expected to create a rebuttable presumption of the need for the recognition of asset impairments (i.e. non-discretionary asset impairments). While these indicators were not explicitly identified in AASB 1010, they are included in the initial version of IAS 36 (issued in 1998) and this would have been considered authoritative. Accordingly, these factors are used to identify where the recognition of asset impairments are likely necessary.

This suggests the estimation of the following model to evaluate how the regulation prescribing asset impairment is being implemented and asset impairments recognised:

$$Impair_{it} = \alpha_0 + \alpha_1 B/M_{it} + \alpha_2 Yrs_{it} + \alpha_3 BHR_{it} + \alpha_4 Earn_{it} + \alpha_5 CF_{it} + \varepsilon_{it} \quad \text{(1a)}$$

As the focus here is on the realisation of asset impairments, *Impair* is in the first instance measured as a dichotomous variable indicating the recognition of asset impairments, this assumes the value 0 if an asset impairment is realised, otherwise 1. This allocation is made as *Impair* is also measured as a continuous variable and negatively signed.

The indicators of impairment considered are those identified in the regulation which would be observable in financial statements and markets. This would include not only external indicators of impairment, but also internal (i.e. private) indicators of impairment which would be known to management and auditors at year end.

A book value in excess of market value is an indicator that the market has determined that the value of assets is less than book value (AASB 136, para 12(d)). Hence, *B/M* is included as an independent variable and is measured as the ratio of the book value of equity adjusted for the recognition of asset impairments over the market value of equity at the end of the financial year. This is calculated at year end which would be relevant to the determination of whether asset impairments are required and this is dictated by our focus on non-discretionary

conservatism. Lawrence *et al.* (2013) considered the prior year ratio as they were also concerned with identifying discretionary conservatism and this necessitated an earlier determination of whether impairment might be required, for which impairment might be an efficient contracting choice. *B/M* is included as a continuous variable as the greater the excess, the stronger the indication is that asset impairments should be realised. If book value has been greater than market value for more than one year, the decline in value that the firm has experienced is not transitory. Furthermore, disclosures made in the prior periods have not resolved uncertainty about asset values and lead to a revision of market value. Hence, *Yrs* is included in the regression and this is a dichotomous variable assuming the value 1 if *B/M* has been greater than 1 for two years (current and preceding), and 0 otherwise.

An increase in the *B/M* may occur because of a substantial decline in market value; however, this may not result in a value greater than one. In these situations there may be individual cash generating units to which the decline in market value can be attributed and this suggests the identification of declines in market value as an indicator of impairment (AASB 136, para 12(a)). Therefore, we complement *B/M* with *BHR*, which is the buy-hold return for the stock over the financial year, as a further indicator of impairment.

Other indicators of impairment may be observable internally during the financial year and available to management at year end when asset impairment decisions are made. These would become observable externally at year end when the financial statements are released. Where the economic performance of an asset is not at a level necessary to justify asset values, asset impairment is necessary (AASB 136, para 12(g)) and evidence of this would include cash flows and profitability (AASB 136, para 14(b)-(d)). Ideally, this would be considered at the cash generating unit level, however this information is not publicly reported. However, as was the case with *B/M*, where aggregate cash flows and profitability is strong there may be no cash generating units where impairment is necessary, but where aggregate cash flows and

profitability is poor there will likely be at least one cash generating unit where the levels of cash flow and profitability indicate impairment is necessary. Accordingly, we include earnings before impairment charges per share (*Earn*) and aggregate cash flow from operating and investing per share (*CF*) as further indicators of impairment, and acknowledge that this will likely underestimate the incidence of asset impairments.[11]

3.2   Determination of recoverable amount and measurement of asset impairments (H₁b)

Impairment of assets is necessary to ensure that the carrying amount of assets is not greater than the recoverable amount of the assets (AASB 136, para 59). This is done either at the individual asset level or the cash generating unit level. There is extensive guidance on the determination of recoverable amount (AASB 13, para 24). For most assets, recoverable amount will be determined having regard to value in use and this is calculated on the basis of estimated future cash flows.

This suggests the estimation of the following model to evaluate the relation between asset impairments and the determinants of recoverable amount which form the basis for measuring asset impairment.

$$Impair_{it} = \beta_0 + \beta_1 Earn_{it} + \beta_2 CF_{it} + \varepsilon_{it} \qquad \text{(1b)}$$

As the concern here is with the measurement of asset impairments, *Impair* is now measured as a continuous variable, being the asset impairment per share realised in the income statement in accordance with the disclosure requirements of AASB 136.

The regulation requires that asset impairments should reflect expected future cash flows, before interest and tax. Estimates of future cash flows are not readily observable and, to the extent that current period earnings and cash flows are predictors of future cash flows, these

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[11] As a sensitivity test we also consider accounting measures *Earn and CF,* together with *Impair* when measured as a continuous variable scaled by market capitalisation.

variables should also be associated with the magnitude of any asset impairment.[12] Support for the use of current period values is provided by limits in the regulation from including any improvements in future cash flows arising from future restructuring, or enhancing or improving the performance of the asset (AASB 136, para 33(b)), while Dechow (1994) suggests the use of earnings as an estimate of future cash flows. Additionally, this should be determined at the cash generating unit level, but as discussed above this is not publicly available information. Accordingly, this necessitates the use of aggregate firm-level information, and the aggregation process will again likely lead to the underestimation of asset impairments. *Earn* and *CF* are as previously defined.

3.3 *Distinguishing non-discretionary conservatism (H$_{2a \text{ and } b}$)*

Distinguishing discretionary and non-discretionary conservatism requires evaluation of whether the incentives for discretionary conservatism remain in circumstances where non-discretionary conservatism is suggested by regulation. Hence, our concern here is primarily on firms that exhibit indicators of impairment, and determining whether an association with incentives for discretionary conservatism persists. We focus on CEO change as this this is widely recognised in the literature as a catalyst for realisation of asset impairments (Cotter *et al.* 1998; Riedl 2004; Wells 2002). This suggests evaluation of the following models relating to recognition and measurement respectively, which include CEO change:

$$Impair_{it} = \alpha_0 + \alpha_1 B/M_{it} + \alpha_2 Yrs_{it} + \alpha_3 BHR_{it} + \alpha_4 Earn_{it} + \alpha_5 CF_{it} + \Delta CEO_{it} + \varepsilon_{it} \ \ (2a)$$

$$Impair_{it} = \beta_0 + \beta_1 Earn_{it} + \beta_2 CF_{it} + \Delta CEO_{it} + \varepsilon_{it} \tag{2b}$$

CEO change is measured as a dichotomous variable which assumes the value of 1 if there was a change in the position during the financial year (i.e., before year end), and 0 otherwise. While some studies have further partitioned CEO changes, such as Wells (2002) who distinguishes

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[12] From available data it is problematic to adjust these numbers for interest payments, and for firms with marginal profitability the issue of tax paid is likely immaterial. This is acknowledged as a limitation of the study.

routine and non-routine changes, this is not undertaken here as the primary concern is not with the evaluation of the opportunistic incentives for asset impairment and this is recognised as a limitation of the paper.

3.4 Impact of regulatory change (H$_{3a \text{ and } b}$)

The change in regulation at transition to IFRS may have impacted the realisation of asset impairments. To evaluate this we first consider differences in the recognition and measurement of asset impairment (reflecting the dependent variable used) by including a dichotomous variable, *IFRS,* which has the value 1 if the financial reports are from the post-transition period (i.e. prepared under AASB 136), and 0 otherwise. This is reflected in the following models which address recognition and measurement respectively:

$$Impair_{it} = \alpha_1 B/M_{it} + \alpha_2 Yrs_{it} + \alpha_3 BHR_{it} + \alpha_4 Earn_{it} + \alpha_5 CF_{it} + \alpha_6 IFRS_{it} + \varepsilon_{it} \quad (3a)$$

$$Impair_{it} = \beta_0 + \beta_1 Earn_{it} + \beta_2 CF_{it} + \beta_3 IFRS_{it} + \varepsilon_{it} \quad (3b)$$

We also consider whether there is a change in the association of the recognition of asset impairments with indicators of impairments, and the measurement of asset impairment with the determinants of recoverable amount. This is reflected in the following models:

$$Impair_{it} = \alpha_0 + \alpha_1 B/M_{it} + \alpha_2 Yrs_{it} + \alpha_3 BHR_{it} + \alpha_4 Earn_{it} + \alpha_5 CF_{it} + \alpha_6 IFRS_{it} +$$
$$\alpha_7 B/M_{it} * IFRS_{it} + \alpha_8 Yrs_{it} * IFRS_{it} + \alpha_9 BHR_{it} * IFRS_{it} + \alpha_{10} Earn_{it} * IFRS_{it} +$$
$$\alpha_{11} CF_{it} * IFRS_{it} + \varepsilon_{it} \quad (3c)$$

$$Impair_{it} = \beta_1 B/M_{it} + \beta_2 Yrs_{it} + \beta_3 BHR_{it} + \beta_4 Earn_{it} + \beta_5 CF_{it} + \beta_6 IFRS_{it} +$$
$$\beta_7 Earn_{it} * IFRS_{it} + \beta_8 CF_{it} * IFRS_{it} + \varepsilon_{it} \quad (3d)$$

All variables are as previously defined.

4. Sample selection and data description

In the first instance, stock price information is obtained from the SIRCA SPPR Database,[13] and firms are matched using firm ticker and year with financial statement and CEO data obtained from the Morningstar DatAnalysis database providing a potential sample of matched firms (11,208 firm-years). Sample observations for this paper are chosen between 2000 and 2012 so as to include an equal number of years before and after the adoption of IFRS in Australia. Firms in the agriculture, financial services and real-estate investment sectors are excluded (3,651 firm-years) because changes in asset values may not be realised as impairments. This is due to the application of fair value accounting (e.g. AASB 140 *Investment Property;* AASB 141 *Agriculture*). This selection is required to ensure that sample firm-years are more likely to be recording assets at (depreciated) cost and decrements in asset value would be realised as impairment in accordance with AASB 136 *Impairment of Assets* or an equivalent.[14] Problematically, asset impairments are not always identified separately in the Morningstar DatAnalysis database, sometimes being aggregated with other items under the label abnormal. To address this, where the database disclosed 'abnormal' items in the firm's financial reports, we reviewed and identified information of asset impairments by hand collection. Firms identified with either missing or unreliable information were removed (368 firm-years) and this provides a final sample of 5,842 firm-years with all necessary information available.

Descriptive statistics for sample firms are provided in Table 1. This shows that for the full sample of firms the mean (median) *BV* was 1.219 (0.418), and the mean (median) *MV* was 2.512 (0.640). The mean value of *Impair* was –0.008 per share and this represents less than

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[13] Initial selection criteria are to include only Australian firms, so any non-Australian firms (e.g. New Zealand firms) are not selected. Furthermore, any firms found with duplicates are also not selected.

[14] While there is provision in other standards such as AASB 116 *Property Plant and Equipment* and AASB 138 *Intangible Assets* for the recognition of assets at other than cost (i.e. the revaluation model), in practice very few firms avail of this choice (e.g. Yao *et al.* 2015). Therefore, it is reasonable to assume that remaining firms have significant assets recorded at cost and AASB 136 *Impairment of Assets* would be the primary regulation for the recognition of reductions in asset values. Asset impairments could be realised for assets measured at fair value between the years where revaluation is undertaken. Accordingly, changes in asset values may be realised as both impairments and revaluations. However, these circumstances are rare and unlikely to influence the results.

0.3% of mean total assets. The mean value of *Impair* would have been influenced by the limited number of firm-years with asset impairments recognised, only 475 firm-years (8.1%). For firms recognising asset impairment, mean impairment is –0.096. Of the firms recognising asset impairment, 130 firms realised an impairment of goodwill, 174 realised an impairment of an identifiable intangible asset, and 333 realised an impairment of tangible assets. This reaffirms the decision to address asset impairment generally rather than focus on goodwill in particular, and suggests that studies focusing on goodwill impairment may be missing a significant proportion of impairments.

[INSERT TABLE 1 HERE]

5. Results

5.1 Recognition of asset impairments and evaluation of whether they are non-discretionary ($H_{1a \ and \ 2a}$).

Attention is first directed to the full sample of firm-years (Table 1) to provide insights into the extent to which there are indicators of impairment and asset impairments are recognised. For the full sample of firm-years the mean (median) *B/M* is 0.929 (0.643) and this indicates considerable skewness in the distribution of this variable. This is confirmed by the 75th percentile being 1.139, and there being a significant number of firm-years with a *B/M* greater than 1, an indicator of impairment, and for which asset impairment is ostensibly an accounting issue. We similarly find skewness in accounting returns. For example, the mean (median) value of *Earn* is 0.124 (0.019) and the 25th percentile value is –0.018. Hence, there are a material number of firm-years exhibiting both internal (i.e. private) and external (i.e. public) indicators of impairment. Surprisingly, this does appear to be reflected in the recognition of asset impairments, with impairments being recognised in only 475 (8.1%) firm-

years. This is not supportive of H_{1a} and firms recognising asset impairments where there are indicators of impairment.

To provide more focused insights into the recognition of asset impairments, attention is next directed at firm-years where book value is greater than market value (Table 2). This is undertaken to focus attention on firm-years where there is at least one indicator that asset impairment is necessary and identifies 1,764 firm-years (30.2% of the full sample). While this is higher than reported in Lawrence *et al.* (2013) this is likely attributable to the number of smaller firms in our sample which may not be subject to the same level of scrutiny and the more recent time period. It is also notable that while the mean values of *Earn* and *CF* are 0.050 and 0.008 respectively, the median values are economically little different from zero. Accordingly, for a majority of this subsample, the existence of indicators of impairment is unlikely to be limited to book value being greater than market value. Hence, it is somewhat surprising that only 201 (11.4%) of these firm-years are recognising asset impairments. While these levels of recognising asset impairments are lower than those reported by Lawrence *et al.* (2013) they also found fewer asset impairments that might reasonably be expected and is again likely attributable to the number of smaller firms in our sample. Again there is little support for H_{1a} and indicators of impairment leading to the recognition of asset impairments. This is also consistent with anecdotal evidence discussed above of asset impairments often being delayed, and empirical evidence of the recognition of asset impairments not being timely (Collins *et al.* 2004).

[INSERT TABLE 2 HERE]

It can also be seen that limiting the sample to firm-years where book value exceeds market value (i.e. *B/M* >1) excludes 274 (57.6%) firm-years where asset impairments are recognised. This is a consequence of impairments being determined at the individual asset or cash generating unit level,and there may not be any publicly observable indicators of

impairment. Hence, while this is suggestive that asset impairments are discretionary, and the likelihood of this is they are overstated.

In this initial evaluation of the recognition of asset impairments there is little to support the proposition that *B/M*, an indicator of impairment, is associated with the recognition of asset impairments. To provide further insight we evaluated the association between the recognition of asset impairments and indicators of impairment more generally (Table 3). Estimating these models requires caution given the low proportion of firm-years where asset impairments are recognised (8.1% of full sample firm-years) together with the number of firm-years where asset impairments are recognised and this may not be indicated by firm-level information (57.6% of impairments are for firms where book value is less than market value). Focusing first on the full sample of firms (Panel A) the co-efficient on cash flow is positive but only significant at the 10% level. This is surprising given the limitations of *CF* as a measure of future cash flows. First, there is evidence in Dechow (1994) that current period earnings are a better indicator of future cash flow. Second, we would expect that firms that are growing may have negative operating and investing cash flow that might be financed by either debt or equity issues. In these circumstances current period cash flow may not be reflective of future period cash flow. The co-efficient on *Earn* is not significant and the co-efficients on *Yrs* and *BHR* do not have the expected sign. Accordingly, there is very limited support for H_{1a} and there being an association between indicators of impairment and the recognition of impairments in the full sample.

[INSERT TABLE 3 HERE]

If the association between indicators of impairment and recognition of asset impairments is not as strong as suggested by the requirements of the regulation it may be that for many firms the recognition of asset impairments is discretionary. To evaluate whether our test of H_{1a} is confounded by discretionary asset impairments, or discretionary conservatism,

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we include ΔCEO in our model, as CEO change is commonly identified as an opportunistic motivation for asset impairment. In this model the co-efficients on *B/M*, *Yrs, BHR, CF* and *Earn* do not change materially, while the co-efficient on ΔCEO does not have the expected sign. Accordingly, even with a control for potential discretionary conservatism there is limited evidence of an association between indicators of impairment and the recognition of asset impairments. This makes distinguishing the recognition of asset impairments as discretionary or non-discretionary in the full sample extremely difficult. This result is likely a consequence of too few firms recognising asset impairments.

Focusing on firms where the *B/M* is greater than 1 and there is at least one indicator of impairment (Panel B), there is some evidence that the presence of indicators of impairment is associated with the recognition of impairment. Again the co-efficient on *CF* is positive and significant as expected and this is consistent with H_{1a}. The co-efficient on *Earn* does not have the expected sign, while the other co-efficients are not significant. On balance there seems limited support for H_{1a} and firms recognising asset impairments where there is at least one indicator of impairment. Again this result is influenced by so few firm-years (201 or 11.4%) with asset impairments recognised.

If there is only limited evidence of the recognition of asset impairment being associated with indicators of impairment, it is unlikely that recognition is non-discretionary. To evaluate this we include ΔCEO in the model. The co-efficient on ΔCEO is not significant and while this might be considered supportive of H_{2a} this is probably not appropriate and is more likely a consequence of the infrequency of firms recognising asset impairments and not distinguishing the nature of the CEO change.

Doubtless an issue in Table 3 is that while there are often indicators of impairment, they may persist for many years and the recognition of the impairments is often delayed. This is confirmed by book values in excess of market values persisting to the subsequent year for

93.3% of firm-years. This would suggest that in practice the timing of the recognition of asset impairments is discretionary, and for many firms there is a decision not to recognise asset impairments as required by regulation.

In summary, for the limited number of firms recognising asset impairments this is likely a reflection of indicators of impairment. This is consistent with the requirements of the regulation and the categorisation of recognised asset impairments as non-discretionary. However, for the majority of firms where there are indicators of impairment, asset impairments are not being recognised and often delayed. This is not consistent with the regulation or the recognition of asset impairments being labelled non-discretionary, and there are a number of consequences of this. First, inclusion of these firms in an evaluation of asset impairments will weaken tests of an association with externally observable economic factors. Second, in the absence of an association with indicators of impairments it is more likely that asset impairments might be considered discretionary and this would contribute to findings of opportunism in the literature (e.g. Riedl 2004). Third, with so many firms recognising impairments where there are no externally observable indicators of impairment, and so few firms recognising impairments where there are externally observable indicators of impairment, distinguishing discretionary and non-discretionary conservatism without individual asset or cash generating unit information is problematic.

5.2 Measurement of asset impairments and evaluation of whether they are non-discretionary (H$_{1b \text{ and } 2b}$).

It is apparent from the above analysis that many firms do not realise asset impairments where it is suggested by regulation. Additionally, many of the impairments realised are immaterial. For example, in Table 1, Panel B the mean value of *Impair* is –0.096, while the median is only –0.026. When the sample is restricted to firms where there is at least one

indicator of impairment (i.e. *B/M*>1), reported in Table 2, Panel B, the mean value of *Impair* is –0.096, while the median is only –0.030.

[INSERT TABLE 4 HERE]

A benefit of using a continuous measure of *Impair* (which is common in the literature considering asset impairments) and only some firms realising material asset impairments, is that the increased variation in dependent variable will increase the likelihood of finding an association between factors relevant to the determination of recoverable amount and asset impairments realised. This is undertaken in Table 4, and the focus is in the first instance on the full sample (Panel A). As expected the co-efficient on *Earn* is positive and significant and this is consistent with H_{1b} and factors relevant to the determination of recoverable amount impacting the measurement of the asset impairments. However, the co-efficient on *CF* is negative which is inconsistent with our hypothesis. For the reasons considered above this is probably not surprising, as well as a consequence of limitations in available data. To provide insights into whether asset impairments might be better classified as discretionary or non-discretionary ΔCEO is included in the model. The co-efficient on *Earn* and *CF* do not change materially while the co-efficient on ΔCEO is negative as expected, albeit not significant. While not consistent with the prior literature on the association between CEO change and asset impairments, this is probably a consequence of the wide sample selection and not distinguishing the nature of CEO change.

When attention is focused on firms where book value is greater than market value (Panel B), there is as expected a marked increase in the explanatory power of the models. Again the co-efficient in *Earn* is positive and significant, while the co-efficient on *CF* is negative. Hence, there is again some evidence consistent with H_{1b} and there being an association between indicators of impairment and asset impairments realised. This is consistent with asset impairments representing non-discretionary conservatism. When ΔCEO is included

in the model there is little change in the explanatory power of the model, and the co-efficient on ΔCEO is still negative, albeit not significant. This is consistent with H_{2b} and there is some evidence that asset impairments might be categorised as causing non-discretionary conservatism.

[INSERT TABLE 5 ABOUT HERE]

A concern with the above analysis is the extent to which the results are a consequence of a limited number of firm-years where material asset impairments were reported. There is also evidence that the realisation of asset impairments is often delayed and factors indicating asset impairment is necessary may prevail for a number of years. To identify the potential extent of this problem equation (1b) was estimated with sample firm-years restricted to those with book value greater than market value and realising asset impairments. The results are presented in Table 5 and the model has good explanatory power (adjusted $R^2 = 46.5\%$) and the co-efficient on *Earn* is positive and significant. The co-efficients from this regression are then applied to the remainder of the subsample of firm-years with *B/M*>1 to determine 'expected' impairment. Asset impairments are predicted for 93.4% of firm-years that did not realise asset impairments. Critically, this is in fact little different from using B/M>1 as an indicator of impairment, and suggests for firms where there is at least one indicator of impairment there is little difference between firms recognising asset impairments and those not.

In summary, there is some evidence of an association between asset impairments realised and determinants of amounts realised for asset impairments. However, this result is again largely a consequence of a limited number of firm-years where asset impairments are realised. Problematically, there are a majority of firms that are not recognising asset impairments where this is suggested by the determinants of recoverable amount, and as suggested by anecdote and prior studies (e.g., Collins *et al.* 2004) they may be much delayed. Accordingly, while the determination of the amount of asset impairments may be dictated by

regulation and considered non-discretionary, the determination of when to recognise (or rather not to recognise) the asset impairment appears discretionary. This also suggests the need for additional disclosures relating to the determination of recoverable amount, especially where no asset impairments are realised.

5.3 The Impact of IFRS on the realisation of asset impairments

An overview of the impacts of IFRS adoption on the realisation of asset impairments is presented in Table 6. Attention is focused on firm-years where book value exceeds market value as these are the firms most likely required to realise asset. Of the sample firm-years in the pre-IFRS period only 39 (5.6%) recognise asset impairments. For those firms recognising asset impairments the mean (median) impairment is -0.062 (-0.026). In contrast in the post IFRS period there are 162 (15.2%) firm-years where asset impairments are recognised and the mean (median) impairment recognised is -0.104 (-0.030). This suggests an increase in the recognition of asset impairments in the period after the adoption of IFRS which is supportive of H_{3a}. Furthermore, the increase in mean asset impairments suggests there are more material asset impairments and this is supportive of H_{3b}.

[INSERT TABLE 6 ABOUT HERE]

To evaluate whether there was an increase in the recognition of asset impairments subsequent to transition to IFRS, we included IFRS and IFRS interacted with the indicators of impairment in the models. The results are presented in Table 7. For the full sample of firms (Panel A), the co-efficient on IFRS is negative and significant. This is consistent with H_{3a} and an increase in the recognition of asset impairments in the post IFRS periods. When the interaction terms are included it is notable that the co-efficient on earnings increases and is significant while the interaction term is negative and significant. The negative co-efficient on the interaction terms is not consistent with H_{3a} and while there was an increase in the

recognition of asset impairments, this was not in association with a specific indicator of impairment. Focusing on firm-years where there is at least one indicator of impairments (Panel B) there is again evidence of an increase in the recognition of asset impairments. The co-efficient on IFRS is negative and significant which is consistent with H_{3a}. However, when IFRS is interacted with the indicators of impairment none have the expected sign. Hence, support for H_{3a} is mixed.

In summary, while there was an increased recognition of asset impairments subsequent to adoption of IFRS, it was not attributable to an increased association with a particular indicator of impairment. This result is however likely impacted by the relatively low level of recognition of asset impairments. Accordingly, while there was an increase in the recognition of asset impairments subsequent to transition to IFRS, they are still not at a level suggested by financial report disclosures and the regulation.

[INSERT TABLE 7 ABOUT HERE]

To determine whether there was an increase in asset impairments realised and there association with determinants of recoverable amount on transition to IFRS we again included IFRS and IFRS interacted with the determinants of asset impairment in the models. The results are presented in Table 8. For the full sample of firms (Panel A) the co-efficient on IFRS is negative and significant. This is consistent with H_{3b} and there being an increase in asset impairments realised with adoption of IFRS. When IFRS is interacted with the factors relevant to the determination of asset impairments there is little evidence of change. Focusing on firms where there is at least one indicator of impairment (Panel B) it is notable that the co-efficient on IFRS is negative and significant as expected. Furthermore, when interactions are included the co-efficient on *Earn* is positive and significant. This is consistent with H_{3b} and there being an increase in asset impairments and an increase in the association with a determinant of asset impairments subsequent to transition to IFRS.

In combination these results suggest that there was an increase in the realisation of asset impairments subsequent to transition to IFRS.[15] Hence, there is some support for H_{3a}. Similarly, we find evidence of an increased association between determinants of asset impairments and impairments realised (H_{3b}). However, evidence persists of firms not recognising asset impairments where there are indicators of impairment.

5.3   Additional tests

A potential issue with the above tests is that the results may be attributable primarily to small firms, which are often thinly traded and whose market values might be subject to measurement uncertainty and considered less reliable. Similarly, small firms may not be subject to the same level of scrutiny from auditors and regulators. To provide insights into whether this is an issue we partitioned firms on the basis of size (results untabulated).[16] Consistent with the concerns expressed above, for firm-years where market capitalisation was less than \$57m and book value exceeds market value, there are only 79 (6.3%) firm-years where asset impairments are recognised. In contrast, for firms with a market capitalisation greater than \$57m and book value exceeds market value, there are 122 (23.6%) firm-years where asset impairments are recognised. While this identifies more problems with the recognition of asset impairments in small firms, the median values of earnings and cash flow for large firms indicate that the majority of these firms are still experiencing poor performance and concerns about lack of recognition of asset impairments persist for all firms.

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[15] The global financial crisis occurred during the post IFRS period and the negative impact this had on reported earnings may have also contributed to this result.

[16] \$57m is the sample median of market capitalisation.

In our analysis measures of *Impair, Earn* and *CF* are included on a per share basis as suggested by (Barth *et al.* 2009). This reflected our primary concern with financial reporting effects. An additional sensitivity we undertook is to repeat the analysis with these variables scaled by market value. The results did not change materially, and in some cases marginally stronger. This likely reflects relatively lower market values for firms making asset impairments.

Finally, we undertook the analysis with separate measures of *Impair* reflecting the nature of the assets subject to impairment (i.e. goodwill, identifiable intangible assets and tangible assets). The results were generally consistent and this is reflective of many firms writing off more than one category of assets. However, it was notable that when attention was focused on impairments of goodwill then the co-efficient on ΔCEO was consistently negative and significant (as expected). This is likely reflective of goodwill arising through acquisitions, and the incoming CEO suggesting that there was either overpayment or that the expected benefits were not realised. This is consistent with the literature considering CEO change (e.g., Pourciau 1993; Wells 2002).

6. Conclusion

The objective of this paper is to evaluate how the regulation prescribing asset impairment is being implemented by managers through an examination of asset impairment being realised in financial reports. Of particular concern is whether there is evidence that the regulations are being complied and whether this contributes to non-discretionary conservatism. Furthermore, does this result change with transition to IFRS and implementation of the more prescriptive AASB 136.

We find that asset impairments are not as common as might be expected and for 5,842 firm-years over the period 2000 to 2012 only 475 (8.1%) recognise asset impairments. Of these

sample firms 1,764 (30.2%) have a book value exceeding market value and hence there is at least one indicator of impairment. For these same firms there is also evidence that the majority report poor performance with reported earnings and cash flows being economically immaterial or negative. However, only 201 (11.4%) of this subsample of firm-years recognised asset impairments and there is only weak evidence of an association between indicators of impairment and of the recognition of asset impairments. There is also evidence that the excess of book value over market value persists to the end of the subsequent year and that this is not a consequence of transitory factors. There is some evidence that the recognition of asset impairments increased with transition to the more prescriptive requirements of AASB 136, and there is increased recognition of asset impairments for large firms. However, issues with the recognition of asset impairments persist.

Hence, the first contribution of this paper is to demonstrate that there is little evidence of firms complying with the regulatory requirements for recognising asset impairments. While some firms recognise asset impairments, a majority of firms exhibiting indicators of impairment are not recognising asset impairments. Problematically, where there are observable indicators of impairment and asset impairments are not recognised, the mandated disclosures are minimal. Enhanced disclosure requirements addressing the situation where management decide not to recognise asset impairments would facilitate more critical evaluation of accounting decisions by financial statement users and regulators. This would reduce measurement uncertainty and provide additional information about expected future performance. Consideration of additional disclosures on the determination of asset values may also be suggested in regulation prescribing asset values other than historic cost, such as fair values, to reduce uncertainty about how values have been determined.

The second contribution of this paper is that with so few firms recognising asset impairments it is difficult to categorise the recognition of asset impairments as non-

discretionary. Furthermore, with firms recognising asset impairments where there are no externally observable indicators of impairment it is more likely that they are discretionary. However, a limitation is that asset impairments are determined at the individual asset or cash generating unit level which likely overstates the problem. The incidence of firms not recognising asset impairments suggests that the decision to recognise (or more correctly not to recognise) an asset impairments is highly discretionary. Additional disclosures along the lines suggested above would facilitate evaluation of the decision not to recognise asset impairments.

The association between asset impairments and factors relevant to the determination of recoverable amount was also evaluated. Based on a subsample of firms where there is at least one indicator of impairment, we find evidence that asset impairments are associated with current period earnings before impairment charges. However, a number of issues arise in this analysis. Many of these firm-years do not realise asset impairments, and for those that do, the asset impairments are often immaterial. Focusing on a limited sample of firm-years exhibiting an indicator of impairment and realising asset impairments, we estimated expected asset impairments for firms exhibiting at least one indicator of impairment but not realising asset impairments. Critically, this suggested that 93.4% of these firms should have realised asset impairments. Simply, with publically available firm-level information there was little to distinguish firm making asset impairments and those not doing so.

The third contribution of this paper is that while for firms realising asset impairments there is an association between asset impairments and factors relevant to the determination of recoverable amount, the majority of firms are not recognising asset impairments, or realising immaterial amounts. This again suggests a review of the disclosure requirements for firms to enable more critical evaluation of management's determination of recoverable amount by financial statement users and regulators. This should consider either the nature of the

information disclosed or whether the disclosures are extended beyond the cash generating unit where the asset impairment is realised.

The fourth contribution of this study of this study is that while the decision to recognise (or more correctly not to recognise) might be discretionary, when asset impairments are recognised they are reflective of the regulatory requirements. Hence the amounts realised might reasonably be considered non-discretionary.

Of the 475 firm-years where asset impairments are realised, only 130 (27.4%) include an impairment of goodwill. This is a consequence of the number of cash generating units in the firm and how goodwill is allocated across the cash generating units. Impairments of goodwill are more likely to be associated with a CEO change. Another contribution of this paper is to identify a limitation of the literature that consider impairment of goodwill only, and that the impairment of assets should be considered more generally. Of the firm-years realising asset impairment, only 201 (42.7%) had a book value greater than market value and there is an observable indicator of impairment. A final contribution of this study is that the evaluation of asset impairment is problematic as impairments are evaluated at the cash generating unit level which may be obscured in aggregate firm-level information. Given that management turnover is commonly associated with poor performance of the firm (e.g. Warner *et al.* 1988), and this may or may not be fully discernible from aggregate firm-level information, strong findings for opportunistically motivated asset impairment is likely expected.

There are a number of limitations in this study, but the most critical is that asset impairment are evaluated with firm level information, rather than information at the cash generating unit. Unfortunately, this is not publicly available and this would enable much more critical insights. Additionally, how the investors reacted to the disclosure of impairments and the impact on share prices was not evaluated. These were beyond the scope of the paper.

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Table 1 Descriptive statistics
Descriptive statistics for firm-years for sample firms listed on the ASX between 2000 and 2012 with data available

Panel A: Descriptive statistics for all firm-years								
	Obs.	**Mean**	**Std. Dev**	**Min**	**p25**	**Median**	**p75**	**Max**
Assets	5842	3.099	10.962	0.000	0.164	0.781	2.812	234.927
Liabilities	5842	1.872	9.909	0.000	0.028	0.292	1.370	224.359
BV	5842	1.219	2.312	0.000	0.108	0.418	1.350	42.398
MV	5842	2.512	5.988	0.001	0.150	0.640	2.460	119.950
B/M	5842	0.929	1.090	0.000	0.349	0.643	1.139	19.292
Impair								
• Goodwill	5842	-0.003	0.034	-1.243	0.000	0.000	0.000	0.000
• Identifiable intangibles	5842	-0.002	0.022	-0.710	0.000	0.000	0.000	0.000
• Tangibles	5842	-0.003	0.027	-0.978	0.000	0.000	0.000	0.000
• Total	5842	-0.008	0.058	-1.439	0.000	0.000	0.000	0.000
Earn	5842	0.124	0.506	-6.802	-0.018	0.019	0.163	13.986
CF	5842	-0.033	1.091	-33.230	-0.063	-0.007	0.078	13.898

Panel B: Descriptive statistics of impairments for firm-years realising asset impairments								
	Obs.	**Mean**	**Std. Dev**	**Min**	**p25**	**Median**	**p75**	**Max**
Goodwill	130	-0.128	0.192	-1.243	-0.148	-0.044	-0.010	-0.000
Identifiable intangibles	174	-0.065	0.112	-0.710	-0.080	-0.018	-0.003	-0.000
Tangibles	333	-0.053	0.103	-0.978	-0.054	-0.017	-0.004	-0.000
Total	475	-0.096	0.180	-1.439	-0.105	-0.026	-0.005	-0.000

Where:

Assets	:	Total assets adjusted for impairments per share for firm i in year t
Liabilities	:	Total liabilities per share for firm i in year t
BV	:	Book value of equity (or net assets) adjusted for impairments recognised per share for firm i in year t
MV	:	Market price per share at year end for firm i in year t
B/M	:	BV/MV
Impair	:	Aggregate impairment expense per share for firm i in year t. This is also disaggregated into components relating to Goodwill, Identifiable Intangible Assets and Tangible Assets.
Earn	:	Net profit after tax before special items adjusted for impairments recognised per share for firm i in year t
CF	:	Free cash flow per share for firm i in year t, being the aggregate of cash flow from operations and cash flows from investing activities

Table 2: Descriptive statistics

Descriptive statistics for firm-years for sample firms listed on the ASX between 2000 and 2012 with data available and restricted to firm-years with B/M > 1

Panel A: Descriptive statistics for all firm-years with B/M>1								
	Obs.	**Mean**	**Std. Dev**	**Min**	**p25**	**Median**	**p75**	**Max**
Assets	1764	2.622	8.587	0.003	0.224	0.841	2.639	200.469
Liabilities	1764	1.424	7.501	0.000	0.041	0.348	1.246	188.024
BV	1764	1.187	2.383	0.002	0.152	0.460	1.392	42.398
MV	1764	0.842	2.105	0.002	0.081	0.255	0.875	42.370
B/M	1764	1.973	1.491	1.000	1.200	1.508	2.087	19.292
Impair								
• Goodwill	1764	-0.004	0.042	-1.243	0.000	0.000	0.000	0.000
• Identifiable intangibles	1764	-0.003	0.025	-0.505	0.000	0.000	0.000	0.000
• Tangibles	1764	-0.004	0.033	-0.926	0.000	0.000	0.000	0.000
• Total	1764	-0.011	0.066	-1.439	0.000	0.000	0.000	0.000
Earn	1764	0.050	0.412	-1.587	-0.024	0.006	0.076	11.621
CF	1764	0.008	0.661	-9.961	-0.051	-0.005	0.066	12.858

Panel B: Descriptive statistics of impairments for firm-years realising asset impairments								
	Obs.	**Mean**	**Std. Dev**	**Min**	**p25**	**Median**	**p75**	**Max**
Goodwill	62	-0.111	0.199	-1.243	-0.087	-0.041	-0.014	-0.001
Identifiable intangibles	70	-0.073	0.102	-0.505	-0.105	-0.030	-0.006	-0.000
Tangibles	146	-0.050	0.103	-0.926	-0.046	-0.018	-0.003	-0.000
Total	201	-0.096	0.174	-1.439	-0.105	-0.030	-0.007	-0.000

Where: All variables as previously defined

Table 3: Recognition of asset impairment
Evaluation of the association between the indicators of impairment and recognition of asset impairments, using the dichotomous measure of *Impair*. : Logit firm-year panel data regression models are used. Fixed effects are from the panel data regressions because too few firms are recognising asset impairments leaving insufficient variation in the models and this reduces too many observations from the sample.

Panel A: Full sample of firm-years						
	Eq.(1a)			**Eq.(2a)**		
	Coef.	*z*-stat.		**Coef.**	*z*-stat.	
B/M	0.076	1.319		0.074	1.272	
Yrs	0.509	3.144	***	0.518	3.198	***
BHR	-0.332	-3.377	***	-0.332	-3.371	***
Earn	-0.209	-1.288		-0.196	-1.206	
CF	0.094	1.565		0.091	1.530	
ΔCEO				0.537	2.509	**
Constant	-3.597	-24.171	***	-3.639	-24.154	***
Observations	5842			5842		
Log likelihood	-1.5e+03			-1.5e+03		
LR Chi-squared	44.699			50.600		
Prob > Chi-squared	0.000			0.000		
Fixed Effects	No			No		

Panel B: Sample of firm-years where B/M > 1						
	Eq.(1a)			**Eq.(2a)**		
	Coef.	*z*-stat.		**Coef.**	*z*-stat.	
B/M	0.006	0.086		0.003	0.050	
Yrs	-0.069	-0.314		-0.055	-0.248	
BHR	0.042	0.224		0.034	0.182	
Earn	-1.540	-3.152	***	-1.507	-3.092	***
CF	0.357	2.045	*	0.347	1.996	*
ΔCEO				0.457	1.328	
Constant	-2.714	-10.450	***	-2.754	-10.498	***
Observations	1764			1764		
Log likelihood	-589.313			-588.473		
LR Chi-squared	13.521			15.386		
Prob > Chi-squared	0.019			0.017		
Fixed Effects	No			No		

Where: *p*-values are one-tailed: * = < 0.05; ** = < 0.01, *** = < 0.001

$$Impair_{it} = \alpha_0 + \alpha_1 B/M_{it} + \alpha_2 Yrs_{it} + \alpha_3 BHR_{it} + \alpha_4 Earn_{it} + \alpha_5 CF_{it} + \varepsilon_{it} \quad (1a)$$

$$Impair_{it} = \alpha_0 + \alpha_1 \frac{B}{M_{it}} + \alpha_2 Yrs_{it} + \alpha_3 BHR_{it} + \alpha_4 Earn_{it} + \alpha_5 CF_{it} + \Delta CEO_{it} + \varepsilon_{it} \quad (2a)$$

All variables as previously defined.

Table 4: Measurement of asset impairment
Evaluation of the association between realised asset impairments and determinants of recoverable amount – earnings and cash flows, using a continuous measure of *Impair*. Continuous firm-year panel data regression models are used.

Panel A: Full sample of firm-years						
	Eq.(1b)			**Eq.(2b)**		
	Coef.	*t*-stat.		**Coef.**	*t*-stat.	
Earn	0.020	10.663	***	0.020	10.651	***
CF	-0.007	-7.657	***	-0.007	-7.644	***
ΔCEO				-0.003	-0.916	
Constant	-0.011	-13.666	***	-0.010	-13.008	***
Observations	5842			5842		
Adjusted R^2	0.166			0.167		
F-Stat.	76.15			51.04		
Fixed Effects	Yes			Yes		

Panel B: Firm-years observations where B/M > 1						
	Eq.(1b)			**Eq.(2b)**		
	Coef.	*t*-stat.		**Coef.**	*t*-stat.	
Earn	0.037	7.408	***	0.037	7.371	***
CF	-0.015	-5.770	***	-0.015	-5.725	***
ΔCEO				-0.008	-1.053	
Constant	-0.013	-9.175	***	-0.012	-8.490	***
Observations	1764			1764		
Adjusted R^2	0.418			0.418		
F-Stat.	34.27			23.22		
Fixed Effects	Yes			Yes		

Where: *p*-values are one-tailed: * = < 0.05; ** = < 0.01, *** = < 0.001.

$Impair_{it} = \beta_0 + \beta_1 Earn_{it} + \beta_2 CF_{it} + \varepsilon_{it}$ (1b)

$Impair_{it} = \beta_0 + \beta_1 Earn_{it} + \beta_2 CF_{it} + \Delta CEO_{it} + \varepsilon_{it}$ (2b)

All variables as previously defined.

Table 5: Estimation of Expected Asset Impairments
Estimation of a model for determining 'expected' asset impairment using the subsample of firms where B/M>1, and realising asset impairments. Continuous measure of *Impair* used. With the co-efficients from this model, expected asset impairments are estimated for those firms with B/M>1 and not recognising asset impairments. Continuous firm-year panel data regression models are used.

Firm-year observations with B/M > 1 and realising asset impairments		
	Eq.(1b)	
	Coef.	***t*-stat.**
Earn	0.453	8.058 ***
CF	-0.005	-0.401
Constant	-0.098	-10.166 ***
Observations	201	
Adjusted R^2	0.465	
F-Stat.	32.75	
Fixed Effects	Yes	

Where: *p*-values are one-tailed: * = < 0.05; ** = < 0.01, *** = < 0.001.

$$Impair_{it} = \beta_0 + \beta_1 Earn_{it} + \beta_2 CF_{it} + \varepsilon_{it} \qquad (1b)$$

All variables as previously defined.

Table 6: Descriptive statistics
Descriptive statistics for firm-years for sample firms listed on the ASX between 2000 and 2012 with data available and restricted to firm-years with B/M > 1, partitioned on the basis of pre / post IFRS

Panel A: Pre-IFRS

	Obs.	Mean	Std. dev	Min	p25	Median	p75	Max
Descriptive statistics for all firm-years with B/M>1								
Assets	695	2.666	4.221	0.011	0.297	1.173	3.362	43.961
Liabilities	695	1.246	2.042	0.000	0.049	0.458	1.666	19.049
BV	695	1.417	3.014	0.007	0.200	0.658	1.705	42.398
MV	695	1.041	2.757	0.003	0.115	0.325	1.190	42.370
B/M	695	1.819	1.183	1.000	1.180	1.453	1.924	11.886
Impairments								
• Goodwill	695	-0.001	0.007	-0.138	0.000	0.000	0.000	0.000
• Identifiable intangibles	695	-0.001	0.011	-0.195	0.000	0.000	0.000	0.000
• Tangibles	695	-0.002	0.017	-0.225	0.000	0.000	0.000	0.000
• Total	695	-0.004	0.022	-0.249	0.000	0.000	0.000	0.000
Earn	695	0.075	0.538	-0.764	-0.021	0.010	0.095	11.621
CF	695	0.011	0.611	-9.780	-0.061	-0.002	0.097	4.017
Descriptive statistics of impairments for firm-years realising asset impairments								
Goodwill	8	-0.045	0.046	-0.138	-0.061	-0.044	-0.004	-0.002
Identifiable intangibles	9	-0.065	0.073	-0.195	-0.105	-0.031	-0.016	-0.000
Tangibles	25	-0.059	0.070	-0.225	-0.077	-0.016	-0.007	-0.000
Total	39	-0.062	0.073	-0.249	-0.105	-0.026	-0.006	-0.000

Panel B: Post-IFRS								
	Obs.	**Mean**	**Std. Dev**	**Min**	**p25**	**Median**	**p75**	**Max**
Descriptive statistics for all firm-years with B/M>1								
Assets	1069	2.593	10.495	0.003	0.196	0.725	2.278	200.469
Liabilities	1069	1.540	9.494	0.000	0.036	0.253	1.015	188.024
BV	1069	1.038	1.849	0.002	0.132	0.403	1.179	25.895
MV	1069	0.713	1.526	0.002	0.070	0.215	0.680	22.650
B/M	1069	2.073	1.654	1.000	1.216	1.545	2.198	19.292
Impairments								
• Goodwill	1069	-0.006	0.054	-1.243	0.000	0.000	0.000	0.000
• Identifiable intangibles	1069	-0.004	0.031	-0.505	0.000	0.000	0.000	0.000
• Tangibles	1069	-0.005	0.039	-0.926	0.000	0.000	0.000	0.000
• Total	1069	-0.016	0.083	-1.439	0.000	0.000	0.000	0.000
Earn	1069	0.033	0.303	-1.587	-0.027	0.004	0.062	7.164
CF	1069	0.006	0.692	-9.961	-0.046	-0.006	0.045	12.858
Descriptive statistics of impairments for firm-years realising asset impairments								
Goodwill	54	-0.121	0.211	-1.243	-0.113	-0.041	-0.018	-0.001
Identifiable intangibles	61	-0.074	0.107	-0.505	-0.093	-0.029	-0.005	-0.000
Tangibles	121	-0.048	0.109	-0.926	-0.041	-0.018	-0.003	-0.000
Total	162	-0.104	0.190	-1.439	-0.109	-0.030	-0.007	-0.000

All variables as previously defined

Table 7: Recognition of asset impairment and the impact of IFRS

Evaluation of the association between the indicators of impairment and recognition of asset impairments, using the dichotomous measure of *Impair*. Logit firm-year panel data regression models are used. Fixed effects are from the panel data regressions because too few firms are recognising asset impairments leaving insufficient variation in the models and this reduces too many observations from the sample.

Panel A: Full sample of firm-years

	Eq.(3a)			Eq.(3c)		
	Coef.	z-stat.		Coef.	z-stat.	
B/M	-0.056	-0.912		-0.201	-1.524	*
Yrs	-0.598	-3.494	***	-0.161	-0.485	
BHR	0.265	2.734	**	0.165	0.898	
Earn	0.351	1.990	*	1.344	2.800	**
CF	-0.071	-1.146		-0.198	-1.214	
IFRS	-1.477	-10.095	***	-1.360	-6.318	***
B/M * IFRS				0.179	1.211	
Yrs * IFRS				-0.563	-1.478	*
BHR * IFRS				0.118	0.548	
Earn * IFRS				-1.045	-2.241	*
CF * IFRS				0.156	0.884	
Constant	4.816	22.032	***	4.736	18.929	***
Observations	5842			5842		
Log likelihood	-1.4e+03			-1.4e+03		
LR Chi-squared	136.411			140.562		
Prob > Chi-squared	0.000			0.000		
Fixed Effects	No			No		

Panel B: Sample of firm-years where B/M > 1

	Eq.(3a)			Eq.(3c)		
	Coef.	z-stat.		Coef.	z-stat.	
B/M	0.026	0.372		-0.156	-1.104	
Yrs	-0.069	-0.302		-0.096	-0.180	
BHR	-0.079	-0.413		0.032	0.074	
Earn	1.592	3.161	***	4.213	3.482	***
CF	-0.335	-1.851	*	-0.161	-0.426	
IFRS	-1.471	-6.091	***	-1.862	-3.317	***
B/M * IFRS				0.217	1.340	*
Yrs * IFRS				0.023	0.039	
BHR * IFRS				-0.188	-0.392	
Earn * IFRS				-2.977	-2.380	**
CF * IFRS				-0.166	-0.387	
Constant	3.865	10.760	***	4.222	7.650	***
Observations	1764			1764		
Log likelihood	-566.473			-561.528		
LR Chi-squared	47.330			51.524		
Prob > Chi-squared	0.000			0.000		
Fixed Effects	No			No		

Where: *p*-values are one-tailed: * = < 0.05; ** = < 0.01, *** = < 0.001.

$$Impair_{it} = \alpha_1 B/M_{it} + \alpha_2 Yrs_{it} + \alpha_3 BHR_{it} + \alpha_4 Earn_{it} + \alpha_5 CF_{it} + \alpha_6 IFRS_{it} + \varepsilon_{it} \quad (3a)$$

$$Impair_{it} = \alpha_0 + \alpha_1 B/M_{it} + \alpha_2 Yrs_{it} + \alpha_3 BHR_{it} + \alpha_4 Earn_{it} + \alpha_5 CF_{it} + \alpha_6 IFRS_{it} +$$
$$\alpha_7 B/M_{it} * IFRS_{it} + \alpha_8 Yrs_{it} * IFRS_{it} + \alpha_9 BHR_{it} * IFRS_{it} + \alpha_{10} Earn_{it} * IFRS_{it} +$$
$$\alpha_{11} CF_{it} * IFRS_{it} + \varepsilon_{it} \quad (3c)$$

All variables as previously defined.

Table 8: Measurement of asset impairment and the impact of IFRS
Evaluation of the association between realised asset impairments and determinants of recoverable amount (earnings and cash flows) using a continuous measure of *Impair*.

Panel A: Full sample of firm-year observations

	Eq.(3b)			Eq.(3d)		
	Coef.	*z*-stat.		Coef.	*z*-stat.	
B/M	-0.000	-0.065		-0.001	-0.424	
Yrs	-0.009	-3.049	**	-0.003	-0.667	
BHR	0.002	2.043	*	0.001	0.422	
Earn	0.020	10.748	***	0.023	7.337	***
CF	-0.007	-7.353	***	-0.006	-5.087	***
IFRS	-0.012	-6.669	***	-0.011	-3.997	***
B/M * IFRS				0.001	0.509	
Yrs * IFRS				-0.010	-1.896	*
BHR * IFRS				0.001	0.861	
Earn * IFRS				-0.004	-1.288	
CF * IFRS				-0.000	-0.039	
Constant	-0.002	-0.973		-0.003	-1.165	
Observations	5842			5842		
Adjusted R^2	0.153			0.152		
F-Stat.	36.02			20.23		
Fixed Effects	Yes			Yes		

Panel B: Firm-year observations where B/M > 1

	Eq.(3b)			Eq.(3d)		
	Coef.	*z*-stat.		Coef.	*z*-stat.	
B/M	-0.000	-0.004		-0.002	-0.634	
Yrs	-0.005	-1.118		0.000	0.009	
BHR	0.005	1.654	*	0.004	0.730	
Earn	0.036	7.221	***	0.009	1.488	
CF	-0.014	-5.539	***	-0.004	-0.868	
IFRS	-0.013	-3.119	***	-0.023	-2.518	**
B/M * IFRS				0.003	1.074	
Yrs * IFRS				-0.003	-	

	(3b)		(3d)		
				0.361	
BHR * IFRS			0.003	0.421	
Earn * IFRS			0.085	8.496	***
CF * IFRS			-0.028	- 5.083	***
Constant	-0.000	- 0.094	0.002	0.266	
Observations	1764		1764		
Adjusted R^2	0.407		0.320		
F-Stat.	13.71		15.38		
Fixed Effects	Yes		Yes		

Where: p-values are one-tailed: * = < 0.05; ** = < 0.01, *** = < 0.001.

$$Impair_{it} = \beta_0 + \beta_1 Earn_{it} + \beta_2 CF_{it} + \beta_3 IFRS_{it} + \varepsilon_{it} \qquad (3b)$$

$$Impair_{it} = \beta_1 B/M_{it} + \beta_2 Yrs_{it} + \beta_3 BHR_{it} + \beta_4 Earn_{it} + \beta_5 CF_{it} + \beta_6 IFRS_{it} +$$
$$\beta_7 Earn_{it} * IFRS_{it} + \beta_8 CF_{it} * IFRS_{it} + \varepsilon_{it} \qquad (3d)$$

All variables as previously defined.