Evolution of intangible asset accounting: Evidence from Australia

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Abstract

This study investigates how the adoption of IFRS in Australia has changed the accounting for goodwill and identifiable intangible assets (IIA). Based on unique hand-collected data for 802 Australian firm-years during 2000–2010, we find that expenses related to IIA are higher under IFRS, which is consistent with the view that IFRS accounting policies for IIA are stricter than those under Australian domestic accounting standards pre-2005 (AGAAP). Our results show two effects that accompany higher IIA expenses under IFRS, which reduce a negative impact on earnings: (i) lower goodwill expenses, and (ii) a shift in recognition of IIA from those with finite useful life to IIA with indefinite useful life. Finally, our market value analyses suggest that the market does not treat mechanical goodwill amortization as a genuine expense, but does treat as genuine expenses discretionary impairment charges, and more lenient IIA amortization under AGAAP. Our results are in line with prior Australian studies claiming that imposing stricter accounting rules for intangible assets under IFRS tends to diminish the quality of investors' information set.

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1   INTRODUCTION

This study examines the impact of changes in accounting standards on the accounting for goodwill and identifiable intangible assets (IIA) by Australian companies. Australia adopted International Financial Reporting Standards (IFRS) from 2005. Prior to 2005, under Australian domestic accounting standards (AGAAP)[1], purchased goodwill had to be capitalized and amortized using the straight-line method over a period not exceeding 20 years, while IIA were largely unregulated. Under IFRS, all purchased intangibles must be capitalized as assets, but most internally developed IIA must not be. Subsequently, goodwill and IIA with indefinite useful life are subject to annual impairment testing, and finite life IIA are amortized and tested annually for impairment. While the transition to IFRS in 2005 required managers to derecognize some capitalized internally developed IIA, they were also required to separately recognize IIA previously included in purchased goodwill. Reinstatement of goodwill and purchased IIA previously written off was also permitted.

We examine how this transition changed the way Australian companies account for their goodwill and IIA. Both AGAAP and IFRS standards on goodwill and IIA contained scope for management discretion in measurement and classification. By their nature, intangible assets create discretion due to the often-unverifiable nature of estimates needed in their valuation (Ramanna & Watts, 2012). Consistent with positive accounting theory (Watts & Zimmerman, 1986), we assume that managers value that discretion, because it allows them to opportunistically manage earnings and balance sheet numbers to meet earnings, compensation, and debt-covenant compliance targets.

The way in which managers can exercise this discretion changed when Australia adopted IFRS. Under AGAAP, there was relatively little discretion in accounting for goodwill subsequent to its recognition, due to the systematic amortization regime required. On the one hand, there was much discretion in accounting for IIA, given the comparatively small amount of regulation of IIA in AGAAP. Under IFRS, there is now more discretion in accounting for goodwill stemming from IFRS' "impairment-only" approach, due to the unverifiable nature of valuations in the impairment test (Hamberg & Beisland, 2014; Ramanna & Watts, 2012). On the other hand, IFRS prescribes specific accounting methods to measure IIA subsequent to initial recognition: impairment for indefinite life IIA and a dual approach including amortization plus impairment for finite IIA. Compared to the previous rather unregulated Australian environment for IIA, these amortization and impairment rules are perceived as more stringent. However, companies still have some discretion in deciding whether an IIA has a finite life or an indefinite life.

We therefore propose that under IFRS, there will be a tendency for Australian companies to recognize greater portions of indefinite life IIA relative to finite life IIA on their balance sheets. This is in line with the argument that managers are likely to exploit the discretion afforded by the impairment-only approach applicable to indefinite life IIA rather than the systematic amortization required for finite IIA (Hamberg & Beisland, 2014; Li & Sloan, 2017). Based on the same argument, we propose that companies are more likely to report lower expenses related to goodwill under IFRS compared to AGAAP. To the extent that managers can also use their discretion for signaling purposes, we finally propose that while a mechanical amortization (goodwill amortization under AGAAP and IIA amortization under IFRS) is not relevant for market valuation, the market perceives discretionary charges as value relevant (impairments under AGAAP and IFRS as well as IIA amortization under AGAAP).

We test our propositions using 802 firm-year observations from 85 of the top 250 Australian listed companies over the period 2000–2010. Our sample comprises a long period of both AGAAP years (2000–2005) and IFRS years (2006–2010) to pick up any long-term trends in goodwill and IIA in these companies. We also analyze the impact of the first-time IFRS adoption on intangible

asset reporting by looking specifically at the reconciliation statement provided in 2006 annual reports, between 2005 AGAAP information and 2005 IFRS information, which was required by the IFRS standard on the first-time adoption. As there are no changes in the underlying transactions and events, any difference between the reported (AGAAP) and reconciled (IFRS) figures can be attributed to the change in accounting standards. In addition, we conduct a sensitivity analysis based on a restricted sample period covering 2 years before IFRS adoption and 2 years after (2004–2005 versus 2006–2007). This subsample period excludes the exceptional years of the dotcom crisis as well as the global financial crisis allowing an analysis on impairment charges independent of unusual market conditions.

Our findings indicate that during the IFRS period, Australian companies recognize both higher IIA amortization and higher IIA impairment expenses compared to the AGAAP period. The analysis of the 2005 reconciliation data suggests that a large portion of higher IIA amortization under IFRS can be attributed to the first-time adoption of the new accounting regulation. In fact, the amount of IIA amortization as a percentage of IIA is more than 20 times larger under IFRS (reconciled figure) compared to the reported amounts under AGAAP for the same year. This is consistent with the notion that IFRS require much stricter rules for the subsequent treatment of IIA than the comparatively unregulated AGAAP environment. Consequently, under IFRS, companies report a greater portion of IIA as indefinite IIA, rather than finite IIA, potentially to minimize annual amortization charges.

For goodwill, our results suggest that while the impairment-only approach yields high levels of goodwill impairment for the global financial crisis period (2008–2009), in a longitudinal analysis, the overall negative charges to the income statement related to goodwill are lower under IFRS compared to AGAAP. Our findings are in line with concerns about the impairment-only approach: that it may provide opportunity for managerial discretion to be used in reducing negative charges to the income statement.

Finally, we run a market value analysis on different expenses of intangible assets. While regression coefficients for amortization amounts based on a mechanical rule are significant and positive, those for impairment charges are significant and negative. This suggests that market participants seem to value these earnings before mechanical amortization of goodwill (IIA) under AGAAP (IFRS) and after impairment charges. Although being reported earnings-decreasing, the market does not treat mechanical amortization as a genuine expense. To the contrary, the discretionary impairment amounts under both standards and the (more lenient) amortization of IIA under the less regulated AGAAP, which also are earnings-decreasing, are negatively related to market value; that is, the market does treat these amounts as genuine expenses.

We contribute to the literature in several ways. First, we provide useful insights into the actual application of IFRS, as part of the ongoing global debate on the benefits of IFRS adoption. Focusing on goodwill and IIA in Australia, our study confirms prior findings that the benefits of IFRS may come with potential costs associated with managerial discretion. Consistent with Hamberg, Paananen, and Novak (2011), our evidence also shows that companies may use discretion when impairing goodwill, resulting in lower expenses related to goodwill under IFRS compared to AGAAP. We complement their findings by analyzing the interplay between intangibles with finite and indefinite life. While IIA expenses are higher under IFRS, presumably due to the stricter accounting policies regarding amortization of finite IIA, companies recognize a greater proportion of indefinite life IIA compared to finite life IIA on the balance sheet under IFRS. The latter can be interpreted as a managerial reaction to reduce annual amortization charges required for finite life IIA under IFRS.

Second, most of the prior IFRS adoption studies have separately considered either the recognition of goodwill or IIA on the balance sheet (e.g., Chalmers et al., 2008; Matolcsy & Wyatt, 2006; Russell, 2017; Wyatt, 2005) or the subsequent effect of the impairment-only approach on goodwill expenses recognized in the income statement (e.g., Bond, Govendir, & Wells, 2016; Chalmers, Godfrey, & Webster, 2011; Glaum, Landsman, & Wyrwa, 2015; Ji, 2013; Kabir & Rahman, 2016). Our study confirms prior studies' findings on goodwill accounting under IFRS and provides additional evidence on how companies account for both goodwill and IIA under IFRS in both the balance sheet and the income statement. In addition, our unique hand-collected data on finite life and indefinite life IIA allow us to further analyze the managerial discretion involved in the classification of such assets. In addition, our sample period of 11 years, covering both the AGAAP and IFRS regimes, provides a longitudinal study on the changes in reporting for goodwill and IIA as well as an analysis of the 2005 AGAAP–IFRS reconciliation statements.

Finally, our analysis complements the existing Australian evidence. Our results, particularly those for market valuation, are in line with prior Australian work claiming that imposing stricter accounting rules for intangible assets under IFRS tends to diminish, rather than improve, the quality of investor's information set (e.g., Ritter & Wells, 2006; Russell, 2017; Wyatt, 2005). Further, while Su and Wells (2015) and Bugeja and Loyeung (2015) analyze IIA acquired in the course of a takeover, they do not consider internally developed IIA and separately purchased IIA. They also do not look at the change in accounting for existing intangibles due to the IFRS adoption. Bond et al. (2016) look at impairments of tangible and intangible assets before and after the IFRS adoption. They, however, do not analyze the interplay between different types of intangible assets (namely goodwill and IIA) and their different subsequent treatment under AGAAP and IFRS. Russell (2017) investigates a related research question by analyzing the effect of incentives and economic fundamentals. Employing an instrumental variable methodology, he finds weak evidence for share issue as an opportunistic driver for IIA as well as some evidence for size and market-to-book ratio as fundamental drivers. However, he does not look at whether the accounting method changed in 2005/2006 for existing intangibles upon the adoption of IFRS. Our study complements the existing Australian evidence and provides additional direct insight into the effects of changes in accounting regulation on accounting for intangible assets.

The remainder of this study is structured as follows. Section 2 provides review of the prior literature and develops propositions. Section 3 describes our sample selection and data collection. Section 4 presents our empirical results and discussion, and Section 5 provides concluding remarks.

2 | LITERATURE REVIEW AND PROPOSITIONS

2.1 | Accounting for intangible assets

Accounting for intangible assets, both goodwill and IIA, has been one of the most controversial issues in standard setting and in practice (Chalmers et al., 2008, 2011; Glaum, Schmidt, Street, & Vogel, 2013). For example, Bloom (2009, 382) points out that it is "impossible to account for goodwill logically and completely within the context of the historical cost system," and as such, valuation of intangible assets has always been under great scrutiny. At the same time, however, intangible assets do provide information useful to investors. For example, Matolcsy and Wyatt (2006) show that firms with capitalized intangible assets are associated with higher analyst following and lower absolute earnings forecast errors.

In addition, opinions are divided about whether the recognized goodwill should then be amortized or subject to an annual impairment test. On the one hand, critics of the impairment-only approach have stated that the main issue with impairment lies with accounting for goodwill relying on managerial expectations and, as such, provides management with discretion (Glaum et al., 2015; IASB 2015). Hamberg and Beisland (2014) argue that the reason behind the impairment-only approach's being under greater scrutiny is that the regime is considered to be more prone to manipulation than the dual regime (i.e., amortization and impairment). In other words, given the availability of opportunities for earnings management with impairment, it is difficult to conclude that the impairment-only approach is superior to systematic amortization (ASBJ, 2015). And impairments only, if sporadic, may not capture in a timely way systematically occurring annual declines in goodwill (Schultze, 2005).

On the other hand, accounting standard setters have claimed that an impairment-only regime is better at reflecting the underlying economic value of goodwill compared to a mechanical amortization rule (Chalmers et al., 2011). It has also been claimed that economic benefits associated with goodwill have been enhanced by IFRS requiring the impairment test for goodwill (Russell, 2017). Bloom (2009, 383) points out that users of accounting information find it "impossible to accept that goodwill should be amortized, thus diminishing profits, at the same time that considerable sums were also being expensed as a result of effort to maintain and improve the value of goodwill." In addition, using Swedish data, Hamberg and Beisland (2014) find that goodwill impairments are value relevant while amortization is not under local GAAP. However, when Sweden adopted IFRS, goodwill impairments under the impairment-only approach were no longer associated with stock returns. Jennings, Robinson, Thompson, and Duvall (1996) show that impairment testing is more relevant for market value compared to annual amortization, a finding supported by Chalmers, Clinch, Godfrey, and Wei (2012), who report that the impairment-only approach conveys more useful information to analysts. Finally, limiting managements' choices to report declines in value of intangible assets, that is, providing less opportunity for discretion, tends to reduce, rather than increase, the quality of the balance sheet (Russell, 2017; Wyatt, 2005). Overall, prior Australian work shows that discretion involved in accounting for intangible assets is not detrimental per se. Rather, stricter accounting rules seem to diminish the quality of investor's information set.

Given these conflicting views on the subsequent treatment of goodwill (i.e., whether to systematically amortize and impair, or to impair only), it is not surprising that there have been calls for more research. Also, the post-implementation review of *IFRS 3 Business Combinations* has noted that the subsequent accounting for goodwill (impairment versus amortization) is one of the high-priority items to be considered by standard setters (IASB 2015). Boennen and Glaum (2014, 27) have stated that it would be interesting to find out "whether impairment charges under the impairment-only approach are lower or higher than the sum of amortization and impairment charges under the old set of rules." The direct comparison between goodwill balances and related expenses before and after the introduction of the impairment-only approach is not possible using US and many European companies[2]. Australia, however, provides an ideal empirical setting to directly examine such questions, because the amortization regime for goodwill was prescribed prior to the adoption of IFRS in 2005, which was then replaced by the impairment-only approach as a result of IFRS adoption. On the other hand, the accounting for IIA has become more stringent. Both aspects taken together provide a unique setting to analyze the users' reaction to these changes.

2.2 │ Intangible asset accounting in Australia

In Australia, intangibles, whether internally developed or purchased, have always been regarded as assets, and they were permitted to be recognized as such-a situation which was quite unique (Chalmers et al., 2012). Prior to the IFRS conceptual framework, the Australian conceptual framework SAC 4 par. 14 defined assets as follows:

> *"Assets" are future economic benefits controlled by the entity as a result of past transactions or other past events; and "control of an asset" means the capacity of the entity to benefit from the asset in the pursuit of the entity's objectives and to deny or regulate the access of others to that benefit.*

Wines and Ferguson (1993) show that in the AGAAP setting, capitalization of intangible assets had been routine during the late 1980s. Further, there was also under AGAAP an "opportunity to deem such assets as having an indefinite life and avoid systematic amortization of such assets" (Chalmers et al., 2012, 692).

Accounting standards for goodwill and IIA have gone through several changes over the last four decades in Australia[3]. Under both AGAAP and IFRS, when a company purchases another, it has to record "purchased goodwill" on the balance sheet equal to the amount by which the consideration given exceeds the fair value of purchased identifiable net assets[4]. Goodwill therefore includes all unidentifiable intangible assets and has to be shown separately from any tangible or identifiable intangible assets on the balance sheet. Purchased IIA must also be recognized. However, recognition of internally developed goodwill has never been permitted in Australia, and neither has the upward revaluation of purchased goodwill.

With the introduction of ASRB 1013 in 1988[5], amortization of purchased goodwill over a maximum of 20 years became mandatory for all Australian companies for the first time. Prior to 1988, amortization of goodwill was prescribed by professional standard AAS 18 (issued in 1985). This standard was not legally binding on companies and amortization of goodwill, although more frequent than pre-AAS 18, was still uncommon. Compliance with the legally binding ASRB 1013 was substantially higher than that with AAS 18 (Anderson & Zimmer, 1992; Dunstan, Percy, & Walker, 1993). ASRB 1013 did not, however, state a specific amortization method, and as a result, attempts were made by some companies to undermine its intent via use of the "Inverted Sum of the Years' Digits" amortization method, which deferred the bulk of goodwill amortization charges to later years[6]. To eliminate this practice, AASB 1013 was revised in 1996 to permit only the straight-line amortization method over a maximum period of 20 years.

IAS 36 Para. 10 (b) now requires companies to "test goodwill acquired in a business combination for impairment annually [. . .]," even in the absence of any sign of impairment. Hence, companies are no longer required to amortize goodwill on a straight-line basis, but to test annually whether goodwill has decreased in value or not. In addition, standard IFRS 1 on the first-time adoption of IFRS in Australia prescribes a full retrospective application of the new set of standards at first-time adoption. Yet, the standard grants a number of exemptions including business combinations, arguing that the cost of complying with IFRS retrospectively would outweigh the benefits for users. For example, if a company decides not to apply *IFRS 3 Business Combinations* retrospectively, it shall not restate previously amortized amounts of goodwill (based on IFRS 1 adopted in Australia).

If an item, previously recognized under AGAAP, does not qualify for recognition as an asset in accordance with the new standard on accounting for intangible assets (IAS 38), the company can

reclassify that item as part of goodwill. Similarly, IFRS 1 Appendix C4 (g) requires the carrying amount of goodwill to be reduced if an IIA was subsumed in recognized goodwill before switching to IFRS, but now meets the recognition criteria for an IIA in IAS 38. In addition, for all cases, the entity must make an initial IAS 36 impairment test of any remaining goodwill in the opening IFRS balance sheet, after reclassifying identifiable intangibles to goodwill or vice versa[7]. Goodwin, Ahmed, and Heaney (2008) provide empirical evidence that upon initial adoption of IFRS in Australia, the impact on equity of changes in the carrying amounts of goodwill and IIA is, on average, very small.

Generally accepted accounting principles usually require that IIA should be recognized if they have been purchased. However, under AGAAP, there were no specific standards on the subsequent treatment of IIA, apart from impairment tests stemming from the fact that they were recognized as assets[8]. While there was a specific accounting standard for research and development (R&D), there was no specific standard regulating IIA, which gave a voluntary choice to management (Matolcsy & Wyatt, 2006). Under IFRS, on the other hand, purchased IIA and restricted types of development expenditure are recognized as assets by IAS 38 which also requires IIA with a finite life to be amortized on "a systematic basis over its useful life" (IAS 38 Para. 97–99). If IIA are deemed to have an indefinite life, they are then tested for impairment annually (IAS 38 Para. 107–108).

In summary, under AGAAP, purchased goodwill had to be recognized as an asset. Before 2005, the subsequent treatment of goodwill had evolved to be straight-line amortization over a maximum of 20 years. Under IFRS, purchased goodwill is subject to annual impairment testing. Under AGAAP, IIA were largely unregulated, whereas under IFRS, only purchased IIA and certain development expenditure shall be capitalized as assets, which are then subject to annual amortization plus impairment, if of finite life, or to annual impairment testing, if of indefinite life. Overall, accounting for IIA has become much stricter under IFRS so that firms are likely to face higher IIA expenses compared to AGAAP.

The change in standards from AGAAP to IFRS in 2005 provides an ideal setting to examine whether managers have exploited the perceived benefits of impairment-only approach by recognizing more indefinite life IIA relative to finite life IIA in the balance sheet. In addition, we also consider the impact of IFRS on the subsequent treatment (i.e., amortization and/or impairment) of goodwill and IIA, as reported in the income statement. Finally, we investigate how the market perceives the accounting information provided related to the different types of intangible assets and their varying profit and loss effects.

2.3   Propositions

The rules in AGAAP and IFRS standards on intangibles contain gaps. For example, AGAAP did not allow for cases where goodwill had not declined in value over time, and IIA, except for research and development, were unregulated. IFRS do not permit recognition of most internally developed IIA, and both AGAAP and IFRS forbid the recognition of internally developed goodwill. As for the subsequent treatment of intangible assets recognized, AGAAP required straight-line amortization of purchased goodwill over 20 years maximum, but was silent about amortization of most IIA. While IFRS require impairment testing of purchased goodwill and indefinite life IIA, systematic amortization is required of finite life IIA.

AGAAP and IFRS standards on intangible assets create some discretion in measurement and classification. Appendix A summarizes that level of discretion in accounting for intangibles implied in AGAAP and in IFRS. AGAAP standards provide much discretion in accounting for

IIA, other than R&D, but less discretion in accounting for purchased goodwill. IFRS provide discretion due to the comparatively unverifiable nature of impairment test estimates for goodwill (Ramanna & Watts, 2012) and indefinite life IIA, and how IIA will be classified (finite versus indefinite useful life) with choice of amortization period for the former and impairment test application for the latter. The following subsections discuss how this discretion might be exercised by the management. In doing so, we make use of two theoretically consistent explanations[9]-opportunism and signaling (Morris, 1987)[10].

2.3.1 Opportunistic perspective

In positive accounting theory (Watts & Zimmerman, 1986, 1990), firms choose accounting methods to opportunistically maximize the benefits of top management or transfer wealth from creditors to shareholders given the presence of efficient contracts. Opportunistic accounting choices, usually income-increasing ones, can also be made to maximize top managers' benefits in the presence of implicit contracts (Bowen, DuCharme, & Shores, 1995), examples of which include relationships with, and expectations of, shareholders, analysts, customers, suppliers, and short-term creditors.

For intangible assets, the opportunistic perspective suggests that firms will use discretion contained in intangible accounting standards to increase reported earnings, even in the absence of explicit contracts. The majority of empirical studies on intangible assets are consistent with managers using discretion opportunistically in intangible asset accounting. For example, Ramanna and Watts (2012) provide evidence that in US firms with indications of goodwill impairment, 69% do not show any goodwill write-offs, although required by the goodwill standard. Bini and Bella (2007) find that such write-offs are highly discretionary with limited information content. Li, Shroff, Venkataraman, and Zhang (2011) show indirectly that managers avoid losses using discretion in not reporting a goodwill impairment loss. Hayn and Hughes (2006) suggest that the actual goodwill impairments lag behind the "economic impairment of goodwill" by an average of 3–4 years.

Previous Australian studies are also consistent with managerial use of discretion in accounting for intangible assets. Under AGAAP, Wines and Ferguson (1993) find that following the introduction of ASRB 1013 in 1988, corporations recognized relatively more IIA (when there were no standards on the subsequent treatment) to avoid the annual systematic amortization of goodwill required by ASRB 1013. Under IFRS, as the recoverable amount of goodwill necessary for an impairment test involves the calculation of its value in use, an appropriate discount rate has to be estimated. Carlin and Finch (2010) find that the discount rates used by Australian and New Zealand firms for impairment testing tend to be lower than expected. This suggests that companies use managerial discretion to avoid potential impairment losses and other negative charges to the income statement stemming from recognizing goodwill and IIA. Overall, the reliability of impairment tests is said to be low (Wyatt, 2008) reducing the relevance of the accounting information at the same time.

While higher impairment risks from higher goodwill appear to increase the probability for volatile earnings in the future, Ramanna and Watts (2012) argue that the impairment test for goodwill entails using estimates of the fair value (and value in use) of the cash-generating units (CGU) that are essentially unverifiable and, thus, create discretion that can be used by managers to smooth reported earnings. According to Graham, Harvey, and Rajgopal (2005), a majority of their surveyed CFOs stated that they prefer smooth earnings over volatile earnings. Also, incentives for earnings management, such as meeting or beating earnings benchmarks or analysts' forecasts, may result in goodwill impairment being delayed (Li & Sloan, 2017). On the other hand, systematic

amortizations do not normally involve as much managerial discretion, making the impairment-only approach a setting in which earnings management is more likely.

In addition, as amortization of goodwill and indefinite life IIA is not permitted under IFRS, there is an incentive to recognize intangible assets not subject to the amortization regime; in other words, managers may recognize more goodwill and indefinite life IIA rather than finite life IIA, to boost reported earnings. We expect this to be particularly the case in view of the stricter accounting rules for IIA: While accounting for IIA was basically unregulated pre-IFRS, their amortization and/or impairment is clearly prescribed in IFRS dependent on whether they are classified as having a finite or indefinite life. One can therefore expect higher IIA expenses under IFRS compared to AGAAP. In our following propositions, we expect companies to address this negative effect on earnings in two different ways. First, any incentives that may be related to goodwill accounting under IFRS are also applicable to indefinite life IIA. As such, under IFRS, we expect to observe the higher IIA expenses to be accompanied by an increase in the proportion of indefinite life IIA recognized in the balance sheet compared to AGAAP. Our first proposition relating to balance sheet effects is thus stated as follows:

Proposition 1. *Under IFRS, higher IIA expenses are accompanied by more IIA with indefinite life recognized relative to under AGAAP.*

Second, companies may try and reduce goodwill expenses in view of higher IIA expenses. Hence, our next proposition relates to the income statement effects of IFRS, based on the subsequent treatment of recognized goodwill and IIA. We expect that companies will report lower impairment expenses, and of course, no amortization expenses for goodwill under IFRS compared to systematic goodwill amortization expenses and impairment recorded under AGAAP. This is consistent with the prior findings that in a Swedish setting after IFRS adoption, the amounts of impairment related to goodwill are lower than the amounts of amortization and goodwill impairments pre-IFRS (Hamberg et al., 2011). In our study, we further expect that the change from an unregulated accounting environment for IIA to stricter amortization rules results in higher IIA expenses. While Proposition 1 relates to balance sheet effects that ultimately allow companies to reduce the negative effects on earnings from higher IIA expenses, Proposition 2 relates to income statement effects and is stated as follows:

Proposition 2. *Under IFRS, higher IIA expenses are accompanied by less goodwill expenses relative to under AGAAP.*

Two concerns could arise with these propositions. First, the opportunistic perspective requires the presence of economic incentives, explicit or implicit. Propositions 1 and 2 are more likely to be met if those economic incentives are binding. However, we cannot tell whether incentives in debt covenants or management bonus plans are binding for any given company, although we include proxies for such incentives in our regressions. Rather, our argument is that managers prefer the flexibility that arises from the change from AGAAP to IFRS because it allows them to create a buffer for income smoothing and for avoiding decreases in current and future reported earnings.

Second, our propositions are implicitly predicting that managers use their discretion to increase reported earnings. It is true that managers can also use accounting discretion to opportunistically reduce reported earnings (e.g., Healy, 1985) and, in extreme cases, to take a "big bath" (Penman, 2013, 592). However, all prior studies we are aware of that examine opportunistic accounting

choices for intangibles predict, and usually find, manipulation of income upward not downward[11]. We therefore follow the stance taken in the prior literature.

2.3.2   Signaling perspective

Firms may choose accounting policies for intangibles to signal their superior future earning power (Dinh, Kang, & Schultze, 2016; Kanagaretnam, Lobo, & Yang, 2004; Morris, 1987). Ritter and Wells (2006) show that in the AGAAP years, reported earnings of large Australian companies up to 3 years ahead are associated with current period's IIA disclosures. The signaling perspective suggests that firms will capitalize intangibles where these are expected to lead to enhanced future profitability and will expense them otherwise. Expenses should thus be negatively related to market values if the market considers them as used resources. On the other hand, literature provides evidence that market participants consider mechanical charges to goodwill as non-cash charges and hence irrelevant for valuation. Consequently, such expenditures are added back to earnings and valuations are carried out based on earnings before goodwill amortization (Robinson, van Greuning, Henry, & Broihahn, 2009; White, Sondhi, & Fried, 2003). Under pre-2005 AGAAP, signaling was difficult for purchased goodwill due to the mechanical amortization, but possible for IIA given the unregulated environment; under IFRS, signaling is possible for goodwill and indefinite life IIA but not for finite life IIA. Compared to AGAAP, IFRS limit managerial discretion particularly when accounting for IIA, which has been claimed to reduce rather than improve the quality of investor's information set (Russell, 2017; Wyatt, 2005). The signaling perspective thus suggests the following proposition:

> **Proposition 3.**   *While a mechanical amortization is not relevant for market valuation, discretionary impairment and amortization charges are.*

2.3.3   Standards alone perspective

So far, we have used a set of consistent theoretical explanations to derive our propositions. An alternative and competing view is that the switch from AGAAP to IFRS will create changes in observed practices due solely to the unbiased application of the standards themselves and not due to opportunistic or other economically motivated actions by managers. We call this the standards alone perspective. IFRS require amortization/impairment of finite life/indefinite life IIA, and so, all else equal, the standards alone perspective would predict no change from AGAAP to IFRS in the proportion of finite life to indefinite life IIA. This is contrary to Proposition 1.

Johansson, Hjelström, and Hellman (2016) show analytically that the impairment test for goodwill will likely understate the true amount of goodwill impairment because of a buffer created by internally developed but unrecognized goodwill and unrecognized increases in the fair values of other assets. The argument would also apply by extension to indefinite life IIA. Relatedly, respondents to the IASB's post-implementation review of IFRS 3 (2015) thought that the goodwill impairment test was flawed, being too complex, time-consuming, costly, and involving significant judgments about value in use and cash-generating units. These factors would lead to the same prediction as Proposition 2.

The standards alone perspective would also indicate that both mechanical amortization and impairment of intangible assets will be negatively value relevant because mechanical amortization and impairment unbiasedly capture the diminution in the value of intangibles—which is contrary to Proposition 3. The standards alone perspective thus provides competing predictions for

Propositions 1 and 3. While we do not empirically test this perspective directly, whether these competing predictions are supported by the data will be discussed later.

3   RESEARCH METHOD

3.1   Research design

We control in several ways for the potential impact of underlying economic conditions on the type and amount of intangible assets reported. First, our study examines the same companies in a time series covering 6 years before and 5 years after the mandatory adoption of IFRS, which can control for their underlying firm-specific economic circumstances over the 11 years. Second, we add several variables to our regressions to control for any cross-sectional variation in firms' propensity to acquire or internally develop intangibles and for incentives for opportunism. Third, as our identical companies could still be influenced by changing macroeconomic conditions, we also examine the 2005 reconciliation data between AGAAP and IFRS, which are available only in the year of switch-over to IFRS (as required by the IFRS first-time adoption standard). It measures the same underlying transactions in AGAAP and IFRS allowing us to examine the impact of changing accounting regimes on the same set of transactions. Fourth, we examine our companies for a narrow window of years around IFRS adoption (2004–2007) for robustness. While none of these four approaches is perfect, we are confident that collectively, they allow us to draw valid conclusions about the impact of the switch from AGAAP to IFRS on accounting for intangible assets while controlling for firm-economic characteristics.

3.2   Models

We test our three propositions using a series of OLS regressions. Our main variables of interest are as follows: the amount of IIA with indefinite life $INDEFINITE\_IIA_{it}$, goodwill expenses $GWEXP_{it}$, IIA expenses $IIAEXP_{it}$, and the specific charges related to intangible assets, namely goodwill amortization $GWAMORT_{it}$, goodwill impairment $GWIMP_{it}$, IIA amortization $IIAAMORT_{it}$, and IIA impairment $IIAIMP_{it}$. All variables are defined in Appendix B.

In our first model, we are particularly interested in the interaction term $IFRS_{it} \times IIAEXP_{it}$. We expect the regression coefficient of the interaction term to be positive in Model 1. This is consistent with the notion that firms may shift more amounts of total IIA to IIA with indefinite life to avoid annual amortization charges given the stricter accounting rules for IIA under IFRS. Note that IIA comprises all three categories of IIA: directly purchased IIA, IIA purchased via a business combination, and internally developed IIA.

$$INDEFINITE\_IIA_{it} = \beta_0 + \beta_1 IIAEXP_{it} + \beta_2 IFRS_{it} \times IIAEXP_{it} + \beta_3 IFRS_{it} + \beta_4 GW_{it}$$
$$+ \beta_5 SIZE'_{it} + \beta_6 AGE_{it} + \beta_7 MB'_{it} + \beta_8 OCFVOL_{it} + \beta_9 LEV'_{it}$$
$$+ \beta_{10} ROA'_{it} + \beta_{11} PRICEVOL_{it} + \beta_{12} SHAREISSUE_{it} + YEAR + IND + \varepsilon \quad (1)$$

We also add a range of different control variables to the regression. The first five such variables are economic characteristics that may influence a firms' propensity to acquire or internally develop IIA: GW_{it} is the amount of goodwill as reported at balance sheet date; $SIZE'_{it}$ is the firm size proxied by the natural logarithm of total assets; AGE_{it} is based on the number of years a firm is listed on ASX; MB'_{it} is a measure for growth using the market-to-book ratio; and $OCFVOL_{it}$ represents operating cash flow volatility to capture operational risk.

In addition, we include four variables that may trigger managerial discretion when accounting for intangible assets: LEV'_{it} is leverage measured by non-current liabilities divided by book value of total equity, and ROA'_{it} is profitability with net profit after tax before abnormals divided by total assets. Prior research has used both variables as indicators for earnings management that may incentivize managers to account for intangible assets in a myopic way (Markarian, Pozza, & Prencipe, 2008). We do not expect LEV'_{it} to be significant in the Australian context, but we include it for consistency with the literature (e.g., Bugeja & Loyeung, 2015; Russell, 2017). We further include share price volatility ($PRICEVOL_{it}$) and the change in newly issued shares ($SHARE\_ISSUE_{it}$) as control variables for managerial incentives to account for external market factors that may influence how managers account for intangible assets[12]. $YEAR$ and IND are year and industry fixed effects.

To test Proposition 2, we replace the dependent variable in Model 1 with the amount of goodwill expense ($GWEXP_{it}$) (Model 2).

$$
\begin{aligned}
GWEXP_{it} = {} & \beta_0 + \beta_1 IIAEXP_{it} + \beta_2 IFRS_{it} \times IIAEXP_{it} + \beta_3 IFRS_{it} + \beta_4 GW_{it} + \beta_5 SIZE'_{it} \\
& + \beta_6 AGE_{it} + \beta_7 MB'_{it} + \beta_8 OCFVOL_{it} + \beta_9 LEV'_{it} + \beta_{10} ROA'_{it} \\
& + \beta_{11} PRICEVOL_{it} + \beta_{12} SHAREISSUE_{it} + YEAR + IND + \varepsilon
\end{aligned}
\tag{2}
$$

Again, our main variable of interest is the interaction term $IFRS_{it} \times IIAEXP_{it}$. We expect a positive coefficient for $IIAEXP_{it}$ in Model 2 suggesting higher IIA expenses to be positively related to goodwill expenses under AGAAP. However, when moving to IFRS, we expect firms to report less goodwill expenses in the presence of higher IIA expenses to make up for the latter. There is ample evidence of firms trying to avoid goodwill impairments (e.g., Bond et al., 2016; Chalmers et al., 2011; Glaum et al., 2015; Ji, 2013; Kabir & Rahman, 2016). In this study, we suggest that the higher IIA expenses under IFRS resulting from the stricter regulations may be another reason for managers to avoid goodwill impairments. We therefore expect the regression coefficient of $IFRS_{it} \times IIAEXP_{it}$ to be negative in Model 2. Consistent with prior work such as Hamberg et al. (2011), we also include goodwill, size, and market-to-book ratio in the model. In addition, as in Model 1, we also include further firm-economic characteristics and controls for managerial incentives.

To test Proposition 3, we regress market value of equity 3 months after fiscal year-end ($MV_{it+3months}$) on book value of equity excluding earnings (BV_{it}), earnings defined as net profit after tax before abnormals (E_{it}), and the different specific charges related to intangible assets ($GWAMORT_{it}$, $GWIMP_{it}$, $IIAAMORT_{it}$, and $IIAIMP_{it}$). Model 3a shows the very basic market value regression including controls for size, market-to-book ratio, and leverage:

$$
MV_{it+3months} = \beta_0 + \beta_1 BV_{it} + \beta_2 E_{it} + \beta_3 SIZE'_{it} + \beta_4 MB'_{it} + \beta_5 LEV'_{it} + YEAR + IND + \varepsilon.
\tag{3a}
$$

In line with prior work (e.g., Ritter & Wells, 2006), we add information on goodwill and IIA to the regression and further extend it by interacting GW_{it} and IIA_{it} with a dummy variable for the IFRS observations as shown in Model 3b:

$$
\begin{aligned}
MV_{it+3months} = {} & \beta_0 + \beta_1 BV_{it} + \beta_2 E_{it} + \beta_3 GW_{it} + \beta_4 GW_{it} \times IFRS_{it} + \beta_5 IIA_{it} + \beta_6 IIA_{it} \times IFRS_{it} \\
& + \beta_7 IFRS_{it} + \beta_8 SIZE'_{it} + \beta_9 MB'_{it} + \beta_{10} LEV'_{it} + YEAR + IND + \varepsilon
\end{aligned}
\tag{3b}
$$

Finally, we adjust our earnings figure by adding back goodwill and IIA expenses (E'_{it}) and include the amounts separately in the regression, resulting in Model 3c:

$$\begin{aligned}
MV_{it+3months} = {} & \beta_0 + \beta_1 BV_{it} + \beta_2 E'_{it} + \beta_3 GW_{it} + \beta_4 GW_{it} \times IFRS_{it} + \beta_5 IIA_{it} + \beta_6 IIA_{it} \times IFRS_{it} \\
& + \beta_7 GWAMORT_{it} + \beta_8 GWIMP_{it} + \beta_9 GWIMP_{it} \times IFRS_{it} + \beta_{10} IIAAMORT_{it} \\
& + \beta_{11} IIAAMORT_{it} \times IFRS_{it} + \beta_{12} IIAIMP_{it} + \beta_{13} IIAIMP_{it} \times IFRS_{it} + \beta_{14} IFRS_{it} \\
& + \beta_{15} SIZE'_{it} + \beta_{16} MB'_{it} + \beta_{17} LEV'_{it} + YEAR + IND + \varepsilon
\end{aligned} \tag{3c}$$

Consistent with Proposition 3, we expect mechanical amortization to not be considered expenses by investors. On the other hand, discretionary impairment and amortization charges are expected to be perceived as genuine expenses. Given the systematic amortization of goodwill under AGAAP, we therefore expect β_7 either to be significant and positive or not to be significant. Given the stricter accounting environment for IIA under IFRS, we have the same expectation for $\beta_{10} + \beta_{11}$, which captures the total value relevance of IIA amortization under IFRS.

On the other hand, as outlined above, both impairment charges bear a lot of discretion but also the former IIA amortization under AGAAP given the unregulated environment. Hence, we expect these amounts to be perceived as genuine expense if the signaling argument holds and predict β_8, $\beta_8 + \beta_9$, and β_{10} to be significant and negative.

All variables, except for $SIZE'_{it}$, AGE_{it}, MB'_{it}, LEV'_{it}, ROA'_{it}, $PRICEVOL_{it}$, and $SHAREISSUE_{it}$, are scaled by the number of shares outstanding, consistent with prior research. For example, Barth and Clinch (2009, 253) consider different deflators and the scale effect problem and find that in capital market settings, "share-deflated and un-deflated specifications generally perform the best, regardless of the type of scale effect" (see also Power, Cleary, & Donnelly, 2017; Shrivastava, 2014). In additional analyses, we also use different deflators such as lagged total assets and net tangible assets. All variables are winsorized at the 1st and 99th percentile to reduce spurious effects of outliers.

3.3   Sample selection and data collection

We start our sample selection with the top 250 Australian listed companies as of 2000. Panel A of Table 1 shows that 28 companies do not report under AGAAP and/or IFRS and therefore are eliminated. Further, 96 companies do not show a value for market capitalization on Aspect Huntley FinAnalysis Database in 2006 (first year of IFRS adoption data available) due to delisting, mergers, acquisition, or similar. We also discard these companies resulting in 126 firms. Our analysis spans a fairly long period from 2000 to 2010. As a result, some firms do not provide information for all variables throughout the 11-year sample period. Hence, our final sample comprises a total of 802 observations based on 85 unique firms. Note that for the years other than 2003–2006, we have less than 85 firms per year due to data unavailability (2001–2002: 84, 2007: 82, 2008: 77, 2009: 68 and 2010: 67 firms). While it is acknowledged that there may be a survivorship bias, the sample allows us to conduct a thorough analysis on the changes in the accounting for goodwill and IIA over the 11-year sample period, controlling for firm-specific characteristics.

Our final sample of 802 observations therefore comprises the same 85 companies over 11 years. Note that the financial year-end is usually 30 June in Australia and as IFRS are effective from January 1, 2005, their first-time adoption is reflected in the 2006 annual report, covering the period July 1, 2005, to June 30, 2006. Our final sample comprises 423 AGAAP firm-year observations from 2000 to 2005 and 379 IFRS firm-year observations from 2006 to 2010, that is, the post-adoption stage when all listed companies in Australia must use IFRS. Panel B of Table 1

TABLE 1 Sample

Panel A: Sample selection	
Sample	
Top 250 firms in 2000	250
Less	
Thereof firms not using AGAAP (IFRS)	(28)
Thereof firms with no market capitalization information on Aspect Huntley FinAnalysis Database in 2006	(96)
	126
Firm-years with non-missing financial data (2000–2010)	802 (85 unique firms)
Number of AGAAP observations (2000–2005)	423 (85 unique firms)
Number of IFRS observations (2006–2010)	379 (85 unique firms)

Panel B: Sample by industry			
	Industry	**GICS codes**	**Number of firm-years**
1	Energy/materials/industrials	10/15/20	242
2	Consumer discretionary/staples	25/30	159
3	Financials	40	194
4	Others	35/45/50/55	207
	Total		802

Panel A presents sample selection process for our final firm-years under AGAAP and IFRS and the industry distribution is in Panel B.

shows that the final sample comprises companies from all industry sectors with, not surprisingly for Australia, energy/materials/industrial companies being the largest category.

We hand-collect relevant goodwill and IIA data from annual reports of each company for the years 2000–2010. In particular, the amounts of goodwill and IIA recognized are collected either from the balance sheet or from the notes to the financial statements[13]. With regard to IIA, we further differentiate and collect the amounts of recognized finite IIA and indefinite IIA. For the purpose of data collection, if a company reports a specific useful life for IIA, they are defined as finite IIA. Examples of finite IIA are licenses and R&D, including in-process R&D. On the other hand, indefinite IIA in our sample are typically brands, customer lists, mastheads, and trademarks. In summary, our hand-collected data comprise the amount of goodwill recognized and three different amounts concerning IIA: total IIA, IIA with indefinite life, and IIA with finite life[14].

With regard to income statement data, information on goodwill amortization (during 2000–2005 under AGAAP), goodwill impairment (2000–2010), and amortization and/or impairment related to IIA (2000–2010) is also hand-collected either from the income statement or from the notes to the financial statements. As amortization and impairment expenses are usually recognized in the income statement as a one-line item, disaggregated amortization and impairment expenses for specific IIA are mostly collected from the notes to the financial statements. In addition, we repeat the collection process for the 2005 reconciliation data, which allows us to compare the AGAAP accounting information (as reported) with the IFRS information (as reconciled).

Finally, accounting policies on amortization and impairment regarding each category of goodwill and IIA are collected from the notes to the financial statements. Other financial data (e.g., total

assets) are either retrieved from the Aspect Huntley FinAnalysis Database or hand-collected from annual reports.

4   RESULTS

4.1   Descriptive statistics

Panel A of Table 2 provides summary statistics on our test variables for the AGAAP (2000–2005) and IFRS (2006–2010) periods separately. The last column shows the *t*-statistic for two-sample *t* tests with equal variances.

The results suggest that for most variables, the mean values are significantly different under AGAAP versus IFRS. Consistent with our propositions, companies report significantly more IIA expenses under IFRS, which are accompanied by lower goodwill expenses but higher amounts of IIA with indefinite life[15]. We will further test these expectations in our multivariate analyses.

In addition, under IFRS Australian firms report both more goodwill and IIA, which may be related to the growing importance of intangible assets in general (Lev & Zarowin, 1999) since the start of the high-tech era around the millennium but also increasing M&A activities. Additional yearly analyses (not tabulated) show that goodwill impairments under IFRS are most pronounced during 2008 and 2009 consistent with the global financial crisis during that period. The highest goodwill impairment reported was $7.9 billion.

Panel B of Table 2 displays the Pearson correlation coefficients for our main variables of interest. For brevity, we do not include the control variables in the matrix. We do not observe extreme amounts for the correlation coefficients among independent variables suggesting that multicollinearity is not of concern in our analyses. The tests on the variance inflation factors support this notion. In line with the summary statistics, the correlation coefficients also behave as expected: While goodwill expenses ($GWEXP_{it}$) and the dummy variable for IFRS years ($IFRS_{it}$) are negatively correlated ($-.131$), $IIAEXP_{it}$ and $IFRS_{it}$ show a positive correlation coefficient (.221). Splitting $GWEXP_{it}$ and $IIAEXP_{it}$ into the specific amortization and impairment charges, we observe that goodwill impairments are positively correlated with $IFRS_{it}$ (.074) while the coefficient for goodwill amortization is negative ($-.333$). On the other hand, both IIA amortization and impairments are positively correlated with $IFRS_{it}$. This suggests that companies report more IIA expenses under IFRS, which are accompanied by less goodwill expenses. In addition, we also observe the suggested shift in IIA with indefinite life based on the positive correlation between $IFRS_{it}$ and $INDEFINITE\_IIA_{it}$ (.158).

4.2   Main results

We first test (Panel A of Table 3) whether our control variables in Models 1–3 are associated with IIA, before we add our test variables. The first column suggests that under AGAAP, firm size, operating cash flow volatility, and leverage are associated with the capitalization of IIA. Under IFRS, firm size and external market factors that might trigger managerial incentives captured by share price volatility and newly issued shares seem to be explanatory factors while goodwill is strongly positively associated as well. The evidence suggests that during different times and accounting standards, different firm characteristics seem to matter. We include those firm characteristics in our main regressions to control for the underlying economic perspectives.

Panel B of Table 3 shows our main findings for Models 1 and 2. Consistent with our Proposition 1, the regression coefficient of $IFRS_{it} \times IIAEXP_{it}$ is significant and positive (5.451,

p-value < .01). The results suggest that under AGAAP, IIA expenses are negatively associated with IIA with indefinite life as the bulk of IIA expenses will be related to IIA with finite life, which are consistent with findings of Wyatt (2005). When firms move from AGAAP to IFRS, IIA expenses are positively related to $INDEFINITE\_IIA_{it}$ however. Hence, with higher IIA expenses under the IFRS regime, firms may allocate more amounts of total IIA to IIA with indefinite life to avoid annual amortization of the latter. This is consistent with Wines and Ferguson (1993) who find that Australian companies under AGAAP shifted the amounts recognized as goodwill to IIA

TABLE 2 Descriptive statistics

Panel A: Summary statistics									
	AGAAP (2000–2005)				**IFRS (2006–2010)**				
	N	**Mean**	*SD*	**Median**	*N*	**Mean**	*SD*	**Median**	*t* test
GW_{it}	423	0.493	1.207	0.011	379	1.208	2.566	0.137	−5.139***
$GWEXP_{it}$	423	0.032	0.067	0	379	0.013	0.07	0	3.741***
$GWAMORT_{it}$	423	0.027	0.052	0	379	0	0	0	9.994***
$GWIMP_{it}$	423	0.004	0.031	0	379	0.01	0.047	0	−2.089**
IIA_{it}	423	0.222	0.666	0	379	0.453	1.158	0.032	−3.517***
$IIAEXP_{it}$	423	0.003	0.01	0	379	0.03	0.087	0.002	−6.418***
$IIAAMORT_{it}$	423	0.003	0.008	0	379	0.022	0.056	0.002	−7.034***
$IIAIMP_{it}$	423	0	0.005	0	379	0.003	0.012	0	−3.953***
$INDEFINITE\_IIA_{it}$	423	0.057	0.276	0	379	0.21	0.629	0	−4.516***
$SIZE'_{it}$	423	20.998	1.501	21.145	379	21.426	1.672	21.785	−3.820***
AGE_{it}	423	2.447	0.894	2.303	379	2.742	0.673	2.565	−5.224***
MB'_{it}	423	2.365	2.766	1.53	379	2.531	2.922	1.516	−0.827
OCF_VOL_{it}	423	0.34	1.382	0.106	379	0.474	1.917	0.12	−1.139
LEV'_{it}	423	0.745	1.688	0.464	379	0.711	1.282	0.483	0.314
ROA'_{it}	423	0.047	0.094	0.055	379	0.056	0.101	0.053	−1.235**
$PRICE\_VOL_{it}$	423	1.865	3.174	0.786	379	2.089	3.351	0.908	−0.973
$SHARE\_ISSUE_{it}$	423	0.147	0.727	0.014	379	0.452	2.102	0.011	−2.804***
$MV_{it+3months}$	423	7.308	9.574	4.051	379	11.727	19.002	4.58	−4.222***
BV_{it}	423	2.829	2.726	2.151	379	4.653	6.559	2.523	−5.237***
E_{it}	423	0.346	0.442	0.221	379	0.641	1.195	0.279	−4.730***

Panel B: Correlation matrix (*N* = 802)													
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**
1 $IFRS_{it}$													
2 GW_{it}	.179												
3 $GWEXP_{it}$	−.131	.299											
4 $GWAMORT_{it}$	−.333	.254	.629										
5 $GWIMP_{it}$	.074	.172	.785	.051									

(Continues)

TABLE 2 (Continued)

Panel B: Correlation matrix ($N = 802$)													
	1	2	3	4	5	6	7	8	9	10	11	12	13
6 IIA_{it}	**.123**	**.421**	**.226**	.056	**.236**								
7 $IIAEXP_{it}$	**.221**	**.404**	**.341**	−.044	**.417**	**.485**							
8 $IIAAMORT_{it}$	**.241**	**.422**	**.158**	−.034	**.207**	**.489**	**.824**						
9 $IIAIMP_{it}$	**.138**	**.241**	**.278**	−.049	**.379**	**.238**	**.636**	**.264**					
10 $INDEFINITE\_IIA_{it}$	**.158**	**.380**	**.074**	−.045	**.110**	**.684**	**.260**	**.199**	**.202**				
11 $MV_{it+3months}$	**.148**	**.492**	**.293**	**.148**	**.226**	**.382**	**.521**	**.485**	**.288**	**.261**			
12 BV_{it}	**.182**	**.478**	**.273**	.061	**.269**	**.394**	**.496**	**.370**	**.356**	**.273**	**.662**		
13 E_{it}	**.165**	**.463**	**.266**	.064	**.250**	**.420**	**.516**	**.472**	**.286**	**.309**	**.871**	**.714**	

Panel A provides the summary statistics for the final sample for the AGAAP and IFRS periods separately. The last column shows the *t*-statistics for two-sample *t* tests with equal variances (***$p < .01$, **$p < .05$, *$p < .10$, two-tailed). Panel B displays the Pearson's correlation coefficients with bold coefficients for $p < .05$ or lower. Variables are defined as in Appendix B.

when the new standard (i.e., ASRB 1013 in 1988) introduced an amortization regime for goodwill, which was not required for IIA at the time.

With regard to IIA, most of the IIA expenses are related to the amortization of finite IIA rather than IIA impairment, with the average IIA amortization rate being 2.1% and 12.0% under AGAAP and IFRS, respectively (not tabulated). As for the IIA impairment, we again observe the highest impairment rate around the financial crisis years, particularly in 2009 when companies, on average, impaired 6.9% of their IIA. This is exceptionally high compared to all other years (mean ranges between 0% and 1.9%). Compared to goodwill, the impairment related to IIA was recorded later than 2008. This may be due to goodwill being the first asset to be written off in a CGU.

The increase in the amortization rate for IIA also suggests that the adoption of IFRS may have led to changes in the amortization policies for IIA, for example, a reduction in the useful life of finite IIA. This increase, however, may also be due to the fact that no regulations existed for most IIA prior to the adoption of IFRS. Under AGAAP, companies were not required to systematically amortize IIA (except for deferred R&D), and hence, by not amortizing, they were able to avoid negative charges to the reported earnings. Under IFRS, at least for finite IIA, this is no longer possible. Once IIA are recognized and classified as finite IIA, they must be amortized in subsequent periods and may be impaired later on. IFRS have much more explicit rules requiring companies to distinguish IIA as finite IIA or indefinite IIA, with finite IIA subject to the amortization regime including potential impairments and indefinite IIA to the impairment-only approach. Hence, IIA impairments may relate to IIA with both finite and indefinite lives. The increase in the amortization rate could also be due to different types of IIA capitalized under AGAAP compared to the IFRS period. However, this seems unlikely to be the case in our sample as we look at the same firms throughout the sample period. This also takes into account that firms from certain industries tend to use and recognize the same kinds of IIA, whether internally generated or acquired.

The positive regression coefficient of the interaction term $IFRS_{it} \times IIAEXP_{it}$ may be interpreted as managerial reaction to address the stricter accounting environment for IIA: By shifting IIA from finite to indefinite IIA, negative charges related to annual amortization of finite IIA may be minimized.

The second column of Panel B of Table 3 shows regression results for Proposition 2. Again, consistent with our expectations, we find a negative regression coefficient for $IFRS_{it} \times IIAEXP_{it}$

TABLE 3 Main results

Panel A: Analysis on firm characteristics and recognition of *IIA*		
Dependent variable	**AGAAP (2000–2005)** *IIA$_{it}$*	**IFRS (2006–2010)** *IIA$_{it}$*
GW$_{it}$	−0.0125	0.191***
	(−0.52)	(4.52)
SIZE'$_{it}$	0.131***	0.136***
	(4.52)	(2.92)
AGE$_{it}$	−0.0109	−0.0175
	(−0.31)	(−0.28)
MB'$_{it}$	−0.0148	0.00592
	(−1.64)	(0.35)
OCF_VOL$_{it}$	−0.0470**	0.0315
	(−2.39)	(1.15)
LEV'$_{it}$	−0.0255**	0.00619
	(−2.25)	(0.18)
ROA'$_{it}$	−0.0311	0.0396
	(−0.23)	(0.12)
PRICE_VOL$_{it}$	0.0187	−0.0374*
	(1.00)	(−1.71)
SHARE_ISSUE$_{it}$	−0.00586	−0.0270*
	(−0.34)	(−1.68)
Constant	−2.669***	−2.745***
	(−4.77)	(−2.99)
INDUSTRY DUMMIES	Yes	Yes
YEAR DUMMIES	Yes	Yes
Observations	423	379
R^2	.15	.35
Adj. R^2	.12	.32
Panel B: Substitution effects of *IIA* and goodwill accounting under *IFRS*		
	Proposition 1 *INDEFINITE_IIA$_{it}$*	**Proposition 2** *GWEXP$_{it}$*
IIAEXP$_{it}$	**−4.510*****	**2.219*****
	(−3.74)	**(4.74)**
IFRS$_{it}$ × IIAEXP$_{it}$	**5.451*****	**−1.908*****
	(4.22)	**(−3.96)**
IFRS$_{it}$	0.0764	−0.00810
	(0.95)	(−0.63)
GW$_{it}$	0.0679***	0.00507**
	(3.22)	(2.29)

(Continues)

TABLE 3 (Continued)

Panel B: Substitution effects of *IIA* and goodwill accounting under *IFRS*		
	Proposition 1 *INDEFINITE_IIA$_{it}$*	**Proposition 2** *GWEXP$_{it}$*
SIZE'$_{it}$	0.0264**	0.000984
	(2.45)	(0.70)
AGE$_{it}$	0.0107	0.00538**
	(0.83)	(2.00)
MB'$_{it}$	−0.00307	−0.00194**
	(−0.63)	(−2.47)
OCF_VOL$_{it}$	0.000944	−0.00245*
	(0.15)	(−1.83)
LEV'$_{it}$	0.00360	0.00136
	(0.53)	(1.40)
ROA'$_{it}$	−0.0395	0.0828***
	(−0.44)	(3.13)
PRICE_VOL$_{it}$	−0.00802	0.00311**
	(−1.36)	(2.16)
SHARE_ISSUE$_{it}$	−0.0109	−0.00220
	(−1.34)	(−1.57)
Constant	−0.605***	−0.0239
	(−2.70)	(−0.83)
INDUSTRY DUMMIES	Yes	Yes
YEAR DUMMIES	Yes	Yes
Observations	802	802
R^2	.27	.29
Adj. R^2	.25	.27

Panel C: Signaling perspective			
	Proposition 3		
	MV$_{it+3months}$	*MV$_{it+3months}$*	*MV$_{it+3months}$*
BV$_{it}$	0.525***	0.449**	0.649***
	(3.14)	(2.38)	(2.87)
E$_{it}$ (E'$_{it}$ in column 3)	12.00***	11.70***	9.026***
	(11.50)	(10.26)	(6.07)
GW$_{it}$		1.172**	−0.147
		(2.23)	(−0.39)
GW$_{it}$ × *IFRS$_{it}$*		−0.646	0.717
		(−1.17)	(1.55)

(Continues)

TABLE 3 (Continued)

Panel C: Signaling perspective			
	Proposition 3		
	$MV_{it+3months}$	$MV_{it+3months}$	$MV_{it+3months}$
IIA_{it}		−0.314	−0.903***
		(−1.15)	(−3.06)
$IIA_{it} \times IFRS_{it}$		0.514	0.668
		(1.13)	(1.03)
$GWAMORT_{it}$			**36.25***
			(3.19)
$GWIMP_{it}$			**−4.089**
			(−0.51)
$GWIMP_{it} \times IFRS_{it}$			**−55.93**
			(−2.37)
$IIAAMORT_{it}$			**−55.94**
			(−2.13)
$IIAAMORT_{it} \times IFRS_{it}$			**87.18***
			(2.65)
$IIAIMP_{it}$			**−32.89***
			(−1.72)
$IIAIMP_{it} \times IFRS_{it}$			**64.56**
			(1.03)
$IFRS_{it}$		−0.815	−0.912
		(−0.66)	(−0.75)
$SIZE'_{it}$	0.489**	0.319*	0.387**
	(2.53)	(1.81)	(2.12)
MB'_{it}	1.177***	1.165***	1.285***
	(6.83)	(6.73)	(6.52)
LEV'_{it}	−0.403**	−0.327*	−0.356*
	(−2.00)	(−1.69)	(−1.85)
Constant	−12.83***	−8.275**	−10.17***
	(−3.32)	(−2.32)	(−2.66)
INDUSTRY DUMMIES	Yes	Yes	Yes
YEAR DUMMIES	Yes	Yes	Yes
Observations	802	802	802
R^2	.82	.82	.80
Adj. R^2	.81	.82	.80

The OLS regression coefficients based on robust standard errors using the Huber–White sandwich estimator with robust t-statistics in parentheses (***$p < .01$, **$p < .05$, *$p < .10$). Panel A displays the results for preliminary analysis, Panel B reports results for Propositions 1 and 2, and Panel C for Proposition 3. The variables of interest are in bold. Variables are defined as in Appendix B.

(-1.908, p-value $< .01$). We interpret this result as follows: Under AGAAP, higher IIA expenses are positively associated with goodwill expenses as observed by the positive regression coefficient of $IIAEXP_{it}$ (2.219, p-value $< .01$). However, this changes when firms move to IFRS. Under the latter, accounting for IIA has become much stricter resulting in higher IIA expenses as shown in the descriptive summary statistics. Avoiding goodwill impairments under IFRS may be one way to compensate for that. The negative regression coefficient of the interaction term is consistent with this notion: The size of the coefficient is almost as large as the coefficient for $IIAEXP_{it}$ suggesting a substitution effect under IFRS of lower goodwill expenses in the presence of higher IIA expenses.

While the impairment-only regime under IFRS has resulted in higher impairment charges for goodwill, they do not make up for zero amortization being recorded under IFRS. This is in line with prior evidence in the Swedish setting (Hamberg et al., 2011). It also confirms one of the main concerns raised by the stakeholders in the post-implementation review of *IFRS 3 Business Combinations*: that is, without annual amortization, there is a greater risk of maintaining high levels of purchased goodwill in the books which, over time, will be replenished by internally generated goodwill and should therefore no longer be recognized.

As mentioned previously, AGAAP (AASB 1013) prescribed straight-line amortization for purchased goodwill over a period not exceeding 20 years from the date of acquisition. In additional analyses (untabulated), we find that during the AGAAP period, the amortization rate of goodwill is on average 7.19%, implying that companies tended to determine the average useful life of goodwill as about 14 years. Further analysis of the amortization policies (untabulated) of the sample companies for 2000, as an exemplar AGAAP year, confirms that the majority of companies have amortized goodwill over 20 years, the maximum period permitted under AGAAP. The evidence is consistent with Kwok and Sharp (2005) who find that a longer amortization period for intangible assets is preferred by preparers of financial statements although users and accountants actually prefer a shorter period[16]. This allows companies to minimize the annual negative impact on earnings. Hence, also under AGAAP, companies had a tendency to avoid goodwill expenses, which are even more pronounced now under the impairment regime (Bond et al., 2016; Kabir & Rahman, 2016).

Panel C of Table 3 reports our findings for our market value analysis that is, a signaling perspective. The first column shows results for the basic Model 3a, where the coefficients for $SIZE'_{it}$, MB'_{it}, and E_{it} are strongly positive and significant, while LEV'_{it} is significantly negative. In the second column, we observe a significant and positive coefficient for GW_{it} (1.172, p-value $< .05$); that is, for AGAAP years, goodwill is positively associated with market values. This does not change in IFRS years; the coefficient for the interaction term $GW_{it} \times IFRS_{it}$ is not significant (F test of $\beta_3 + \beta_4$ is significant at p-value $< .10$, not tabulated). The consistently insignificant results for IIA suggest that while the market seems to deem the information on goodwill value relevant, this is not the case for IIA under either standard.

Our results for Proposition 3 are presented in the third column: Note that the coefficient of earnings decreases from around 12 to 9.026 (p-value $< .01$). In Model 3c, we adjust E'_{it} and add back goodwill and IIA expenses to test the amounts in the regression separately. If the market considered these amounts expenses, their coefficient should carry a negative sign. However, consistent with our expectations, charges from a mechanical amortization are positively associated with market values. This is the case for $GWAMORT_{it}$ relating to the AGAAP years (36.25, p-value $< .01$) as well as IIA amortization under IFRS ($IIAAMORT_{it} + IIAAMORT_{it} \times IFRS_{it} = -55.94 + 87.18$; F test on the sum of the coefficients is significant at p-value $< .01$). The positive coefficients for the amounts suggest that the market does not consider goodwill amortization as expenses. Textbooks on analysis and valuation suggest that such expenditures are added back to earnings and

valuations are carried out based on earnings before goodwill amortization (Robinson et al., 2009; White et al., 2003). The cumulative effect of such adjustments increases not only earnings of the current period, but also book values. The positive sign on the coefficient suggests that this is the case in our sample. The evidence is consistent with prior Australian work claiming that limiting managerial discretion when accounting for intangible assets may reduce the quality of investor's information set (Russell, 2017; Wyatt, 2005). Mechanical amortization charges do not seem to be priced by the market. On the other hand, IIA charges under the unregulated AGAAP environment are priced negatively: Coefficients of both $IIAAMORT_{it}$ (-55.94, p-value $< .05$) and $IIAIMP_{it}$ (-32.89, p-value $< .10$) are significant and negative. Finally, impairment charges for goodwill under IFRS are also priced negatively (-4.089 - 55.93; F test with p-value $< .01$). While the discretion inherent in the impairment test may be used opportunistically, companies still seem able to signal useful information about managerial expectations about these assets to the market through their write-offs.

Taken together, these findings suggest support for the signaling perspective. Note that the opportunistic and signaling views can be considered as complementary rather than competing (Morris, 1987). In other words, finding support for signaling theory (i.e., Proposition 3) does not contradict our results for Propositions 1 and 2; rather, our findings complement each other. While we observe changes in how companies account for their intangible assets under IFRS compared to AGAAP, suggesting an opportunistic use, the signaling argument still seems to hold overall[17].

In summary, while Australia had a fairly unregulated environment for IIA under AGAAP, the adoption of IFRS resulted in stricter accounting policies for IIA, which may have reduced managerial discretion to account for IIA. Our results suggest that in turn, managerial discretion may now be used to a larger extent when accounting for goodwill and classifying IIA. We observe two effects: firstly, a substitution effect with less goodwill expenses making up for the higher IIA expenses and secondly, a shifting effect with more IIA being classified as IIA with indefinite life rather than finite life. While companies in the past have been shown to successfully avoid negative charges relating to the annual amortization of goodwill, our analyses suggest that this is not the case for the annual amortization of IIA under IFRS. Instead, companies seem to shift amounts from finite IIA to indefinite IIA and to avoid goodwill impairments, both potentially to reduce higher annual amortization charges. In addition, while a mechanical amortization does not contain information relevant for market valuation, discretionary impairment and amortization charges do.

Our findings are consistent with the notion that intangible assets and their accounting remain an area that is susceptible to managerial discretion and that opportunism and signaling appear to be the strongest explanation in our setting. It remains to be seen how the IASB will respond to the outcome of the post-implementation review of *IFRS 3 Business Combinations* and, in particular, to the concerns raised regarding the subsequent treatment of goodwill and, implicitly, also of indefinite IIA.

4.3   Additional analyses

4.3.1   Quintile analyses and reconciliation statement (AGAAP versus IFRS) 2005

Table 4 provides the results for our additional analyses. In Panel A, we compare goodwill expenses, IIA expenses, and the amount of IIA with indefinite life under AGAAP versus IFRS for different quintiles of share issues, with quintile 1 the lowest and quintile 5 the highest amount of share issues. We use the change in newly issued shares as depicted by $SHARE\_ISSUE_{it}$ to control

TABLE 4 Additional analyses

Panel A: Accounting for intangibles per quintiles of share issue

| | Share issue quintiles | | | | |
	1	2	3	4	5
Observations (AGAAP)	95	56	87	99	86
Observations (IFRS)	119	37	79	72	72
$GWEXP_{it}$ *(AGAAP)*	0.037	0.030	0.046	0.021	0.023
$GWEXP_{it}$ *(IFRS)*	0.031	0.030	0.001	0.001	0.002
t test	0.483	0.029	4.817***	3.199***	3.212**
$IIAEXP_{it}$ *(AGAAP)*	0.004	0.002	0.006	0.001	0.001
$IIAEXP_{it}$ *(IFRS)*	0.043	0.047	0.033	0.009	0.019
t test	−3.449***	−2.526**	−2.834***	−4.135***	−3.978***
$INDEFINITE\_IIA_{it}$ *(AGAAP)*	0.059	0.039	0.076	0.051	0.056
$INDEFINITE\_IIA_{it}$ *(IFRS)*	0.229	0.322	0.183	0.184	0.174
t test	−2.383**	−2.537**	−1.501	−2.046**	−1.576

Panel B: Accounting for intangibles per quintiles of price volatility

| | Price volatility quintiles | | | | |
	1	2	3	4	5
Observations (AGAAP)	99	95	77	89	63
Observations (IFRS)	70	82	87	68	72
$GWEXP_{it}$ *(AGAAP)*	0.008	0.019	0.028	0.045	0.074
$GWEXP_{it}$ *(IFRS)*	0.010	0.018	0.019	0.014	0.004
t test	−0.295	0.079	0.745	2.611***	5.659***
$IIAEXP_{it}$ *(AGAAP)*	0.001	0.003	0.002	0.006	0.004
$IIAEXP_{it}$ *(IFRS)*	0.035	0.032	0.014	0.040	0.034
t test	−2.806***	−2.871***	−3.646***	−2.930***	−4.979***
$INDEFINITE\_IIA_{it}$ *(AGAAP)*	0.014	0.151	0.062	0.022	0.029
$INDEFINITE\_IIA_{it}$ *(IFRS)*	0.056	0.235	0.207	0.289	0.258
t test	−2.330**	−0.970	−1.774*	−3.429***	−2.498**

Panel C: First-time IFRS adoption effects of accounting for intangibles

	AGAAP as reported (*n* = 85)	IFRS as reconciled (*n* = 85)	*t* test
$GWEXP_{it}$	0.036	0.014	2.287**
$IIAEXP_{it}$	0.003	0.061	−4.751***
$INDEFINITE\_IIA_{it}$	0.081	0.143	−1.039

For different quintiles of share issues and price volatility, respectively, Panel A displays the accounting for intangible assets under AGAAP versus IFRS. Panel B shows the first-time IFRS adoption effects of accounting for intangibles. The reported *t*-statistics are based on two-sample *t* tests with equal variances (***$p < .01$, **$p < .05$, *$p < .10$, two-tailed). Variables are defined as in Appendix B.

for an external market factor, which may encourage companies to account for intangibles in a more opportunistic way. The results show that under both AGAAP and IFRS, goodwill expenses fall from quintile 1 to quintile 5, although not monotonically. $GWEXP_{it}$ is, in general, lower, under

IFRS compared to AGAAP with the difference being most pronounced in the higher quintiles of share issues (*p*-value < .01 in quintiles 3–5). In addition, under both AGAAP and IFRS, the amount of $GWEXP_{it}$ is lower in quintiles 4 and 5 than in quintiles 1 and 2. With more newly issued shares, the pressure might be larger to report higher profits and, as such, to avoid goodwill impairments. IIA expenses under IFRS always exceed those under AGAAP. However, in quintiles 4 and 5, the amounts for $IIAEXP_{it}$ are lower under both AGAAP and IFRS compared to the lower quintiles in line with the notion that external market pressure to be profitable is higher. However, the decrease in $IIAEXP_{it}$ when moving from lower to higher quintiles is much larger under IFRS compared to AGAAP. $IIAEXP_{it}$ during IFRS years always exceeds $IIAEXP_{it}$ in AGAAP. Finally, for IIA with indefinite life, the amounts are larger under IFRS compared to AGAAP, but within AGAAP and IFRS, the differences across quintiles are not as large as for $IIAEXP_{it}$.

We rerun the additional analysis for quintiles of price volatility as an additional proxy of external market pressure leading to opportunism. The results in Panel B of Table 4 are consistent with our findings based on quintiles of changes in newly issued shares. Goodwill expenses are lower under IFRS than AGAAP, with the difference being most pronounced in quintiles 4 and 5, that is, when high price volatility may weigh on companies to be profitable. IIA expenses and also the amounts of IIA with indefinite life under IFRS always exceed comparable amounts under AGAAP. However, the differences from quintiles 1 to 5 for $INDEFINITE\_IIA_{it}$ are larger under IFRS than under AGAAP.

In summary, the results in Panel A are consistent with larger share issues being associated with lower expenses for GW_{it} under IFRS compared to AGAAP. For higher price volatility (Panel B), a similar result occurs. For indefinite IIA, higher quintiles of share issue and price volatility are associated with larger amounts under IFRS than under AGAAP. Collectively, these results are consistent with higher market performance expectations being associated with accounting outcomes driven by opportunistic choices as in our Propositions 1 and 2.

Finally, different economic events and transactions throughout the sample periods may affect our results, especially given the 11-year sample period. In other words, it might be argued that the trends we have reported are due to underlying economic changes rather than due to the influence of IFRS. We therefore repeat our analyses from the previous sections and compare the 2005 AGAAP financial information (as reported) with the 2005 IFRS information (as reconciled) of the 85 sample companies. We examine the 2006 annual reports and the year of first-time IFRS adoption and hand-collect the information on reconciled financial figures for goodwill and IIA related to the previous financial year ending on 30 June 2005. That is, we examine the 2006 annual reports and retrieve the reconciliation information as of June 30, 2005. IFRS 1 Para. 39 requires disclosure of the reconciliation from IFRS to AGAAP of a firm's equity, its comprehensive income, and any recognized or reversed impairment losses. Hence, the reconciled information is based on the same economic circumstances as the accounting data reported in the previous year's annual report. However, they differ in terms of the accounting standards (AGAAP versus IFRS). This allows us to analyze the sole impact of the IFRS adoption on accounting for goodwill and IIA.

Panel C of Table 4 shows the results of two-sample *t* tests with equal variances for goodwill expenses, IIA expenses, and IIA with indefinite life based on the reported and reconciled 2005 figures. The smaller sample size does not allow us to run larger multivariate analyses. However, the findings also show that under IFRS, companies report higher IIA expenses accompanied by both lower goodwill expenses and higher IIA with indefinite life (although the difference is not significant for the latter).

4.3.2   Sensitivity analyses

We run a number of sensitivity analyses to test the robustness of our results. As indicated above, we use the number of shares outstanding as a deflating variable in our tabulated results. This is consistent with prior work in this area (e.g., Barth & Clinch, 1998, 2009; Power et al., 2017; Shrivastava, 2014). When using lagged total assets as deflator (e.g., Dinh et al., 2016), the results for Proposition 1 show that while signs are as expected, the interaction is no longer significant. However, the results of Proposition 2 on the substitution effect of lower goodwill expenses in the presence of higher IIA expenses remain unchanged. As for Proposition 3, findings on the mechanical versus discretionary charges related to IIA remain robust, while those for goodwill turn insignificant. We also scale our variables by net tangible assets, as defined by total assets less intangible assets (Ritter & Wells, 2006)—results for Proposition 2 again remain unchanged. Signs for Proposition 1 are as expected but not significant, while results for Proposition 3 are consistent with the notion that the mechanical goodwill amortization under AGAAP is not relevant for market valuation but is priced positively instead. In addition, only IIA impairment under the unregulated AGAAP environment is perceived as a genuine expense with a negative sign.

Given that impairment charges related to goodwill and IIA are potentially associated with market conditions, we repeat our analyses for a subsample period covering the years 2004–2007. These periods of AGAAP (2004–2005) and IFRS (2006–2007) exclude the exceptional years of the dot-com crisis as well as the global financial crisis. Our findings remain largely unchanged[18]. For Proposition 3, we find only goodwill impairments under IFRS to be priced correctly; coefficients of all other charges are not significant.

Given the unique features of financial institutions, we exclude the 194 firm-years belonging to that industry and rerun our analyses. All our results remain unchanged, except in our market value tests where the findings for IIA amortization under AGAAP turn insignificant. However, results on the mechanical goodwill amortization under AGAAP as well as the discretionary impairment charges under both standards remain unchanged.

Finally, we have implicitly assumed that the enforcement level in Australia does not change during our sample period. This is based on the World Governance Indicators (WGI) on both Regulatory Quality and Rule of Law dimensions which show that Australia did not experience significant changes over 2000–2010.[19] Using a measure of enforcement more focused on accounting and auditing, Brown, Preiato, and Tarca (2014) report that enforcement of accounting rules increased from 2005 to 2008 in Australia. This increase in the enforcement of rules acts against our primary expectations (Propositions 1 and 2).

5   DISCUSSION AND CONCLUSION

The purpose of this study is to analyze the impact of changes in accounting methods for intangible assets on how companies account for their goodwill and IIA. The Australian setting is particularly interesting as the accounting regulation for intangible assets has changed several times in a relatively short period of 20 years, with the final change being IFRS adoption. With the adoption of IFRS in 2005 (2006 financial year in Australia), subsequent treatment for goodwill changed from systematic amortization to an impairment-only regime, with IFRS prescribing specific accounting methods for IIA, which had been largely unregulated under AGAAP.

Our findings suggest a substitution effect; that is, under IFRS, IIA expenses are negatively associated with goodwill expenses, which is not the case under AGAAP. In addition, firms seem

to recognize more IIA with indefinite useful life rather than finite useful life. This also allows firms to minimize annual amortization charges. We also find evidence consistent with signaling: The market positively values impairment and amortization charges, which are not the product of mechanical rules in standards.

Our findings suggest that companies impair significantly less goodwill under IFRS than they amortized and impaired under AGAAP. This finding is in line with prior research conducted in different settings such as Hamberg et al. (2011) for Sweden. At the same time, goodwill has become an increasingly more important item on the balance sheet over our sample period, subsequently resulting in companies being more prone to impairment risks. On the other hand, IIA are amortized and impaired significantly more under IFRS than under AGAAP. This suggests that by prescribing accounting policies required for IIA, IFRS may have restricted companies from avoiding negative charges relating to IIA. Companies, however, may have found a way to address this issue by shifting their IIA from finite to indefinite IIA, and subsequently, they may potentially reduce annual amortization charges. The result is consistent with prior Australian evidence by Wines and Ferguson (1993) who have observed a similar shift from goodwill to IIA in Australia under AGAAP to avoid annual amortization.

In addition, we find the new accounting rules under IFRS to have resulted in higher impairment charges for goodwill, which are consistent with Hamberg et al. (2011). The effect of non-amortization of goodwill, however, is greater than higher levels of impairment under IFRS, and as such, overall, the amount of goodwill-related expenses is lower under IFRS. This addresses one of the main concerns raised by many stakeholders who participated in the post-implementation review of *IFRS 3 Business Combinations*. The lower amount of expenses related to goodwill potentially bears the risk that the purchased goodwill in the books is replenished by internally generated goodwill. In other words, companies may be covertly recognizing an asset (i.e., internally generated goodwill) which cannot be recognized under the current accounting standards, raising doubts on both the relevance and reliability of accounting information.

Finally, we find support for prior Australian studies claiming that limiting managerial discretion when accounting for intangible assets tends to reduce rather than improve investor's information set. This is observable in our data with mechanical amortization not being relevant for market valuation but instead the market perceiving discretionary impairment and amortization charges as genuine expenses.

We contribute to the existing literature in several ways. Contrary to prior Australian studies that have focused only on goodwill or IIA, our study uses unique hand-collected data on separate finite and, indefinite IIA which allows us to analyze the managerial discretion involved in the classification of such assets. Our study confirms prior findings that while the global adoption of IFRS is associated with many benefits, it may also be associated with costs related to higher managerial discretion. The results suggest that companies can potentially use discretion when recognizing goodwill and IIA and when making subsequent impairment decisions. Our analysis also includes the year of reconciliation, which provides a clean empirical setting to rule out reasons other than the change in the standards (from AGAAP to IFRS) that may affect how companies account for intangible assets. Overall, our findings may be useful for preparers, users, and standard setters, particularly in view of the recently finalized post-implementation review of *IFRS 3 Business Combinations*.

We acknowledge that our sample of 85 constant companies from the top 250 Australian listed companies is small and there may be a survivorship bias, as well as low statistical power; hence, generalizing our inferences to other settings should be carried out with caution. In addition, while we have used several different deflators (i.e., the number of shares outstanding, lagged total assets,

and net tangible assets), it is acknowledged that a scale effect problem still exists. However, we are confident that the Australian setting with the various changes in accounting policies related to intangible assets provides a good environment to test our research questions.

Future research may use our findings and investigate the adjustments of the reconciliation for goodwill and IIA. A more thorough analysis on the different reconciliation adjustments and how they are related to managerial discretion may provide further insight into the usefulness of the accounting for goodwill and IIA under IFRS.

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ENDNOTES

1 Since 1991, Australian accounting standards have had the prefix "*AASB*," regardless of whether they are referring to the standards under Australian GAAP (pre-2005) or IFRS (post-2005). To avoid confusion, we use the acronym *IFRS* to refer to the Australian accounting standards post-2005 and *AGAAP* to refer to the standards pre-2005. This is the approach consistent with Chalmers, Clinch, and Godfrey (2008). IFRS requirements as specified in Australia are identical to IFRS as issued by the International Accounting Standards Board (IASB) for for-profit entities.

2 According to Boennen and Glaum (2014), for US companies and many European companies, goodwill and related expenses are not directly comparable before and after the introduction of the impairment-only approach due to the wide use of pooling of interests and setting off goodwill directly to reserves. Weber (2004) finds that the method is clearly preferred by managers with 90% of the pending mergers in 1996 in the United States being completed as pooling-of-interests. In Australia, purchase method and amortization of goodwill were prescribed for all business combinations prior to the introduction of IFRS, and therefore, such direct comparison is possible for Australian companies.

3 For a detailed information and discussion on changes in intangible asset accounting standards in Australia, see Matolcsy and Wyatt (2006) and Wyatt (2005).

4 AASB 1013 defines identifiable assets as "those assets which are capable of being both individually identified and specifically recognised," and identifiable net assets means "identifiable assets less liabilities."

5 ASRB refer to the Australian accounting standards pre-1991. All ASRB standards were relabeled as AASB in 1991.

6 For a discussion on the use of the Inverted Sum of the Years' Digits amortization method, see Brown (1995). The use of the inverted sum of digits method in practice seems to have been infrequent. Of the top 150 Australian companies in 1992–1996, less than 10% used the method (Tibbits, 1995, 1997).

7 AASB 1 also requires IIA to be remeasured at fair value with resulting changes to be recorded in retained earnings and not goodwill.

8 While some guidance on intangible assets was issued intermittently, they were not issued as binding standards.

9 Where two theories are consistent, if one theory is correct, the other is also possibly correct (Morris, 1987, p. 49). The predictions from each theory will not conflict and can be tested side by side and can be validly used together in hypothesis development. In other words, if combining two (or more) theories is valid epistemologically, then fresh insights into the phenomenon being studied can be obtained by considering the theories together.

10 In positive accounting theory (Watts & Zimmerman, 1986, 1990), firms also choose accounting methods to reduce agency costs as part of efficient contracts that can also reflect underlying firm economics between the

firm's stakeholders such as creditors, outside shareholders, and top management. However, intangible assets are often specifically excluded from covenants in Australian corporate debt contracts, especially in private debt contracts (Mather & Peirson, 2006; Ramsey & Sidhu, 1998). Private debt is much more common than public debt in Australia (Cotter, 1998). Also, positive accounting theory suggests (Emanuel, Wong, & Wong, 2003) that firms with large proportions of intangible assets to total assets will not reward managers on the basis of reported earnings, perhaps because of the imperfect way in which intangibles are treated in accounting standards, but will use other variables such as share price or sales revenue. It is also possible for companies, within the constraints of the existing rules, to choose accounting policies that reflect the underlying economics of the firm (Matolcsy & Wyatt, 2006; Wyatt, 2005). For example, Wyatt (2005) argues and finds that based on the underlying economic perspective, capitalization of IIA before 2005 will be positively associated with the intangible's technological strength affecting the firm's operations, the length of the technological cycle time, and property-rights-related factors that affect the firm's ability to appropriate the investment benefits. Due to data unavailability, we are unable to directly test Wyatt's propositions in our setting. However, we make some research design choices (explained in Section 3.1) to control for potential impact of underlying economic conditions on the type and amount of intangible assets reported.

11 Representative examples are as follows: Li and Sloan (2017), Guthrie and Pang (2013), Shalev, Zhang, and Zhang (2013), Ramanna and Watts (2012), and Li et al. (2011).

12 Variables denoted with ′ are adjusted for the effects related to goodwill and IIA expenses for a clean analysis of the accounting for intangible assets.

13 While the majority of companies recognise goodwill as a separate category under non-current assets on the balance sheet, IIA are usually recognized on the balance sheet as "other intangibles." We therefore collect the amount of each category of IIA from "notes to the financial statements."

14 We collect the data for total IIA, IIA with indefinite IIA, and in-process R&D separately as the latter is typically presented as a separate item. The amount of finite IIA is then calculated as in-process R&D plus the difference of [total IIA—indefinite IIA].

15 Note that not all of the 85 sample companies report goodwill and IIA and their related expenses every year. To maintain our sample for clean comparisons between the AGAAP and IFRS years, we keep all firm-years even if they report no goodwill or IIA for some years.

16 Although the preference for a shorter amortization period actually refers to IIA, Kwok and Sharp (2005) find that the respondents in their interview refer to goodwill and IIA interchangeably.

17 Our results therefore do not support the competing predictions of the standards alone perspective (see Section 2.3.3). That is, the standards alone perspective is not as good as opportunism and signaling in explaining our results.

18 While we acknowledge that the longitudinal nature of our study poses a number of challenges, as economic and global conditions can change during the sample period (e.g., potential impact of the global financial crisis), Australia is one of the countries least affected by the global financial crisis (Chua, Cheong, & Gould, 2012; Elias, 2012). That is, overall, our findings do not seem to be affected by macroeconomic conditions.

19 For example, in the year 2000, the indicator of governance (which ranges between −2.5 and 2.5, with the latter being the highest quality) was 1.60 in Australia. In 2005, it was 1.60 and in 2010, 1.69, which is only a slight increase.

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APPENDIX A: SUMMARY OF STANDARDS ON INTANGIBLE ASSETS IN AUSTRALIA

	2000–2005 AGAAP standard	2000–2005 Overt discretion[a] in standards	2005–2010 IFRS standard	2005–2010 Overt discretion in standards
Internal goodwill	Recognition not permitted (AASB 1013)	Zero	Recognition not permitted (IFRS 3)	Zero
Purchased goodwill	Recognized and amortized straight line over 20 years max. (AASB 1013) plus impairment (dual model)	Amortization period can be arbitrary but is capped at 20 years	Recognized and subjected to annual impairment testing (IFRS 3, IAS 36)	Impairment test requires identification of CGU and calculation of value in use, both of which are subjective[b]
IIA—R&D	Capitalization permitted if benefits assured beyond a reasonable doubt AASB 1011	Some discretion about whether the beyond reasonable doubt test has been met. However, more demanding test than "probable occurrence"	Research to be expensed as incurred Development shall be capitalized subject to five tests (IAS 38)	Zero The five tests are inexact and thus could be subverted
Other IIA—internal	Unregulated	Considerable overt discretion	Recognition not permitted (IAS 38 Para. 63)	Zero
Other IIA—purchased	Recognized at purchase (AASB 1013) but subsequent measurement unregulated	Discretion about subsequent measurement	Recognition at purchase (IAS 38 Para. 24) Finite life IIA to be amortized (IAS 38 Para. 97–99) Indefinite IIA (as well as finite life IIA) subjected to annual impairment testing (IAS 38 Para. 111, IAS 36)	Zero Amortization period could be arbitrary Calculation of value in use is subjective

a We acknowledge that there is a difference between overt discretion and covert discretion. The former is discretion explicitly permitted by the standard; the latter is a function of the level of enforcement of standards and the quality of auditing. For example, the latter covers a case where a company in a business combination manipulates the assignment of purchase price to assets of the acquiree to minimize the amount assigned to goodwill.

b Possible buffer of internal goodwill could lead to under impairment (Johansson et al., 2016).

APPENDIX B

DEFINITION OF VARIABLES

Variable	Measure
$IFRS_{it}$	Dummy variable equal to 1 if firm reports under IFRS (2000–2005) and 0 if firm reports under AGAAP (2006–2010)
$GWEXP_{it}$	Amortization and impairment expenses for goodwill
GW_{it}	Amount of goodwill (B/S) as of fiscal year-end, net of $GWEXP$
$IIAEXP_{it}$	Amortization and impairment expenses for identifiable intangible assets (IIA)
IIA_{it}	Amount of IIA (B/S) as of fiscal year-end, net of $IIAEXP$
$INDEFINITE\_IIA_{it}$	IIA with indefinite life
$SIZE_{it}$	Natural logarithm of total assets
AGE_{it}	Natural logarithm of the number of years a firm has been listed on the ASX
MB'_{it}	Market-to-book ratio with book value of equity adjusted for $GWEXP$ and $IIAEXP$
OCF_VOL_{it}	Standard deviation of operating cash flow for a rolling 3-year window
LEV'_{it}	Non-current liabilities divided by book value of equity adjusted for $GWEXP$ and $IIAEXP$
ROA'_{it}	Net profit after tax before abnormals adjusted for $GWEXP$ and $IIAEXP$ divided by total assets
$PRICE\_VOL_{it}$	Standard deviation of stock price for a rolling 3-year window
$SHARE\_ISSUE_{it}$	Portion of newly issued shares relative to previous year
$MV_{it+3months}$	Market value of equity 3 months after fiscal year-end
BV_{it}	Book value of equity less net profit after tax before abnormals
E_{it}	Net profit after tax before abnormals
E'_{it}	Net profit after tax before abnormals adjusted for $GWEXP$ and $IIAEXP$

Variables denoted with ' are adjusted for the effects related to goodwill and IIA expenses for a clean analysis of the accounting for intangible assets. All variables except for *SIZE*, *AGE*, *MB'*, *LEV'*, *ROA'*, *PRICE_VOL*, and *SHARE_ISSUE* are scaled by the number of outstanding shares for the results as presented in the tables. All variables are winsorized at the 1st and 99th percentile.