ASIAN ACADEMY *of* MANAGEMENT JOURNAL *of* ACCOUNTING *and* FINANCE

AAMJAF, Vol. 7, No. 2, 1–34, 2011

ON THE ALLOCATION OF A TAKEOVER PURCHASE PRICE UNDER AASB1013

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ABSTRACT

The purpose of this paper is to document and explain the allocation of takeover purchase price to identifiable intangible assets (IIAs), purchased goodwill, and/or target net tangible assets in an accounting environment unconstrained with respect to IIA accounting policy choice. Using a sample of Australian acquisitions during the unconstrained accounting environment from 1988 to 2004, we find the percentage allocation of purchase price to IIAs averaged 19.09%. The percentage allocation to IIAs is significantly positively related to return on assets and insignificantly related to leverage, contrary to opportunism. Efficiency suggests an explanation: profitable firms acquire and capitalise a higher percentage of IIAs in acquisitions. The target's investment opportunity set is significantly positively related to the percentage allocation to IIAs, consistent with information-signalling. The paper contributes to the accounting policy choice literature by showing how Australian firms make the one-off accounting policy choice in regards allocation of takeover purchase price (which is often a substantial dollar amount to) in an environment where accounting for IIAs was unconstrained.

Keywords: purchased goodwill, identifiable intangible assets, accounting policy choice, information signalling, opportunism

INTRODUCTION

In Australia, the former accounting standard AASB1015: *Acquisitions of Assets*, which was in force throughout this study's sample period (1988–2004), stipulated that the accounting treatment of all acquired assets required that all identifiable assets be recorded at their cost and, when necessary, be adjusted to fair values when these materially departed from their cost. When the acquisition price exceeded the fair value of the identifiable net assets acquired, the resulting

balance was deemed to be purchased goodwill that had to be accounted for in accordance with the former AASB1013: *Accounting for Goodwill* (1987) (James, 2010)[1]. From 1988 to 2004, under AASB1013, purchased goodwill was subject to strict and mandatory amortisation on the income statement over the period during which the benefits were expected to arise, which in no case could exceed 20 years. During this time period, there was no equivalent accounting standard for identifiable intangible assets (IIAs) (James, 2010; Wyatt, 2005).[2] Because there are significant practical difficulties in measuring certain IIAs and in separating IIAs from goodwill, managers of acquisitions used the relative freedom available to them under the accounting regulation AASB1013 to allocate purchase prices toward IIAs and away from purchased goodwill (James, 2010; Whittred et al., 2000; Wines & Ferguson, 1993; Wines et al., 2007). The phrase "away from purchased goodwill" in this context reflects the fact that purchased goodwill is defined by accounting standards as the mathematical difference of a purchase price (at fair value) minus the fair value of the net assets acquired. Therefore, a greater dollar allocation to IIAs means a lesser dollar allocation to purchased goodwill, assuming that the dollar allocation to the target net tangible assets remains unchanged.

The aim of this paper is to assess the extent to which the allocation of a purchase price is applied towards IIAs and thus away from purchased goodwill during the lifetime of AASB1013 in Australia (1988–2004). We also aim to explain the once-off accounting policy choices made during acquisitions by examining key variables obtained from costly contracting research including acquirers' prior performances; acquirers' leverages; and acquirers' and targets' investment opportunity sets (IOS). More specifically, we empirically discriminate between two competing perspectives on differences in the percentages of purchase prices allocated to IIAs: the information-signalling and opportunism perspectives of positive accounting theory. Knowledge concerning this once-off accounting policy choice is important because the sums of money involved in takeovers are very large and user groups, especially shareholders and creditors, will be interested to know to what extent opportunism or information signalling predominates in this choice. If large values of IIAs are kept on the balance sheet unamortised when there has been a decline in their value, then shareholders and creditors will be provided with a picture of the company's financial position that is overly optimistic. They may then invest new funds and/or delay removing existing funds when these are not the decisions they would have made if they had known the underlying reality of the company's financial position. Our findings have important implications for accounting standard setting bodies who continue to be put off guard by the strength and vigour of the arguments concerning goodwill/intangibles accounting policy choices coming from both sides of the debate. For example, the Financial Accounting Standards Board (FASB) first released in September 1999 Exposure Draft #201, which favoured the treatment

for purchased goodwill in the U.K. that involved systematic amortisation. Because of the corporate and congressional backlash (Ramanna, 2008), the FASB then reversed its position so that the final standards SFAS Nos. 141 and 142 remove the amortisation requirement in favour of a goodwill impairment test (James, 2010). Ramanna (2008) has documented that many of the firms that opposed the banning of pooling accounting in the 1999 Exposure Draft became supporters of the impairment test at a later stage of the lobbying process when it had become clear that pooling would not be revived. We consider a time period in Australia during which purchased goodwill accounting was highly regulated but IIAs accounting was unregulated (James, 2010). This allows us to determine what types of choices were made in this particular environment. Both Holthausen and Watts (2001) and Ramanna (2008) have argued that the change to a fair-value accounting can increase opportunism when the fair values are unverifiable with respect to the active market trading prices. With respect to assets for which there are no actively traded markets or reliable market prices, the change to fair-value accounting is then essentially a move towards an unregulated accounting environment. As Ramanna (2008) explains for the U.S. context, some pro-poolers were pooling abusers and their will to avoid amortisation seems to have held significant clout in the FASB's due process. Significantly, the unconstrained nature of IIAs reporting during our sample period allows us to observe the accounting choices that were made freely by firms in the absence of external restrictions upon this area of their activities.

Based on a sample of 52 acquisitions of Australian listed targets by Australian listed acquirers over the period from 1988 to 2004, we have found that the average percentage of the takeover purchase price allocated to IIAs was 19.09% (21.70% for the 1988–2000 sub-period). There was a significant drop (of about five percentage points annually) in the percentage of a takeover purchase that was allocated to IIAs over time, due in part to the opposition voiced by the IASB's David Tweedie and other leading Australian accounting authorities in the late-1990s and early 2000s with respect to Australia's then allegedly lax unregulated accounting environment for IIAs (James, 2010, p. 5, fn. 9).[3] The decline after 2000 coincides with the increased opposition being voiced around and after this time concerning firms allocating too much of a purchase price to IIAs to avoid goodwill amortisation.

Our results show that the percentage of allocation to IIAs is significantly positively related to the rate of return on assets (hereafter ROA), a traditional contracting variable, which is contrary to opportunism. The efficiency perspective of positive accounting theory provides an explanation: profitable firms acquire and capitalise a higher percentage of IIAs in acquisitions. These IIAs are a major reason for the continued profitability of such firms. Leverage is insignificant, which is also contrary to the opportunism argument. There is a

significant positive association between the target's investment opportunity set and the percentage of allocation to IIAs, which is consistent with the information-signalling perspective of positive accounting theory. Furthermore, the use of a high quality auditor is positively associated with the percentage of allocation to IIAs, which is consistent with the argument that high quality auditors are hired for their knowledge base of acquisition accounting policy choices that both produce favourable financial statement outcomes and are theoretically defensible. This finding is consistent with Watts and Zimmerman's (1979) 'market for excuses' theory. We have subjected our findings to a battery of tests and they are robust to several variable specifications.

In a supplementary analysis, we found that the percentage of a purchase price allocated to purchased goodwill is significantly negatively correlated with the acquirer's subsequent three-year abnormal returns, suggesting an initial overpayment for purchased goodwill in some cases. The percentage of allocation to IIAs is positively but not significantly correlated with the acquirer's subsequent abnormal returns, suggesting minimal overpayment for IIAs and that the purchase of IIAs may contribute to positive excess returns for the acquirer after their bid. Overall, the supplementary analysis supports the primary regression results. Nevertheless, a caveat to our findings is the small sample size.

Our study can be viewed as a first step in exploring the research agenda proposed by Ritter and Wells (2006). It differs from previous studies on a number of important fronts. First, by studying completed takeovers only, we have conducted a cleaner test by focusing on companies that we knew in advance had a current-year choice to make regarding their allocation of their takeover purchase price. These companies have higher average goodwill and IIA balances than a broader sample of all companies listed on the Australian Stock Exchange (ASX). Therefore, the balances will be more likely to be material and the allocation decision more likely to have been given detailed consideration. We have also avoided the cases for which 'sticky' accounting policies for goodwill and IIAs over time can impact the integrity of data drawn from more than one observation per takeover. Secondly, with only pre-bid accounting data to measure our independent variables,[4] we have overcome the endogeneity problem because pre-acquisition accounting variables are less likely to be influenced by the accounting policy choices made for an acquisition as well as by the very decision to go ahead with the acquisition. Lastly, the much longer sampling interval of our study[5] adds to the reliability of the inferences drawn, gives us insight into the pervasiveness of the observed phenomena over time, and allows us to investigate any temporal changes in managerial incentives underlying the allocation of an acquisition price.

The remainder of the paper is structured as follows. Section 2 contains a literature review; Section 3 presents the theoretical framework and research hypotheses; Section 4 provides the research model and variable definitions; Section 5 presents and analyses the data; Section 6 discusses the results. Finally, Section 7 concludes the paper.

LITERATURE REVIEW

Prior research suggests that capital markets value goodwill as an asset (Barth & Clinch, 1998; Bugeja & Gallery, 2006; Churyk, 2005; Clinch, 1995; Godfrey & Koh, 2001; Henning et al., 2000; Jennings et al., 1996; Whittred et al., 2000). However, according to Henning et al. (2000), only one component of purchased goodwill, the excess of the market value over the fair value, is recognised by the market on acquisition. The other (residual) component of purchased goodwill, the excess of the acquisition cost over the market value (typically approximately 30% of the total goodwill), has a negative association with equity values, consistent with the imposition of a market penalty for overpayment (White et al., 2003).

Using the Australian data for the period from 1993 to 1997, Wyatt (2005) found that share returns are strongly positively associated with IIAs, but only marginally positively associated with purchased goodwill. The significance of the goodwill result, however, depended upon the model specifications. Bugeja and Gallery (2006) found that purchased goodwill is value-relevant. However, when purchased goodwill is divided into (a) the current and previous two years and (b) older than four or more years, the older goodwill is found not to be value-relevant. These authors suggested two explanations: (a) the older purchased goodwill is converted over time into ordinary net profit from the operations of the firm, and/or (b) there was overpayment in the original takeover and it takes the market several years to verify this. They were unable to distinguish empirically between these two explanations but suggested that the second explanation needs to be taken seriously. The results from our supplementary analysis are consistent with the overpayment theory.

Clinch (1995) summarised the U.S. and U.K. evidence, up until 1995, for the value-relevance of reported goodwill as follows: (a) there is no consistent evidence of a stronger or weaker association between equity values and goodwill than between equity values and non-current tangible assets; (b) the association between goodwill and equity values only seems to exist outside of manufacturing industries; (c) the association between equity values and goodwill is not as strong as that between equity values and IIAs; (d) there is no consistent evidence of any association between share returns and goodwill amortisation.

Churyk (2005) found no significant difference between the strength of the associations of "purchased goodwill with the market value of equity" or "book equity less purchased goodwill with the market value of equity". The author argues that this finding is consistent with the value-relevance of purchased goodwill (Clinch, 1995) and the move by the FASB in 1999–2001 towards purchase accounting and away from pooling accounting. However, in subsequent years, when book net assets minus the market value of equity are negative (defined as an 'impairment condition'), the association between the interaction of purchased goodwill less amortisation with the impairment condition and the market value of equity is significantly negative. The coefficient is –2.02 for the first year after an acquisition and –4.54 for the second year. This suggests that the absolute value of share returns is positively associated with the absolute value of (previously recorded) purchased goodwill, thus supporting the overpayment hypothesis put forward by Bugeja and Gallery (2006). Acquirers, on average, cannot generate the rate of return on the purchased goodwill that they expected to earn at the acquisition date. The results from our supplementary analysis also offer some support for this conclusion.

The U.S. and Australasian evidence suggests that managers use the rates of amortisation of goodwill and IIAs (Bradbury et al., 2003; Coombes et al., 1997) and the goodwill write-off (Henning et al., 2004) to signal to the capital market the actual rate of decline in the economic value of intangibles (Bartov & Bodnar, 1996; Boone & Raman, 2001; Holthausen, 1990; Holthausen & Leftwich, 1983). However, despite such possible management intentions, the U.S. evidence indicates that there is no significant association between the goodwill amortisation charge and share returns (Clinch, 1995; Jennings et al., 2001; Moehrle et al., 2001; White et al., 2003; Whittred et al., 2000). Jennings et al. (2001) have argued that goodwill amortisation 'adds noise' to the reporting system because the earnings before amortisation explain significantly more of the variation in share prices than the earnings after amortisation. White et al. (2003, p. 526) went so far as to say that goodwill amortisation is a 'non-event' that has no 'real consequences'.

Matolcsy and Wyatt (2006) documented that, from 1990 to 1997 for Australian firms with high underlying intangibles, the capitalisation of IIAs is significantly associated with (a) a higher following by analysts, (b) a lower absolute error in analysts' earnings forecasts, and (to a lesser extent) (c) a lower dispersion in analysts' earnings forecasts. This suggests real and favourable economic consequences if flexibility is permitted in the area of accounting for IIAs. This flexibility existed in Australia prior to the adoption of the International Financial Reporting Standards (IFRS) in 2005, but does not exist presently.

Ritter and Wells (2006) have shown that, on average, the book values of IIAs and purchased goodwill are imputed into Australian equity values (beyond the effects on the current period income) and that the book values of IIAs, but not purchased goodwill, are associated with future incomes. The first finding, which supports the value-relevance of IIAs, is consistent with the evidence presented by Matolcsy and Wyatt (2006) that the accuracy of analysts' forecasts increases with IIA capitalisation. The value-relevance of IIAs beyond the current period income supports the results of Collins et al. (1999) who found that asset values are an important indicator of future performance, especially when current period income is very low relative to future permanent income. For firms already reporting high current period income, asset values can signal the permanence of this higher income.

Ritter and Wells' (2006) second finding of an association between the book values of IIAs and future period income rules out the argument that the Australian share market *mechanistically* takes the book values of IIAs and impounds them into share prices. However, the finding that purchased goodwill is *not* associated with future income is consistent with an overpayment for goodwill (Bugeja & Gallery, 2006; Churyk, 2005; Henning et al., 2000). It is also consistent with Wyatt's (2005) suggestion that the value-relevance of goodwill is highly sensitive to model specifications.

James et al. (2008) examined whether the premium of a takeover bid was affected by the changes in the accounting standards for purchased goodwill in Australia. The issuance of AASB1013 in 1987 effectively took away the discretion afforded to management in their accounting choices for purchased goodwill. Based on information-signalling and opportunistic theories of accounting policy choices, they argue that constraining the accounting choices for dealing with purchased goodwill will reduce an acquirer’s firm value and thus the level of the bid premium paid. Their results show that the enactment of AASB1013 appears to have caused a statistically significant decline in the median (but not the mean) Australian bid premium. They also reported a significant decline in the strength of the association between purchased goodwill and bid premiums subsequent to the issuance of AASB1013. Unconstrained (i.e., unregulated) accounting policy choices for purchased goodwill seem to be regarded as a valuable option for managers, although this could be due to either opportunism or information-signalling.

In summary, prior research from both Australia and overseas suggests that firms prefer to capitalise both IIAs and purchased goodwill if permitted under accounting standards. There are doubts as to whether purchased goodwill is value-relevant, as it does not appear to be associated with future income and, hence, may often reflect overpayment. The value of purchased goodwill minus

amortisation times the impairment condition (the book net assets below the market value of equity) is negatively associated with the acquirer's market value of equity even just one year after the acquisition date, and this negative association grows stronger thereafter (Churyk, 2005). Older goodwill that is four or more years out from the acquisition date is most probably not value-relevant (Bugeja & Walter, 1995). Capitalised IIAs, on the other hand, are unmistakably value-relevant and associated with future income; they also help analysts to provide more accurate estimates of a firm's value. This suggests that information signalling is likely to be a major factor in explaining firms' decisions to allocate a high percentage of purchase prices to IIAs, although opportunism can never be totally ruled out.

By contrast, the capitalisation of purchased goodwill is unlikely to be consistent with information signalling for many firms because capitalised purchased goodwill does not seem to be associated with future income (Ritter & Wells, 2006). Such capitalisation in Australia during the sample period probably represents in most cases either opportunism or an altruistic/risk-averse approach to accounting policy choices in which firms choose to conform to the 'standard interpretation' of AASB1013[6] simply because it is the standard interpretation. Information-signalling theory would support a reclassification of purchased goodwill as IIAs in which the IIAs are assumed to be positively associated with the expected future income. However, in Australia during our sample period, opportunism theory supports the same action prima facie. We attempt to empirically distinguish between the opportunism and information-signalling theories in our work.

The evidence suggests that firms avoid goodwill and IIA amortisation when possible, except for those classes of IIA that have a useful life limited by legal factors (on this latter point, see Coombes et al., 1997). Why managers appear eager to avoid goodwill amortisation remains somewhat of a mystery given that this amortisation does not appear to be significantly associated with share returns. As Whittred et al. (2000) have suggested, managers' revealed behaviours in this area are probably due to contracting and/or information-signalling reasons (remembering that goodwill amortisation also reduces the capitalised net goodwill value on the balance sheet, through the other half of the journal entry, and that the upwards revaluation of purchased goodwill has never been permitted). Mandatory amortisation for goodwill or IIAs over 20 years prevents firms from using a rate of amortisation that is lower than the acceptable minimum rate (5% per year), and hence, their information-signalling ability may be reduced.

We introduce our theoretical framework in the next section, which includes our research hypotheses.

THEORETICAL FRAMEWORK AND HYPOTHESES

We tested two competing theories that could explain differences in the proportion of purchase prices allocated to IIAs: the information-signalling[7] and opportunism perspectives of positive accounting theory.

Under the information-signalling perspective (Holthausen, 1990; Holthausen & Leftwich, 1983), managers select accounting policies to signal their expected future cash flows to a relatively less informed capital market. Under this view, the percentage allocated to IIAs is likely to be a positive function of the target's and the acquirer's investment opportunity sets (IOSs). If the target's and/or acquirer's IOS are large relative to the assets-in-place, other things being equal, the acquirer is more likely to prefer to classify the purchase price primarily as IIAs to avoid any compulsory goodwill amortisation (under AASB1013), which does not reflect any actual decline in economic value.

Under the opportunistic perspective (Holthausen & Leftwich, 1983; Watts & Zimmerman, 1978, 1986, 1990), managers act opportunistically ex post facto to transfer wealth to themselves and away from shareholders (e.g., the bonus plan hypothesis) or to shareholders and away from debt holders (e.g., the debt-equity hypothesis). Because it is not possible or cost-effective ex ante to specify how wealth will be distributed among the contracting parties, the possibility of ex post facto opportunistic behaviour will always remain under all possible future states of nature.

Opportunism and information signalling can be distinguished empirically. Under the opportunistic perspective, all acquirers, regardless of their IOS, but especially those with poor prior performance and/or high leverage, would prefer to allocate a large percentage of the purchase price to IIAs to avoid goodwill amortisation and thus to opportunistically manage profits upwards (Scott, 2003; Wines & Ferguson, 1993). However, under the information-signalling perspective, *only* those acquirers acquiring targets with large IOSs for which the intangible asset values are material will prefer this allocation method (Anderson & Zimmer, 1992). To enable us to discriminate between information-signalling and opportunism explanations, acquirers' prior performances, acquirers' pre-bid leverages, and acquirers' and targets' pre-bid IOSs were used in our regressions. This leads to the following four hypotheses (H1 and H2 are based on an opportunistic perspective while H3 and H4 are based on an information-signalling perspective):

H1: The percentage of a takeover purchase price allocated to IIAs is negatively associated with the prior performance of the acquirer.

H2: The percentage of a takeover purchase price allocated to IIAs is positively associated with the pre-bid leverage of the acquirer.

H3: The percentage of a takeover purchase price allocated to IIAs is positively associated with the pre-bid investment opportunity set of the acquirer.

H4: The percentage of a takeover purchase price allocated to IIAs is positively associated with the pre-bid investment opportunity set of the target.

Support for H1 and H2 would indicate that the opportunism argument holds, whereas support for H3 and H4 would favour the information-signalling explanation for the accounting choices for the allocation of takeover purchase prices.

For H1, the argument is that firms with a poor prior performance can least afford the reduction in consolidated post-takeover profits that mandatory goodwill amortisation causes. Therefore, they prefer to allocate a large percentage of the purchase price to IIAs, primarily to avoid goodwill amortisation. This creates a *negative* association between allocations to IIAs and prior performances. In regards to H2, firms with high leverage and other things being equal, will be closer to a technical breach of the accounting-based terms contained in their debt contracts. Ramanna (2008) notes that prior evidence from Dichev and Skinner (2002) suggests that, while leverage is not necessarily a good proxy for the probability of a debt covenant breach, it is a good proxy for the costs of a debt covenant breach. Hence, leverage is the proxy for contracting costs used in the Ramanna (2008) study as well as in the present study. Ratios such as those of interest coverage and debt-to-income are made directly worse by goodwill amortisation, and highly leveraged firms may prefer to allocate a larger percentage of their purchase prices to IIAs to increase their reported profits. Other ratios usually used in debt contracts such as the debt-to-equity ratio also become less favourable with goodwill amortisation because the reduced profits reduce the end-of-period book shareholders' equity and hence increase the debt-to-equity and debt-to-assets ratios. Although intangible assets are usually not included in the asset base to compute leverage, goodwill amortisation is not typically added back into the reported profits for the purpose of assessing compliance with accounting-based debt contract terms (Whittred et al., 2000). Therefore, based on the opportunism perspective, a *positive* association is expected between the percentage of allocation to IIAs and the pre-bid leverage. The motivation in classifying a large percentage of the purchase price as IIAs is simply to avoid goodwill amortisation. Information-signalling is *not* involved under the opportunism perspective (or H2 based upon that perspective).

The opportunism arguments are supported by the findings of Daley (1985), who found that firms reacting negatively to the mandatory amortisation requirement of the non-binding professional standard AAS18: *Accounting for Goodwill* in 1984 (the provisions of this standard were essentially assimilated into AASB1013) had lower interest coverage ratios than those that did not react negatively. Pavletich (1989) reports that firms are more likely post-AASB1013 to obtain valuations of trademarks, patents and other IIAs that are outside the scope of the goodwill standard. Furthermore, there are more instances under AASB1013 (compared to AAS18) of firms revaluing their non-depreciable assets arising out of acquisitions such as land and investments, presumably to minimise the corresponding amounts allocated to purchased goodwill. Both of Pavletich's (1989) findings are prima facie consistent with both opportunism and information-signalling explanations and thus do not help us to distinguish between the two.

Anderson and Zimmer (1992) found that firms with high 'economic goodwill' post-AASB1013 were more likely than firms with lower 'economic goodwill' to use the transitional provision of AASB1013 to write goodwill off as an extraordinary item. However, in the pre-AASB1013 period, high economic goodwill firms were more likely to retain goodwill as a non-current asset on the balance sheet. Thus, information-signalling considerations tended to predominate for these firms pre-AASB1013, but opportunism considerations predominated in the post-standard period (James, 2005, 2010). Clearly, the intentions of the standard-setters appear to have been thwarted in practice by a number of firms post-AASB1013 as the transitional provisions were designed to be a temporary ad hoc concession rather than a recommended treatment.

Gore et al. (2000) found that debt contracting (i.e., opportunism) is a significant factor influencing U.K. firms' decisions to write goodwill off immediately in their financial statements. Grinyer et al. (1991) found that the percentage of the purchase price allocated to purchased goodwill[8] for a sample of U.K. firms was significantly negatively related to their post-acquisition leverage, consistent with opportunism. Acquirers with high leverage prefer not to classify a high percentage of the purchase price as purchased goodwill because this was immediately written off against reserves and hence reduced book equity under U.K. accounting standard SSAP No. 22 (1984, rev. 1989).[9]

Coombes et al. (1997) presented results consistent with information signalling, but not with opportunism. They found an inverse relationship in Australia between growth opportunities and the amortisation rate for IIAs, consistent with the information-signalling perspective. Furthermore, those IIAs with legally limited lives, such as patents, were more likely to be amortised than those without a legally limited life, such as trademarks, a finding that also

supports this perspective. A debt-contracting variable was not significantly associated with the rate of IIA amortisation.

Wyatt (2005) reports, for the period from 1993–1997, that Australian firms' capitalisation decisions with respect to IIAs, given a firm's *underlying* intangible assets, are a positive function of their technology strength and the ability of the firm to appropriate investment benefits and a negative function of the length of the technology cycle time. These results support the findings of Coombes et al. (1997) and are consistent with information-signalling explanations. In contrast, leverage is significantly positively associated with IIA capitalisation in all sample years, consistent with opportunism. However, contracting and signalling variables could explain only a small percentage of the total variation in IIA capitalisation compared with variables capturing the underlying economics of the intangible assets. The coefficient of determination was 3% for the specification including only the signalling, operating, and contracting variables but rose to 13% for the specification that included all of the independent variables.[10]

In Singapore, Tan (2001) studied the goodwill accounting policy choices permitted by the original version of IAS22: *Business Combinations* (1987).[11] She reported a significant association between the level of human capital specificity of the chief executive officer (CEO) and the goodwill accounting policy choice in the predicted direction. Tan (2001) argued that information-signalling is the primary determinant of the purchased goodwill accounting policy choice. The information being signalled is the incremental value derived from the human capital of the CEO or, more specifically, the firm's investment in that value.[12] Through additional robustness testing, she was also able to conclude that the result is unlikely to be due to opportunism.

RESEARCH MODEL AND VARIABLE DEFINITIONS

To test our hypotheses, we ran the following basic regression model:

$$PERCENT_i = a_0 + a_1 ROA_i + a_2 DEBT_i + a_3 IOS_{T,i} + a_4 IOS_{A,i} + e_i \quad (1)$$

The dependent variable is the percentage of the takeover purchase allocated to either IIAs ($PERCENT_1$) or purchased goodwill ($PERCENT_2$). The independent experimental variables are the following: ROA, the (pre-bid) rate of return on assets of the acquirer measured as the net profit after tax in financial year t-1 divided by the average of total assets at the end of t - 2 and t - 1 (year 't' is defined as the first year in which the successful takeover is fully accounted for in the consolidated financial statements of the acquirer, which is not necessarily the

same year as that of the takeover announcement date); DEBT, the (pre-bid) total liabilities divided by the (pre-bid) total shareholders' equity of the acquirer at the end of year t - 1; and IOS_T and IOS_A, the pre-bid investment opportunity sets of the target and acquirer companies, respectively, at the end of year t - 1 (determined by factor analysis using the Kaiser-Guttman rule and the maximum likelihood estimation, see below); *e* is an independent and identically distributed error term.

We also use $PERCENT_2$ as an alternative dependent variable because the capitalised purchased goodwill, *despite the mandatory amortisation requirement*, may also be used for information-signalling. If, however, IIAs do not need to be amortised, acquirers with high IOSs may allocate more of their purchase price to IIAs and less to purchased goodwill (because the latter is the mathematical difference). The assumption here is that all or most of the reclassifications to IIAs are 'coming from' acquired assets that would have otherwise been classified as purchased goodwill rather than as target's net tangible assets. This argument is plausible and intuitive because it is easier to 'play around with' a simple mathematical difference such as purchased goodwill given that what actually is purchased goodwill theoretically has always been so obscure and strongly debated. It is more difficult, but not impossible (as Pavletich's (1989) results indicate), for an acquirer to reduce the net book values of the target's pre-bid tangible assets, such as cash, receivables, inventories, property and equipment, below the values that they were recorded at in the target's own accounts.

With the *pre-bid* accounting data to measure our independent variables, we were also able to minimise the endogeneity problem because the pre-acquisition accounting variables are less likely to be influenced by the acquisition accounting policy choices made as well as by the very decision to go ahead with the acquisition.

Following Godfrey and Koh (2006), the investment opportunity set (IOS) for both the acquirer and the target was computed by factor analysis using the Kaiser-Guttman rule and maximum likelihood estimation. The factors included in the analysis are (a) the market-to-book value of assets at the end of year t – 1, where the market value of assets is the sum of the market value of equity and total liabilities; (b) the market-to-book value of equity at the end of year t – 1; (c) the price-to-earnings ratio at the end of year t – 1, with the earnings per share computed as the net profit after tax for year t – 1 divided by the average number of ordinary shares outstanding at the end of years t –1 and t – 2. High values of these variables are indicative of a high IOS.[13]

We define the 'standard treatment' under AASB1013 as the reporting of the difference of the full purchase price minus the fair value of the target's net

tangible assets as the purchased goodwill on the consolidated balance sheet and then the amortisation of this complete amount on the income statement over 20 years.[14]

We control for auditor quality because high quality audit firms can advise clients on how to best structure their accounting policy choices to produce outcomes that are both favourable financially to the firm and can be defended on theoretical grounds should they later be challenged (Watts & Zimmerman, 1979). Therefore, acquirers with high quality auditors that have access to the auditing firm's knowledge base and reputational capital are more likely to challenge the 'standard interpretation' of AASB1013 and allocate more of the purchase price to IIAs. Auditor quality can be proxied by the traditional big 'N' vs. non-big 'N' dichotomy (BigN).

Control variables are: the sizes of the acquirer ($SIZE_A$) and the target ($SIZE_T$), both measured by the market value of common equity at t – 1; the number of successfully completed acquisitions of subsidiaries and businesses by the acquirer during t (NUMBER); the linear time trend (TREND); and, an industry dummy (FINANCE), which assumes the value of 1 if the acquiring firm (or its parent company) belongs to the finance industry and zero otherwise. We controlled for the firm size (SIZE) and the number of successfully completed acquisitions by the acquirer in financial year t (NUMBER) because the larger and highly acquisitive acquirers are more likely to have a larger knowledge base about alternative acquisition accounting policy choices and make use of non-conventional interpretations of AASB1013. Additionally, firm size is a standard proxy for the exposure to political costs that may occur upon acquisition accounting policy choices (Holthausen & Leftwich, 1983; Watts & Zimmerman, 1978, 1986, 1990). To compute the variable NUMBER, we included all of the subsidiaries first consolidated by the acquirer in year t regardless of whether they met this study's sample selection criteria or not. The TREND and FINANCE variables control for any linear time dependency and industry effects, respectively. We also controlled for firms with negative ROAs because these firms may have different incentives for their accounting policy choices.

DATA

A complete listing of Australian takeovers from 1 January 1990 to 30 June 2004 was sourced from SDC Platinum, which provides details on takeover announcement dates, target and acquirer names, target delisting dates, acquisition offer price(s) that include formal price revisions, percentage of shares held by the acquirer prior to and after the takeover, and percentage of shares sought in the takeover. Takeover data prior to 1990 were sourced from the ASX annual

publication *Takeovers in Australia*. Financial data were obtained from the Australian Graduate School of Management (AGSM) Annual Reports Microfiche Series and Datanalysis. Data on considerations, fair values of the assets/liabilities acquired (including IIAs), and purchased goodwill were obtained from the footnotes to either the *Statement of Cash Flows* or the *Controlled Entities* of the acquirer.[15] Share prices were obtained from the *Australian Financial Review* and Datastream. All figures expressed in Australian dollars were inflated to 2004 values using the Australian consumer price index (CPI) provided on its official website by the Australian Bureau of Statistics (ABS).

To be included in the sample, we require both the target and acquirer to be listed on the ASX and have complete financial and share price data available. Mining companies (acquirers and targets) were excluded from our sample, consistent with prior published and unpublished Australian studies (Bugeja & Walter, 1995; James, 2005, 2010; James et al., 2008). We included finance companies but excluded mining companies because the products and services offered by finance companies can be differentiated and, hence, there can be goodwill. By contrast, the products offered by mining companies cannot be differentiated and, hence, any purchased goodwill that arises mathematically upon takeover is either due to an overpayment and/or simply due to differing estimates of future sales, costs, and profits and/or payments for synergies in production and marketing.

Our final sample consisted of 52 successful acquisitions over the period from 1988 to 2004 (inclusive) for which either (a) purchase consideration and net assets acquired class totals (including IIAs) information was available for each individual subsidiary acquired during the year or (b) 90% or more of the total consideration paid in acquisitions during the year was paid to acquire the subsidiary in question. In those cases where between 90% and 99.99% of purchase consideration paid during the year was used to purchase the subsidiary in question, all assets and liabilities acquired, including IIAs and purchased goodwill, were mathematically 'allocated' by the researchers to the takeover under consideration. The sample is small. This is partly due to the exclusion of mining companies and the requirement that both the acquirer and target be Australian and listed. However, the main reason is that although consideration, net assets acquired and goodwill are always disclosed on a per subsidiary basis, individual asset and liability class totals, including the IIAs of the target, are often *not* disclosed for each subsidiary purchased.

The benefits of our restrictive sample selection criteria are that we can explain and evaluate accounting policy choices *on a per-takeover basis* rather than on the gross basis of all successful takeovers made by a given acquirer in a given financial year.[16] Furthermore, by studying completed takeovers only, we

have performed a cleaner test by focusing on companies that we knew in advance had a current-year choice to make regarding the allocation of their takeover purchase price. These companies will have higher average goodwill and IIA balances than a broader sample of all companies listed on the ASX. Therefore, the balances are more likely to be material and the allocation decision more likely to have been given detailed consideration. We also avoided cases for which 'sticky' accounting policies for goodwill and IIAs over time can impact the integrity of data drawn from more than one observation per takeover.

The frequency distribution in Table 1 shows that most sample firms were associated with the food, beverages and tobacco sector (23.08%), followed by manufacturing (15.38%), miscellaneous (13.46%), and financials (11.54%). In panel B, a marginally higher frequency of acquisitions after the year 2000 is apparent.

Table 2 provides descriptive statistics for the full sample. The average (median) percentage of the takeover purchase prices allocated to IIAs ($PERCENT_1$) under AASB1013 was 19.09% (2.24%). Although not shown in the table, the mean (median) for the 1988–2000 sub-period was much higher at 21.70% (5.55%). The lower figure for the entire sample period is in line with the greater opposition to the capitalisation of IIAs voiced near the end of the period, for example, by the IASB's David Tweedie, relating to Australia's allegedly lax unregulated accounting environment for IIAs prior to the adoption of IFRS in 2005. Clearly, corporate governance standards and requirements increased after 2000; after this time, auditors were under greater pressure not to accept non-standard interpretations of accounting standards. Our finding is consistent with the observation that, during the 'unregulated period' of 1988–2004 when no accounting standard covered IIAs, firms frequently allocated large dollar amounts to IIAs immediately at acquisition (Whittred et al., 2000; Wines & Ferguson, 1993; Wyatt, 2005). These dollar values were, either partly or in total, amounts that the standard interpretation of AASB1013 would suggest should be allocated to purchased goodwill. The standard deviation of 29.73% for $PERCENT_1$ indicates considerable variation in the extent to which firms departed from the standard treatment of AASB1013.

Table 1
Frequency distribution

	Number	Percentage
Panel A: By industry sector		
Construction	1	1.92
Retail	1	1.92
Telecommunication	1	1.92
Transport	1	1.92
Technology	2	3.85
Engineering	3	5.77
Health	3	5.77
Leisure	3	5.77
Media	4	7.69
Food Beverage & Tobacco	6	11.54
Manufacturing	7	13.46
Miscellaneous	8	15.38
Financials	12	23.08
Panel B: By year of acquisition		
1988	5	9.62
1989	1	1.92
1990	3	5.77
1991	3	5.77
1992	5	9.62
1993	1	1.92
1994	1	1.92
1995	1	1.92
1996	1	1.92
1997	3	5.77
1998	2	3.85
1999	5	9.62
2000	1	1.92
2001	4	7.69
2002	8	15.38
2003	3	5.77
2004	5	9.62
Total	52	100.00

Table 2
Descriptive statistics

	Mean	Median	Maximum	Minimum	Std. Dev.
AUDITFEE ($'thousands)	13949.61	372.86	357790.70	18.36	62174.94
BigN	0.82	1.00	1.00	0.00	0.39
IOS_A	0.08	–0.18	3.75	–0.94	0.94
IOS_T	0.07	–0.27	3.43	–1.47	1.05
DEBT	95.14	88.84	235.45	7.83	56.16
$SIZE_A$ ($'millions)	1620.00	564.00	9380.00	0.97	2340.00
$SIZE_T$ ($'millions)	265.00	117.00	1610.00	5.73	394.00
NUMBER	2.16	1.00	9.00	1.00	2.10
$PERCENT_1$	19.09	2.24	100.00	0.00	29.73
$PERCENT_2$	23.86	13.24	95.12	0.00	26.37
ROA	7.32	6.07	22.68	–23.72	7.21

ROA, the return on assets, is measured as net profit after tax in financial year t – 1 as a percentage of average total assets at end of t – 2 and t – 1; BigN takes a value of 1 if the acquirer firm was audited by a BigN auditor and zero otherwise; IOS_A and IOS_T are the investment opportunity set of the acquirer and target company respectively, obtained by factor analysis of market-to-book value of assets, market-to-book value of equity, and price-to-earnings ratios; DEBT is total liabilities as a percentage of total shareholders' equity as at the end of year t – 1; $SIZE_A$ and $SIZE_T$ are the size of acquirer and target firm size respectively, measured as the market value of common equity at the end of the financial year immediately prior to the takeover announcement date; AUDITFEE is the year *t* annual audit fees paid to the auditor of the holding company and its associated firms; NUMBER is the number of successfully completed acquisitions of both subsidiary companies and businesses made by the acquirer group of companies in financial year t relative to the takeover announcement month; $PERCENT_1$ is the percentage of takeover purchase consideration allocated to identifiable intangible assets (IIAs); and $PERCENT_2$ is the percentage of takeover purchase consideration allocated to purchased goodwill. An even larger percentage of takeover purchase prices were allocated to purchased goodwill than to IIAs.

The variable $PERCENT_2$ has a mean (median) of 23.86% (13.24%), suggesting an even larger percentage of takeover purchases were considered as allocated to purchased goodwill than to IIAs. Unfortunately, Grinyer et al. (1991) did not report the mean or median figures for their dependent variable for the percentage allocated to purchased goodwill (the purchased goodwill divided by

the total acquisition price for all acquisitions made during the year) in their U.K. study; thus, we cannot compare our results with theirs. Our finding is not inconsistent with our observations made above because, although many firms did reclassify purchased goodwill as IIAs, a large number of firms still elected to follow, either in whole or in part, what we have termed the standard interpretation of AASB1013. Although not shown in the table, a larger proportion of firms allocated at least some of the takeover purchase price to purchased goodwill than to IIAs.[17]

The mean (median) after-tax ROA for the acquiring firms in the sample in the financial year immediately preceding the recognition of the takeover was 7.32% (6.07%), suggesting moderate to high average profitability. Acquiring firms have a mean (median) leverage (DEBT) of 95.14% (88.84%). Abdul Wahab et al. (2011, Table II, p. 404), for their study of 1,022 Malaysian firm-years for 2001–2003, report a mean (median) before-tax ROA of 5.201% (5.274%) and a mean (median) debt-equity ratio of 83.8% (26.1%). The fact that our acquirers appear more profitable (even after-tax compared to the Malaysian firm-years' before-tax ROAs) may be due to our firms being acquiring firms only. Acquiring firms may be, on average, more profitable than non-acquiring firms. Our firms are also more highly leveraged than the Malaysian firms considered by Abdul Wahab et al. (2011), which may be due to acquirers being both more profitable and more ambitious than non-acquiring firms in our study, thus leading to higher debt levels. This result may also reflect cultural conservatism among Malaysian senior managers, which makes them less keen on taking on higher debt levels compared to Australian managers. The larger difference between the mean and median leverage in Malaysia compared to our Australian sample suggests a "bunching" of firm-years in the low-leverage region for Malaysia. Different accounting regimes in both countries could also explain some differences because the data are taken from pre-IFRS years. In our study, an acquiring firm has a mean (median) market value of equity of A$1.6 billion (A$564 million), roughly five times that of a target firm.

For the acquiring firms in our study, the mean (median) score of the investment opportunity set (IOS_A) obtained through factor analysis is 0.08 (–0.18), and for targets (IOS_T), it is 0.07 (–0.27). The higher mean (and median) scores for the acquiring firms suggest that these firms have a higher investment opportunity set than their target firms. This is expected because negative prior share returns (leading to a reduction in IOS_T) tend to increase the likelihood of a potential target firm being the subject of a successful takeover bid.

The NUMBER variable has a mean (median) score of 2.16 (1.00), with a maximum of nine acquisitions and a minimum of one acquisition completed by the acquirer in the acquisition year. Clearly, some acquirers are much more

acquisitive than others, although this variable is influenced by acquisitions of less than 100% owned subsidiaries, which may have been previously effectively controlled (but not consolidated) by the group. The median outcome is still to make only one acquisition per financial year. Of the 52 firms in the final sample, 28 (62%) involved acquirers that made only one acquisition during the financial year. As stated previously, successful takeovers were relatively rare and important events for most individual Australian acquirers during our sample period. The average (median) firm pays an audit fee of A$13.9 million (A$0.37 million). A relatively high percentage (82%) of acquiring firms (median 1.00) were audited by one of the big 'N' auditors, although it is worth noting that this figure was much lower during the 1980s and the first two years of the 1990s compared to later in the sample period. For the Malaysian firm-years in Abdul Wahab et al. (2011, Table II, p. 404), big 'N' audits averaged 0.681 or 68.1% (median of 1.00). The Big 'N's dominance of the Australian audit market grew significantly during our sample period (for better or for worse). The big 'N' dominance in Malaysia was nearly certainly less significant than in Australia during 2001–2003.

RESULTS

The Pearson's correlations presented in Table 3 indicate that there is a high correlation (the correlation coefficient is 0.46 and significant) between the IOS of the target firm (IOS_T) and the percentage of takeover purchase that is allocated to IIAs ($PERCENT_1$). This result is consistent with the information-signalling perspective of positive accounting theory (Holthausen, 1990; Holthausen & Leftwich, 1983) and is obviously inconsistent with opportunism. We found no significant correlation between $PERCENT_1$ and IOS_A, ROA or DEBT. Opportunism does not appear to be strongly evident according to the data. Unsurprisingly, the size of the acquirer ($SIZE_A$) is highly positively correlated to both the size of the target firm ($SIZE_T$) and the number of acquisitions by the acquirer (NUMBER). As expected, the percentage of the takeover purchase that is allocated to IIAs is significantly negatively correlated with the percentage allocated to purchased goodwill. This is in line with allocation to IIAs 'coming from' what would have otherwise been classified as purchased goodwill rather than what would otherwise have been classified as target net tangible assets.

This demonstrates that firms recording IIAs tended to reallocate some of what would have been purchased goodwill to IIAs rather than what would have been target net tangible assets. Our study is the first Australian study to formally document this correlation. Overall, the correlation matrix shows that multicollinearity is not a serious problem in our data.

Table 3
Pearson correlations

	IOS_A	IOS_T	DEBT	Ln(AUDITFEE)	$Ln(SIZE_A)$	$Ln(SIZE_T)$	NUMBER	$PERCENT_1$	$PERCENT_2$
IOS_T	0.10								
DEBT	0.18	–0.13							
Ln(AUDITFEE)	0.20	0.13	0.31						
$Ln(SIZE_A)$	0.22	–0.13	0.13	0.37					
$Ln(SIZE_T)$	0.06	–0.14	0.16	0.33	0.47				
NUMBER	0.01	–0.15	0.10	0.15	0.43	–0.06			
$PERCENT_1$	0.01	0.46	–0.02	0.10	–0.08	–0.30	0.18		
$PERCENT_2$	0.04	–0.25	0.36	0.22	0.32	0.22	–0.03	–0.35	
ROA	0.16	–0.09	–0.10	0.00	0.51	0.16	0.04	0.00	0.16

ROA, the return on assets, is measured as net profit after tax in financial year t – 1 as a percentage of average total assets at end of t – 2 and t – 1; IOS_A and IOS_T are the investment opportunity set of the acquirer and target company respectively, obtained by factor analysis of market-to-book value of assets, market-to-book value of equity, and price-to-earnings ratios; DEBT is total liabilities as a fraction of total shareholders' equity as at the end of year t – 1; $SIZE_A$ and $SIZE_T$ are the size of acquirer and target firm size respectively, measured as the market value of common equity at the end of the financial year immediately prior to the takeover announcement date; AUDITFEE is annual audit fees paid to the auditor of the holding company and its associated firms; NUMBER is the number of successfully completed acquisitions of both subsidiary companies and businesses made by the acquirer group of companies in financial year t relative to the takeover announcement month; $PERCENT_1$ is the percentage of takeover purchase consideration allocated to identifiable intangible assets (IIAs); and $PERCENT_2$ is the percentage of takeover purchase consideration allocated to purchased goodwill. $N = 52$.

Table 4 presents the results for acquisitions for which the percentage of the takeover purchase that is allocated to IIAs ($PERCENT_1$) is the dependent variable. We estimated equation (1) using a Tobit regression because our dependent variable was truncated at zero. The Huber-White estimator was used to compute robust variance estimates and to correct for heteroskedasticity.

Table 4
Tobit regressions for percentage of takeover acquisition allocated to identifiable intangible assets (1988–2004)

	1	2	3	4	5	6	7	8
ROA	4.14	4.36		3.56	3.49	3.70	3.70	3.64
	(0.01)	**(0.00)**		**(0.01)**	**(0.01)**	**(0.00)**	**(0.00)**	**(0.00)**
DEBT		6.83		7.98	9.20	1.88	8.45	5.20
		(0.62)		(0.63)	(0.55)	(0.90)	(0.56)	(0.72)
IOS_T			22.42	20.52	20.89	19.53	20.61	18.27
			(0.00)	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**
IOS_A			–3.34	–2.24	–3.03	–2.64	–4.27	–4.66
			(0.64)	(0.77)	(0.69)	(0.70)	(0.58)	(0.50)
NUMBER					2.35	1.20	1.79	–0.83
					(0.52)	(0.74)	(0.66)	(0.85)
Ln(AUDITFEE)							3.02	
							(0.45)	
BigN						50.60		48.26
						(0.00)		**(0.00)**
$Ln(SIZE_T)$								–7.44
								(0.24)
$Ln(SIZE_A)$								3.95
								(0.50)
TREND	–4.64	–4.64	–3.74	–5.30	–4.90	–5.20	–5.31	–5.14
	(0.01)	**(0.01)**	**(0.00)**	**(0.01)**	**(0.01)**	**(0.01)**	**(0.01)**	**(0.00)**
FINANCE	–57.18	–52.81	–40.44	–51.29	–45.68	–35.25	–43.70	–39.95
	(0.02)	**(0.06)**	**(0.08)**	(0.12)	(0.13)	(0.17)	(0.19)	(0.11)
ROA<0	165.90	173.45	19.27	119.10	114.93	105.10	122.78	118.51
	(0.00)	**(0.00)**	(0.64)	**(0.03)**	**(0.03)**	**(0.04)**	**(0.02)**	**(0.03)**
Constant	19.91	10.54	45.73	23.36	13.14	–19.89	–3.05	42.08
	(0.12)	(0.67)	(0.00)	(0.44)	(0.62)	(0.39)	(0.94)	(0.74)
LogL	–137.48	–137.40	–126.77	–123.97	–123.72	–121.37	–118.86	–120.54
Akaike	6.37	6.41	6.22	6.18	6.21	6.15	6.18	6.21
Left cens.	19	19	19	19	19	19	19	19

The dependent variable is the percentage of takeover purchase consideration allocated to identifiable intangible assets. ROA, the return on assets, is measured as net profit after tax in financial year t – 1 as a percentage of average total assets at end of t – 2 and t – 1; BigN takes a value of 1 if the acquirer firm was audited by a BigN auditor and zero otherwise; IOS_A and IOS_T are the investment opportunity set of the acquirer and target company respectively, obtained by factor analysis of market-to-book value of assets, market-to-book value of equity, and price-to-earnings ratios; DEBT is total liabilities as a fraction of total shareholders' equity as at the end of year t – 1; $SIZE_A$ and $SIZE_T$ are the size of acquirer and target firm size respectively, measured as the market value of common equity at the end of the financial year immediately prior to the takeover announcement date; AUDITFEE is annual audit fees paid to the auditor of the holding company and its associated firms; NUMBER is the number of successfully completed acquisitions of both subsidiary companies and businesses made by the acquirer group of companies in financial year t relative to the takeover announcement month; TREND is a linear time trend; and FINANCE takes on the value of 1 if the acquirer firm was in the financial industry. $N = 52$. *P*-values are in parentheses.

The first four specifications include only some or all of the explanatory variables relating to the research hypotheses H1 to H4. Because H1 and H2 relate to opportunism whereas H3 and H4 relate to information-signalling, Specifications 1 and 2 include only opportunism variables, and Specification 3 includes only information-signalling variables. All of the experimental variables are present in the remaining five specifications (4 to 8). Specifications 5 to 8 all include at least one control variable. The complete set of control variables could not be included in any single regression due to cross-correlations and concerns about degrees of freedom.

The results show that an acquirer's pre-bid after-tax ROA is a significant determinant of their acquisition accounting policy choice. However, the direction of the relationship implies that acquirers with *good* prior performances are more likely to allocate a higher percentage of takeover purchase prices to IIAs. This result also holds when control variables are added into the structural equation. Although inconsistent with opportunism, the result is consistent with efficiency arguments because it suggests that more profitable firms *both* acquire and capitalise a higher percentage of IIAs than less profitable firms. This result makes intuitive sense in today's high-tech economy in which acquisitions of intangible assets in the long run contribute to an increased rate of return on capital. In other words, accessing intangible assets increases the probability of earning economic rents through competitive advantages (Wyatt, 2005). Also inconsistent with the opportunism perspective, the table shows that the pre-bid leverage (DEBT) is not

a significant determinant of the percentage of purchase that is allocated to IIAs ($PERCENT_1$).

The estimated coefficient for IOS_T was positive and significant at better than the 1% level for all specifications. This is consistent with the information-signalling perspective and prior empirical research (Coombes et al., 1997; Tan, 2001; Wong & Wong, 2001; Wyatt, 2005). That is, there is a higher percentage of allocation of the purchase price to IIAs for targets with higher IOS_T. Firms with higher growth opportunities are likely to have more patents and other IIAs. In economic terms, a one unit increase in the IOS_T increases the allocation of a takeover purchase to IIAs by approximately 18 percentage points (Specification 8 of Table 4). However, the pre-bid IOS of the acquirer (IOS_A) is not a significant determinant of the percentage of the purchase price that is allocated to IIAs ($PERCENT_1$). Therefore, the IOS_A of the acquirer is of limited relevance for the percentage allocation decision. Obviously, this occurs because the IOS_A of the acquirer may not reflect the IOS_T of the target, especially when the acquirer and the target are in different industries or when the acquirer is a diversified conglomerate, and logically, it is the target IOS_T that should drive acquirers' accounting choices with respect to their acquisitions of a target. Our findings here support our decision to reduce the sample size by studying takeover accounting choices *on a per takeover basis* rather than on an acquirer-year basis (see our earlier comments on this point).

The results for Specification 6 show that BigN has a positive and significant coefficient. This finding is consistent with our prediction that firms choose high quality auditors so that they can access the auditing firm's knowledge base concerning which accounting policy choices can be selected to produce favourable reporting outcomes.[18] It is possible that this result may be due to correlated omitted variables. For example, smaller acquiring firms with non-BigN auditors may not be as skilled at negotiating a price and thus overpay, with this overpayment being classified as purchased goodwill. By contrast, larger acquiring firms can afford to identify better quality targets and can more accurately compute unbiased prices. However, it should be noted that in Specification 8 in Table 4, we included both the acquiring firm size and the target size as independent variables and found that the BigN variable retained its significance.

We note that there is a significant drop (of about five percentage points annually) in the percentage of the takeover purchase price that is allocated to IIAs over time. Although it is not possible to prove this point, it could be that this drop was influenced, at least in part, by the opposition voiced by the IASB's David Tweedie and others in the early 2000s with regard to Australia's allegedly lax unregulated accounting environment for IIAs. Australia's approach was viewed

by some financial commentators as reflecting a 'corporate cowboy' mentality (see, for example, Boreham, 1999).

We reran the above tests using the percentage of the takeover purchase price allocated to purchased goodwill as the dependent variable ($PERCENT_2$). The results are presented in Table 5. There is a significant negative association between the target IOS and the percentage of the takeover purchase price allocated to purchased goodwill ($PERCENT_2$). No significant relationship between an acquirer's pre-bid ROA or IOS_A and the percentage of the takeover purchase price allocated to purchased goodwill was found.

The dependent variable is the percentage of takeover purchase consideration allocated to Purchased Goodwill. ROA, the return on assets, is measured as net profit after tax in financial year t – 1 as a percentage of average total assets at end of t – 2 and t – 1; BigN takes a value of 1 if the acquirer firm was audited by a BigN auditor and zero otherwise; IOS_A and IOS_T are the investment opportunity set of the acquirer and target company respectively, obtained by factor analysis of market-to-book value of assets, market-to-book value of equity, and price-to-earnings ratios; DEBT is total liabilities as a fraction of total shareholders' equity as at the end of year t – 1; $SIZE_A$ and $SIZE_T$ are the size of acquirer and target firm size respectively, measured as the market value of common equity at the end of the financial year immediately prior to the takeover announcement date; AUDITFEE is annual audit fees paid to the auditor of the holding company and its associated firms; NUMBER is the number of successfully completed acquisitions of both subsidiary companies and businesses made by the acquirer group of companies in financial year t relative to the takeover announcement month; TREND is a linear time trend; and FINANCE takes on the value of 1 if the acquirer firm was in the financial industry. $N = 52$. *p*-values are in parentheses.

Previously, profitable firms have not seemed to acquire any more purchased goodwill than unprofitable firms, suggesting that purchased goodwill is unlikely to be an important source of competitive advantage in the modern economy in general (Bugeja & Gallery, 2006; Churyk, 2005; Ritter & Wells, 2006). Where there is evidence of purchased goodwill, it is quite probable that there has been overpayment by the acquirer (Bugeja & Gallery, 2006; Churyk, 2005; Ritter & Wells, 2006), although this is not the case for every individual acquirer or for every individual acquisition. The relationship between the quality of an auditor and the percentage of a takeover purchase price that is allocated to purchased goodwill is insignificant. We report a significant negative relationship for target size, consistent with smaller target firms being harder to value and overpayments being more likely, leading to more allocation to purchased

goodwill. The size of an acquirer is positively related to the percentage of the purchase price allocated to purchased goodwill.

Table 5
Tobit regressions for percentage of takeover acquisition allocated to purchased goodwill, 1988–2004

	1	2	3	4	5	6	7	8
ROA	–0.30	–0.09		0.02	0.02	0.06	0.04	0.13
	(0.79)	(0.92)		(0.98)	(0.98)	(0.94)	(0.96)	(0.88)
DEBT		7.23		17.16	17.10	16.70	16.57	18.60
		(0.45)		**(0.02)**	**(0.02)**	**(0.02)**	**(0.03)**	**(0.01)**
IOS_T			–11.62	–10.88	–10.91	–10.70	–11.10	–13.15
			(0.00)	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**
IOS_A			1.34	–1.67	–1.62	–1.97	–1.97	–2.55
			(0.68)	(0.59)	(0.61)	(0.53)	(0.55)	(0.35)
NUMBER					–0.12	–0.28	-0.70	–3.51
					(0.96)	(0.91)	(0.78)	(0.26)
Ln(AUDITFEE)							1.87	
							(0.47)	
BigN						17.40		12.76
						(0.08)		(0.21)
$Ln(SIZE_T)$								–5.98
								(0.04)
$Ln(SIZE_A)$								6.86
								(0.05)
TREND	2.00	2.00	2.46	2.87	2.85	2.74	2.52	2.26
	(0.04)	**(0.05)**	**(0.01)**	**(0.00)**	**(0.00)**	**(0.00)**	**(0.01)**	**(0.03)**
FINANCE	–29.30	–23.87	–27.02	–9.73	–9.98	–2.46	–8.70	–8.46
	(0.01)	(0.13)	**(0.01)**	(0.48)	(0.47)	(0.84)	(0.54)	(0.50)
ROA<0	–50.00	–40.75	–30.53	–25.08	–25.04	–26.63	–22.76	16.48
	(0.14)	(0.24)	**(0.00)**	(0.44)	(0.44)	(0.38)	(0.49)	(0.67)
Constant	5.25	–4.31	–4.51	–28.00	–27.45	–41.50	–34.24	–55.67
	(0.69)	(0.83)	(0.68)	(0.12)	(0.15)	(0.03)	(0.17)	(0.39)
LogL	–161.13	–160.90	–146.58	–145.05	–145.04	–144.17	–144.21	–142.49
Akaike	7.42	7.46	7.14	7.16	7.21	7.21	7.39	7.23
Left cens.	14	14	14	14	14	14	13	14

The coefficient for DEBT is significantly positive, with more leveraged firms allocating a larger proportion of their purchase prices to purchased goodwill. This finding is inconsistent with the opportunism argument and also with previous empirical findings for the U.K. (Gore et al., 2000; Grinyer et al., 1991). Our result may be explained by acquirer's (pre-bid) debt being a proxy for the target's IOS_T, and hence, there is a correlated omitted variable. This is supported by the negative correlation between a target's IOS_T and an acquirer's (pre-bid) debt ($r = –0.13$), as shown in Table 3. Highly leveraged firms tend to acquire targets with a lower IOS_T and also tend to allocate more of a purchase price to purchased goodwill and less to IIAs. It must be remembered that IOS is a complex theoretical construct; thus, our measure of IOS is unlikely to capture it exactly for our sample firms given that we use only three IOS proxies for the computation of our IOS factors.

Finally, we note that there was a significant linear increase (of about two to three percentage-points annually) in the percentage of takeover purchase prices that were allocated to purchased goodwill over time. This is in line, although we cannot prove cause-effect, with the official opposition to non-conventional acquisition accounting policy choices being voiced both within and outside of Australia (as reflected in, for example, David Tweedie's comments and earlier than that the 'tightening up' of AASB1013 in 1996 that mandated the straight-line method of goodwill amortisation). This result suggests that 'political costs' in the form of regulator and media disapproval can have a significant effect on accounting policy choices on a time-series basis (despite the fears of those same regulators and media outlets that firms are 'corporate cowboys' in their choices of accounting policies).

Supplementary Analysis

In a supplementary univariate regression analysis (results not tabulated), we found that the percentages of purchase prices allocated to purchased goodwill ($PERCENT_2$) were significantly negatively correlated with the acquirers' subsequent three-year abnormal returns ($r = –0.193$, $p = 0.02$, Adj. $R^2 = 0.0456$), suggesting an initial overpayment for purchased goodwill. The percentages of allocation to IIAs ($PERCENT_1$) were positively but not significantly correlated with the acquirers' subsequent abnormal returns ($r = 0.088$, $p = 0.354$, Adj. $R^2 = –0.013$), suggesting that there has been minimal overpayment for IIAs and that they may contribute to positive excess returns for the acquirer after the bid. Overall, the supplementary analysis supports the study's primary regression results as reported in Tables 4 and 5.

CONCLUSIONS

This study has investigated the determinants of the once-off accounting policy choices that a successful acquirer makes in the acquisition year to classify a takeover purchase price as target net tangible assets, IIAs and/or purchased goodwill. Until 2004 in Australia, the accounting policy choices for IIAs were totally unconstrained.

We found that many companies classified a large percentage of the takeover purchase price as IIAs during our sample interval (1988–2004): the mean (median) percentage was 19.09% (2.24%), and the mean percentage for the 1988–2000 subperiod was even higher at 21.70% (not reported in the tables). There was a significant linear decrease (of about five percentage-points annually) in the percentage of the takeover purchase price that was allocated to IIAs over time, suggesting that the 'political costs' in the form of regulator and media disapproval can have a significant effect on accounting policy choices on a temporal basis.

The regression results show that the percentage of the purchase price allocated to IIAs does not appear to be determined by traditional opportunism contracting variables such as leverage. An acquirer's pre-bid return on assets is positively associated with the percentage allocated to IOS, consistent with efficiency but not opportunism. Strongly performing firms tend to *both* acquire and capitalise a high percentage of IIAs in acquisitions, presumably to maintain their strong performance in the future. Although the IOS_T of the target is significantly positively related to the percentage of the takeover purchase price allocated to IIAs, the IOS_A of the acquirer is not. The supplementary analysis shows that the percentage of the takeover purchased goodwill is significantly negatively associated with the acquirer's subsequent three-year abnormal stock returns. This finding supports our primary regression results and suggests overpayment for purchased goodwill, consistent with the prior Australian findings of Bugeja and Gallery (2006) and Ritter and Wells (2006). Nevertheless, a caveat on this finding is our small sample size.

Despite the IASB/FASBs' perceived current preferences for the impairment test rule for purchased goodwill and capitalisation plus amortisation for most IIAs (as reflected in SFAS Nos. 141 and 142 and IAS3 and IAS38), our research has continued relevance because the accounting policy preferences of regulators and the public go in cycles.[19] From the late 19th century up until the mid-1960s, most leading accounting authorities have preferred the capitalisation and amortisation rule for purchased goodwill over all other alternatives (Bryer, 1995). It is unlikely that those holding strong views in the pro-amortisation camp have changed their opinions as a result of the FASB/IASB official hegemony.

The issue of which accounting policies to use for purchased goodwill and IIAs may yet again be debated at high levels by the world's most important accounting regulators. Our research offers a deeper understanding of the factors that systematically influence managers' initial allocation decisions (to target net tangible assets, IIAs and/or purchased goodwill) on a per-takeover basis. A unique contribution of our study is our documentation of how allocation decisions have changed throughout our sample period in response to regulator and media pressures. The results presented here also offer some further empirical support for Wyatt's (2005) and Matolcsy and Wyatt's (2006) arguments that the current IAS38 limits managers' abilities to communicate insider information about future cash flows arising from IIAs to the capital market (especially where those IIAs are internally generated or have increased in value above costs).

NOTES

1. The use of the pooling of interests method was prohibited by AASB1015. There is presently no comparable standard to AASB1015 in Australia, but its key content has now been subsumed within AASB 3 (Business Combinations) and AASB 138 (Intangible Assets).
2. In 2005, IAS38: *Intangible Assets* (named AASB 138 in Australia) first came into effect in this country. In IAS38, intangible assets are defined as "an identifiable non-monetary asset without physical substance." Under IAS38, intangible assets have a mandatory amortisation requirement. For more details on IAS38 see Deegan (2005).
3. See, for example, the views about Australia's then unregulated accounting environment for IIAs expressed by Deloitte's national technical partner, Bruce Porter, and the Australian Securities and Investment Commission (ASIC) chief accountant, Jan McCahey, both reported in Boreham (1999).
4. This contrasts with, for example, Grinyer et al. (1991), who used post-acquisition leverage in their tests.
5. The sampling periods for prior Australian studies are much shorter in comparison. For example, the sampling period examined by Matolcsy and Wyatt (2006) was only eight years, 1990–1997.
6. That is, capitalisation of the difference of all or most of the purchase price minus the fair value of the net tangible assets as the value of the purchased goodwill.
7. Information-signalling can be viewed as a subset of efficient contracting (it is hard to imagine a set of efficient contracts in which information-signalling is ruled out or frowned upon) and, hence, as far as this study is concerned, these two perspectives are collapsed into one. Under the efficiency perspective of positive accounting theory, managers select ex ante and in consultation with other contracting parties the set of accounting policies that simultaneously minimise agency costs, including the residual losses, and therefore maximise firm values (Watts & Zimmerman, 1990).

8. We used the same dependent variable as Grinyer et al. (1991), except that they classified the allocation into only purchased goodwill or other target net assets, whereas we introduced a third category: allocation to IIAs. We acknowledge our debt to Grinyer et al. (1991).
9. However, Wong and Wong (2001) argued that this study suffers from a correlated-omitted-variables problem because IOS was not included as an explanatory variable in the test. Furthermore, pre-acquisition leverage should have been used instead of post-acquisition leverage to overcome the endogeneity problem. We have addressed the two concerns of Wong and Wong (2001) in this paper, which may be viewed as a follow-up study to Grinyer et al. (1991).
10. Wyatt (2005) defined signalling very narrowly to refer only to the cases in which firms signal at the time of an IPO or new debt and equity issue. However, in our view, *every* capitalisation of an IIA in an unregulated environment (because it reflects a choice) is a signal.
11. Under the original version of IAS22, as applicable in Singapore in the year 1996, purchased goodwill could either be capitalised and amortised or written off directly against reserves.
12. Specific knowledge is unique to individual firms and managers and is gained by those managers through experience. Given that specialised assets are created from firm-specific circumstances over time, firm-specific knowledge potentially has the ability to explain recognition policies relating to those specialised assets (using an information-signalling framework). Overall, the evidence presented by Tan (2001) supports a positive association between the firm-specific knowledge of a CEO and the adoption of a recognition policy for goodwill.
13. We found that all three measures of growth load positively on the IOS factor. Acquirer IOS variables use post-bid data for those cases in which the acquisition is not included in the acquirer's accounts in the financial year that includes the takeover announcement date. Although this is not desirable on theoretical grounds, it is unlikely to cause practical problems. Our data is pre-bid in these cases only in the sense that the acquirer has not yet recorded the acquisition in its own accounts. However, most importantly, this data is not post-bid data, as it does not include the financial effects (on the acquirer) of the acquisition.
14. A typical example of the 'standard treatment' is Toll Holdings Limited's year 2001 acquisition of Finemore Holdings. In this acquisition, Toll reported a payment of A$119,906,000 for the fair value of the net assets acquired of A$79,164,000 and the *Goodwill on Acquisition* of the difference of A$40,742,000 (A$119,906,000 minus A$79,164,000) in the footnotes to the *Statement of Cash Flows* in its 2001 accounts. It classified A$Nil of the purchase consideration as IIAs. In the *Intangible Assets* footnote, this *Goodwill on Acquisition* duly appeared as an equal dollar increase in the *Gross* (pre-amortisation) *Goodwill* balance. Toll conformed to the AASB1013 regulations and the 'textbook' measurement rules for purchased goodwill. For example, purchased goodwill, according to Schroeder et al.'s (2005, p. 322) textbook, is "the excess of total fair value [paid] over the fair value of identifiable net assets [acquired]."
15. We use the IIAs figures listed here, which are the sum of the IIAs recognised pre-bid by the target and those later recognised by the acquirer in the acquisition

process. The goodwill of the target prior to the acquisition was defined as a part of purchased goodwill, even when the acquirer presents them separately (because under AASB1013, all goodwill is required to be accounted for in the same manner).

16. As takeovers are major and not overly frequent events for the majority of firms, it is likely that significant decision-making time and effort is expended with respect to each individual takeover including accounting choices. For a given acquirer's acquisition in a given year, where target industry and target size may vary significantly, accounting choices may well also be different. To expand the sample size by taking as one observation all the takeovers made by an acquirer in one financial year would 'smooth out' and distort accounting choices and their consequences which we presume are made on a per-takeover basis. Additionally, grouping takeovers by financial year so that there is one observation per acquirer-year would introduce another source of bias that is a consequence of the financial year end date being an arbitrary way to group takeovers.
17. Forty-four percent of the sample firms allocated none of the takeover purchase price to IIAs, compared to the 29% of firms that allocated none of the takeover purchased price to purchased goodwill.
18. Our finding also suggests that, at least for our sample firms, it is the smaller audit firms that provide higher quality audits if high quality is operationalised here to mean accepting the standard interpretation of AASB1013. However, small audit firms may not be driven by altruism but may simply be less experienced in advising firms as to how best to account for their acquisitions and/or they may be less willing to 'take the heat' should the corporate regulators later take action against them for their part in breaching the letter of a AASB approved accounting standard.
19. Accounting for purchased goodwill still remains today, in our view, as Malcolm Miller has said, a 'time bomb waiting to explode' (Miller, 1995, cited in Whittred et al., 2000, p. 239). The historically high degree of dispute and disagreement regarding how best to account for purchased goodwill can be seen by: (a) the U.S. Accounting Principles Board (APB) in 1970 placing Business Combinations and Intangible Assets in separate accounting standards so that both standards had a higher chance of gaining majority support from board members (Schroeder et al., 2005); and (b) the FASB first releasing a 1999 Exposure Draft on goodwill accounting which recommended mandatory amortisation over a maximum 20-year period only to subsequently reverse its position in the face of opposition from Wall Street (Ramanna, 2008; Schroeder et al., 2005).

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