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Valuation of Non-Goodwill Intangibles by Firms[1] and Investors

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Summary

Findings

- This report addresses two related research questions. First, what information do Australian companies disclose about how they value non-goodwill intangibles when they acquire substantial non-goodwill intangibles in business combinations. Second, how do investors perceive the value of different types of intangibles, especially externally-acquired vs internally-developed intangibles.
- We form a sample of Australian firms with a material carrying amount of non-goodwill intangibles on the balance sheet (non-goodwill intangibles/total assets of at least 5%) over 2018-2024, resulting in a sample of 1,643 firm-years. We then hand-collected the reconciliation of the opening and closing balances of non-goodwill intangibles, and the names and carrying amounts of the disclosed classes of intangibles for the sample firms.
- We identify a sub-sample of 146 firms that acquired non-goodwill intangibles through business combinations with an acquisition-date fair value of at least 10% of the firm's opening total assets, resulting in major additions to non-goodwill intangibles via business combinations. We then hand-collected the disclosures made by these firms about how they determined the acquisition-date fair values of non-goodwill intangibles.
- We find that firms rarely provide information about how they value non-goodwill intangibles acquired through business combinations, because disclosure of this information is not required by AASB standards. Just 35 firms (out of 146) disclosed a valuation method for at least one non-goodwill intangibles acquired in a business combination. This suggests that

[1] This report uses the term 'firm' or 'company' rather than the broader 'entity', which is preferred in the Standards, because the sample consists of public companies.
This report references AASB Standards, but all reference could be substituted with the equivalent IAS/IFRS Standards without change in meaning.

investors typically lack information about how firms value non-goodwill intangibles acquired in business combinations, even where these acquisitions are highly material.

- Firms that did disclose valuation methods most often referred to valuation approaches that are described in the International Valuation Standards, such as the relief-from-royalty method and the multi-period excess earnings model. The former was typically used for intellectual property, such as brands and trademarks. The latter was typically used for customer-related intangibles.
- Although a minority of firms disclosed valuation methods for intangible assets, these firms typically provided only basic information, such as simply naming the valuation method they used. Most firms did not disclose key assumptions made in valuing the intangibles, such as assumed royalty rates, customer attrition rates, forecasted cash flows or discount rates. This again implies that investors typically lack information about how non-goodwill intangibles are valued by firms, even where the firm discloses the valuation method it used.
- We examine a small sample of major business combinations made by US firms as a comparison. In contrast to Australian firms, most US firms stated the methods they used to value material non-goodwill intangibles acquired in business combinations. This suggests that disclosing information about the valuation of non-goodwill intangibles recognised in business combinations might be possible.
- We find that investors view goodwill, brand-related intangibles, software intangibles, and development costs as being value relevant, i.e. they place a significant value on these intangibles. We do not find that investors, on average, view customer-related intangibles (e.g. customer relationships) as value relevant. Further, we find that investors place a statistically indistinguishable value on goodwill and brand-related intangibles.
- The value relevance evidence suggests that intangibles which are normally recognised only through business combinations, brands and customer relationships/contracts, are viewed as equivalent to goodwill or as not value relevant. It is possible that this result is caused by the fact that most firms provide no disclosure about how they determined the fair value of these assets when they are acquired and hence investors are sceptical about their value.

Recommendations

- Our results are consistent with investors not having access to information about how firms value material identifiable intangibles acquired in business combinations which affects the value relevance of externally-acquired intangibles compared to internally-developed intangibles. It might be useful for investors if firms were required to disclose how they valued material identifiable intangibles acquired in business combinations, especially where the

intangibles are highly material or where they were not formerly recognised by the acquiree and hence their fair value might be more uncertain (e.g. brands and customer relationships).

1. Introduction

This report investigates two related research questions. First, what disclosures Australian listed companies make about how they value non-goodwill intangibles[2] when they acquire significant non-goodwill intangibles in a business combination (and hence must determine the acquisition-date fair value of intangibles). Second, how investors perceive the value relevance of different types of intangibles, particularly, whether investors view acquired intangibles differently than other types of intangibles. The two research questions are related because how investors perceive the value of acquired intangibles might be affected by the extent to which firms disclose how they valued those intangibles on acquisition. For example, if a firm does not disclose any information about how it determined the acquisition date fair values of acquired intangibles such as brand names and customer relationships, investors might view these intangibles as having no statistically significant value or a value that is statistically indistinguishable from the value investors place on goodwill (since these intangibles would have been subsumed into goodwill if they were not treated as separate assets).

The first research question, what disclosures firms make about how they determine the fair value of identifiable intangibles acquired in business combinations, does not appear to have been investigated in prior academic research. The second research question, the value relevance of different types of non-goodwill intangibles, has received very little attention in academic research (King et al., 2024).

We begin with a review of background information about International Financial Reporting Standards (IFRS) requirements and the guidance in the International Valuation Standards. Section 3 describes the reports methodology. Section 4 provides descriptive statistics. Section 5 discusses the results of our empirical analysis. Section 6 concludes with a discussion and recommendations. The report includes two appendices. Appendix A provides examples of annual report disclosures. Appendix B provides a literature review of the valuation of intangibles by firms for financial reporting purposes and the value relevance of intangibles to investors.

2. Background

2.1 Research Question One

Recognition and Measurement of Acquired Intangibles

AASB 3 ¶10 requires an acquirer to recognise all identifiable assets and liabilities acquired in a business combination separately from goodwill. This can include recognising assets and liabilities that were not recognised by the acquiree, such as brands, patents and customer relationships (AASB 3, ¶13). Identifiable assets and liabilities are recognised at their acquisition-date fair values (AASB 3,

[2] Note that exploration and evaluation assets are not considered intangible assets for the purposes of this report, because they are excluded from the scope of AASB 138 (¶2).

¶18). Special rules apply to identifiable intangibles (AASB 3, ¶B31-B34). An identifiable intangible must either be a contractual-legal right, even if the asset is not transferable or separate from the acquiree (AASB 3, ¶B32), or the asset must be separable from the entity, meaning capable of being separated from the acquiree and sold, transfer, licensed, etc. (AASB 3, ¶B33). The latter criterion is to be interpreted broadly, for example, it does not matter whether the acquiree intends to sell/transfer the intangible and it does not matter whether transactions for similar intangibles are infrequent (AASB 3, ¶B33). Implicitly, intangibles that do not meet the recognition criteria are subsumed into goodwill.

In a 2020 discussion paper on business combinations and goodwill, the IASB noted that IFRS 3 broadened the range of intangible assets that are recognised separately from goodwill in business combinations (IASB, 2020, IN47). The IASB notes that stakeholders' views differ on the merits of recognising identifiable intangibles, especially brands and customer relationships. Some stakeholders view recognition of identifiable intangibles as useful because it helps to explain what companies have bought (IASB, 2020, IN48). However, other stakeholders question the usefulness of recognising identifiable intangibles because similar intangibles are not recognised if internally generated and because some identifiable intangibles are difficult to value (IASB, 2020, IN48). The IASB's post-implementation review of IFRS 3, names brands and customer relationships as examples of identifiable intangibles that are difficult and subjective to value (IASB, 2015).

One issue that has received little attention is the disclosure of valuation methods. As discussed below, firms are not required by IFRS standards to disclose how they determined the fair values of identifiable intangibles (or other assets and liabilities) acquired in a business combination. It is possible that stakeholders would view information about identifiable intangibles as more useful if firms were required to disclose how they identified the assets and determined their fair value in business combinations.

Disclosure Requirements

AASB 3 does not require firms to disclose the assumptions or methods they used to determine the fair value of identifiable intangibles acquired in a business combination. AASB 13 (¶91) requires firms to disclose the valuation techniques and inputs used to determine the fair value of assets or liabilities where they are carried at fair value. However, this applies to assets or liabilities measured at fair value *after initial recognition*, or assets or liabilities measured at fair value on a recurring basis that use significant unobservable inputs. Importantly, these scenarios would not capture the determination of the fair value of identifiable intangible assets acquired in a business combination, except where the identifiable intangible assets were subsequently carried under the revaluation model, which is rare.

Despite the lack of requirements for firms to disclose how they determined the acquisition-date fair values of identifiable intangible assets acquired in a business combination, we expect some firms to voluntarily disclose this information, because it might be useful for investors.[3]

Potential Valuation Methods for Non-Goodwill Intangibles

AASB 13 provides limited guidance for how firms might determine the fair value of individual, non-goodwill intangible assets, except AASB 13 (¶B11) mentions that firms might use the multi-period excess earnings method (MPEEM), which is type of income approach, to determine the fair value of some intangible assets.

The International Valuation Standards (IVS) provide additional guidance for valuing intangible assets. Similar to the AASB Standards, IVS 210 describes three main approaches to valuation: market approach, income approach, and cost approach. Within the income approach, IVS 210 (¶60) describes several possible approaches to valuing non-goodwill intangible assets:

- Excess earnings method: present value of expected future cash flows attributable to the intangible asset after excluding cash flows attributable to other assets required to generate the cash flows ('contributory assets'). MPEEM, which is mentioned in AASB 13, is a special case of the excess earnings method where multiple periods are forecasted (which is the norm).
- Relief-from-royalty method: present value of the theoretical royalty payments that the firm would have made to licence the intangible asset if it did not own it.
- With-and-without method: the difference between the value of the firm if it uses the intangible asset ('with') and the value of the firm if it does not use the intangible asset ('without').
- Greenfield method: the value of an intangible asset is determined using an income approach assuming the intangible asset is the only asset of the business, and all other assets must be bought, built or rented.
- Distributor method: the value of an intangible asset is estimated by referring to the profit margins of distributor companies in the same industry to isolate the profits earned by companies that generate intellectual property from companies that merely distribute products (distributors).

[3] AASB 101 (¶125) requires firms to disclose information about major assumptions and sources of estimation uncertainty that have a significant risk of resulting in material adjustment to the carrying amounts of assets and liabilities within the next financial year. Some sample firms that disclosed details of how they valued identifiable intangibles referred to this requirement. However, most sample firms do not appear to view the requirement in AASB 101 (¶125) as applying to the estimation of fair values of assets and liabilities acquired in business combinations.

Other Scenarios Where Firms Value Intangibles

Intangibles can be carried at fair value under the revaluation model (AASB 138, ¶75). However, this is rare, because there is rarely an active market for intangible assets (AASB 138, ¶78). We therefore do not consider intangible assets carried under the revaluation model in this report.

A firm might determine the recoverable amount of an individual non-goodwill intangible asset if the firm tests the asset individually for impairment under AASB 136. The recoverable amount of an asset is the higher of its value in use (VIU) and fair value less costs of disposal (FVLCD), which are both forms of valuation similar to determining the fair value of an intangible. Indefinite life intangible assets other than goodwill and intangible assets not yet available for use must be tested for impairment annually, similar to goodwill (AASB 136, ¶10). Other intangible assets are tested for impairment where there is an indication of possible impairment (AASB 136, ¶9). Entities are encouraged to test intangible assets for impairment individually, but where this is not possible, intangible assets are tested for impairment indirectly by testing whether the cash-generating unit (CGU) to which the intangible asset belongs is impaired (AASB 136, ¶66). For the sample firms, we find, in untabulated analysis, that most firms tested non-goodwill intangibles for impairment only indirectly by testing the CGU to which the intangible belongs for impairment. We therefore do not consider the valuation of non-goodwill intangibles in the context of impairment testing in this report

2.2 Research Question Two

Appendix B provides a review of the relevant academic literature related to intangibles. Most prior research has focused on the value relevance of internally developed intangibles, such as software development costs under US GAAP, and research and development costs under IFRS and pre-IFRS Australian GAAP. This literature generally finds that investors in common law countries (Australia, UK, US) view internally generated intangibles as being valuable. King et al. (2024) appears to be the only paper that examines the value relevance of externally acquired intangibles. They find that acquired intangibles are perceived by investors as valuable, but they find that some types of intangibles are not valued by investors significantly differently than goodwill, which calls into question whether these intangibles should simply be subsumed into goodwill.

The present report examines the value relevance of all classes of intangibles recognised by the sample firms. This includes intangibles that can only be recognised when externally acquired (normally in a business combination) such as brands and customer relationships.[4] It also includes intangibles that can be either internally developed or externally acquired, including software, development costs and

[4] AASB 138 ¶63 expressly prohibits recognising internally generated brands and customer lists as intangibles assets.

licences. There does not appear to be any extant studies of the value relevance of different types of intangibles under IFRS.

3. Methodology

Sample and Data Collection

To address both research questions, we begin by identifying a sample of Australian firms that reported a material balance of non-goodwill intangibles. The details of the sample construction are as follows:

- The sample period is financial years ending during calendar years 2018-2024.
- The sample includes only firms incorporated in Australia and listed on the Australian Securities Exchange.
- The firm reported total assets of at least A$100m at the end of at least one of the financial years 2018-2024. This minimum firm size is imposed to keep the data collection manageable.
- The firm reported non-goodwill intangible assets of at least 5% of total assets at the end of at least one of the financial years 2018-2024. This criterion is used to isolate firms with material non-goodwill intangible assets, which might be more likely to disclose details of how they value intangible assets.

We used data from Compustat Global to form the sample.[5] Applying the sampling criteria results in an initial sample of 1,715 firm-years.

We then hand-collected the reconciliation of the opening and closing balances of non-goodwill intangibles for these firms from the notes to the financial statements, including:[6]

- Additions through business combinations[7]
- Other additions, e.g. direct purchases, capitalised expenditure
- Amortisation
- Impairments
- Net total other changes, e.g. foreign currency translation effects, disposals, transfers to other assets (e.g. assets held for sale)

[5] During the data collection, we discovered that Compustat Global inconsistently includes or excludes capitalised development costs in its total intangibles data item. We manually collected the opening and closing balance of non-goodwill intangibles as reported by the company. We therefore include capitalised development costs in our analysis regardless of whether Compustat Global included or excluded it from intangibles.

[6] This reconciliation is a required disclosure under AASB 138 ¶118.

[7] A small number of firms bundled additions through business combinations with other types of additions. In that case, we assumed that additions related to business combinations.

We excluded firm-year observations where the firm did not provide a reconciliation of the opening and closing balances of non-goodwill intangibles or where the firm did not disaggregate intangibles into classes. The final sample is 1,643 firm-years. The sample encompasses 84.8% of the total carrying amount of the non-goodwill intangibles of Australian listed firms during the sample period and is therefore reasonable comprehensive.

3.1 Research Question One

To address research question one, we selected firms that recognised major additions to non-goodwill intangibles through one or more business combinations during a particular year for further analysis of their disclosures related to the valuation of non-goodwill intangibles. We define major additions as being additions to non-goodwill intangibles of at least 10% of opening total assets during a given year. This resulted in a sample of 146 firm-years. For these firms, we hand-collected whether they disclosed how they valued non-goodwill intangibles acquired in business combinations, and if they provided this disclosure, what valuation methods they described using.

3.2. Research Question Two

Type of Intangibles

We hand-collected the number of classes and the names of the different classes of intangibles into which the firm classified its non-goodwill intangibles.[8]

After reviewing the most common types of intangible classes reported by the sample firms, we decided to disaggregate a firm's non-goodwill intangibles into categories by searching for the following keywords in the intangible class names:[9]

- Brand related intangibles: 'brand', 'trade name', 'trademark'
- Customer related intangibles: 'customer', 'client'
- Software related intangibles: 'software', 'website'
- Intellectual property related intangibles (excluding trademarks): 'intellectual property', 'patent'
- Licence related intangibles: 'licence', 'license'
- Development costs: 'develop' and not 'software'[10]

[8] Firms are required to report intangibles by class under AASB 138 ¶118.

[9] The keyword search captures plurals form of the keywords, e.g. 'brands', 'licences'. The keyword categories are not mutually exclusive, i.e. a class could be captured by more than one keyword.

[10] Some firms report intangibles like 'Software development'. We distinguish these software related intangibles, from other types of capitalised development costs under AASB 138. US GAAP does not permit firms to capitalise expenditure on research and development except for software development. This appears to influence how Australian firms report intangibles, because most firms distinguished software development costs from other types of development costs.

This categorisation is necessarily imperfect for several reasons. First, firms will sometimes combine intangibles from different categories into one class. One example from the sample is 'Technology, trademarks and customer contracts at cost'. Second, some types of intangibles will not be captured by these categories. Third, some intangibles will be misclassified. These are unavoidable limitations of the study.

Value Relevance

We conduct value relevance regressions to test how investors perceive the value of different types of intangibles. Following a standard approach in the accounting literature, we model a firm's share price three months after the end of its financial year (e.g. share price at the end of September for a firm with a June financial year end) as a function of its earnings per share and book value of equity per share (e.g. Collins et al., 1997; Brown and Shivakumar, 2003):[11]

$$SharePrice_{i,t} = \beta_0 + \beta_1 EarningsPerShare_{i,t} + \beta_2 BVEquityPerShare_{i,t} + \varepsilon_{i,t} \quad (1)$$

The data for all three variables is obtained from Compustat Global. *EarningsPerShare* is earnings before extraordinary items (Compustat data item IB) scaled by shares outstanding (Compustat data item CSHOC). *BVEquityPerShare* is book value of common equity (data item CEQ) scaled by shares outstanding (data item CSHOC). *SharePrice* is Compustat data item PRCCD.

To examine how the market perceives the value relevance of different types of intangibles, we disaggregate a firm's book value of equity per share into the carrying amount of the following:

- Goodwill per share
- Brand related intangibles per share
- Customer related intangibles per share
- Software related intangibles per share
- Intellectual property related intangibles per share
- Licence related intangibles per share
- Development costs per share
- Book value excluding intangibles per share

[11] This approach deflates the market value of equity, earnings and book value of equity by the number of shares outstanding. Prior research suggests this is the best deflator for addressing heteroskedasticity caused by differences in firm size (Brown et al., 1999; Barth and Clinch, 2009).
All terms in the regression are measured in Australian dollars. Where a firm reports in a different currency, we convert accounting terms to Australian dollars using Compustat Global's exchange rate at the end of the company's financial year.

Equation 1 is then expanded as follows:[12]

$$SharePrice_{i,t} = \beta_0 + \beta_1 EarningsPerShare_{i,t} + \beta_2 BVEExclIntangiblesPerShare_{i,t} + \beta_3 GoodwillPerShare_{i,t} + \beta_4 BrandsPerShare + ... + \varepsilon_{i,t} \quad (2)$$

We exclude firms with a share price of more than $35 (5% of firms) from the value relevance analysis, because including firms with extreme share prices causes the dependent variable (share price) to be highly skewed and this greatly affects value relevance analysis. We winsorize the independent variables at the 1st and 99th percentiles to reduce the influence of outliers. We include year fixed effects in all value relevance regressions to control for year-specific changes in the market valuation of all firms.

4. Descriptive Statistics

Table 1 Panel A shows the number of sample observations and the number of firms recognising major non-goodwill intangibles via business combinations (10% of opening total assets or more). Approximately 8.9% of firm-years involved the addition of non-goodwill intangible assets via business combinations of at least 10% of opening total assets.

Table 1 Panel B shows the mean, 25th percentile, median, and 75th percentile of the ratio of the closing carrying amount of total non-goodwill intangible assets to total assets (non-goodwill intangible intensity) by year for the sample firms. Non-goodwill intangibles are highly material for the sample firms. For example, the median firm has non-goodwill intangibles to total assets of 11.1%.

Table 1 Panel C shows the aggregate flows related to non-goodwill intangibles for the sample firms. The sample firms added $47.7bn of non-goodwill intangibles through business combinations during the six-year sample period. There was a noticeable spike in additions through business combinations in 2023 and a nadir during 2021. The sample firms added $56.7bn of non-goodwill intangibles through other means such as asset purchases and expenditure capitalisation. They amortised $55.6bn of finite life intangibles and recognised impairments of $9.2bn. Net other adjustments totalled a reduction of $14.8bn, likely because disposals are included in other adjustments. In aggregate terms, additions outweighed reductions, meaning the sample firms increased their balance of non-goodwill intangibles during the sample period.

[12] Our approach is similar to prior research (e.g. Aboody and Lev, 1998).

Table 1

Sample Statistics by Year

Panel A: Frequency

Year	Observations	Major Business Combinations
2018	230	21
2019	237	26
2020	240	20
2021	241	27
2022	241	27
2023	236	17
2024	218	8
Total	1,643	146

Panel B: Non-Goodwill Intangible Intensity

Year	Mean	P25	Median	P75
2018	16.9%	6.4%	12.4%	21.4%
2019	16.1%	6.5%	11.6%	21.6%
2020	14.2%	5.4%	10.9%	18.6%
2021	14.5%	5.4%	10.4%	18.0%
2022	14.9%	5.4%	11.0%	20.9%
2023	15.0%	5.4%	10.4%	21.0%
2024	15.2%	5.3%	11.2%	21.1%
Overall	15.3%	5.6%	11.1%	20.1%

Panel C: Non-Goodwill Intangible Total Flows

Year	Additions Through Business Combinations	Other Additions	Amortisation	Impairments	Other Adjustments
2018	7,514.7	8,642.6	-6,611.7	-1,483.3	350.7
2019	6,045.7	9,345.2	-6,551.7	-2,339.2	-2,860.2
2020	5,166.8	6,426.3	-7,912.2	-1,599.3	-253.0
2021	2,692.0	5,829.3	-8,003.3	-293.8	-7,434.2
2022	5,708.3	7,487.1	-8,156.8	-997.0	-1,637.5
2023	15,893.4	8,520.2	-9,188.8	-788.9	-1,711.2
2024	4,713.8	10,459.6	-9,237.9	-1,764.8	-1,222.1
Total	47,734.7	56,710.3	-55,662.5	-9,266.4	-14,767.7

Table 2 shows the number of observations, the mean, 25th percentile, median and 75th percentile of non-goodwill intangible intensity by GICS sector.[13] The sample includes fewer firms from the Energy sector (GICS Sector 10) and the Materials sector (GICS Sector 15), which includes mining companies, than the population of Australian listed firms, because these types of firms usually do not have significant intangible assets.[14] Looking at median non-goodwill intangible intensity, the most intangible intensive sectors are GICS sectors 45 (Information Technology) and 50 (Communication Services), which is unsurprising given the nature of these sectors. Median intangible intensity is lowest in the GICS sectors dominated by extractive firms, 10 (Energy) and 15 (Materials), as well as Utilities (GICS sector 60). However, median non-goodwill intangible intensity generally shows small variation across the sectors in our sample.

Table 2

Non-Goodwill Intangible Intensity by Industry

GICS Sector	Observations	Mean	P25	Median	P75
10	20	9.2%	3.8%	7.1%	9.3%
15	109	9.7%	3.9%	6.5%	11.1%
20	271	15.4%	4.7%	8.6%	17.0%
25	321	14.5%	6.5%	11.5%	19.9%
30	129	12.5%	6.4%	10.3%	17.4%
35	169	18.1%	5.5%	10.5%	24.5%
40	167	10.5%	4.5%	7.5%	15.7%
45	239	18.2%	8.8%	16.9%	24.8%
50	159	21.8%	10.3%	14.9%	30.1%
55	23	8.8%	4.1%	6.2%	15.2%
60	36	14.9%	6.6%	11.5%	15.2%
Overall	1,643	15.3%	5.6%	11.1%	20.1%

Figure 1 shows the frequency of the number of classes into which firms categorised non-goodwill intangibles. The median sample firm disaggregates non-goodwill intangibles into 3 classes and 95% of firms classified non-goodwill intangibles into5 or fewer classes, but the distribution of classes is highly skewed with a small number of firms disclosing a large number of classes.

[13] The statistics are sometimes below 5% non-goodwill intangibles to total assets despite the sampling criteria, because we required to firms to have non-goodwill intensity of at least 5% as at the end of *at least one* sample year, not every year.

[14] As noted above, exploration and evaluation assets are excluded from intangible assets in this study.

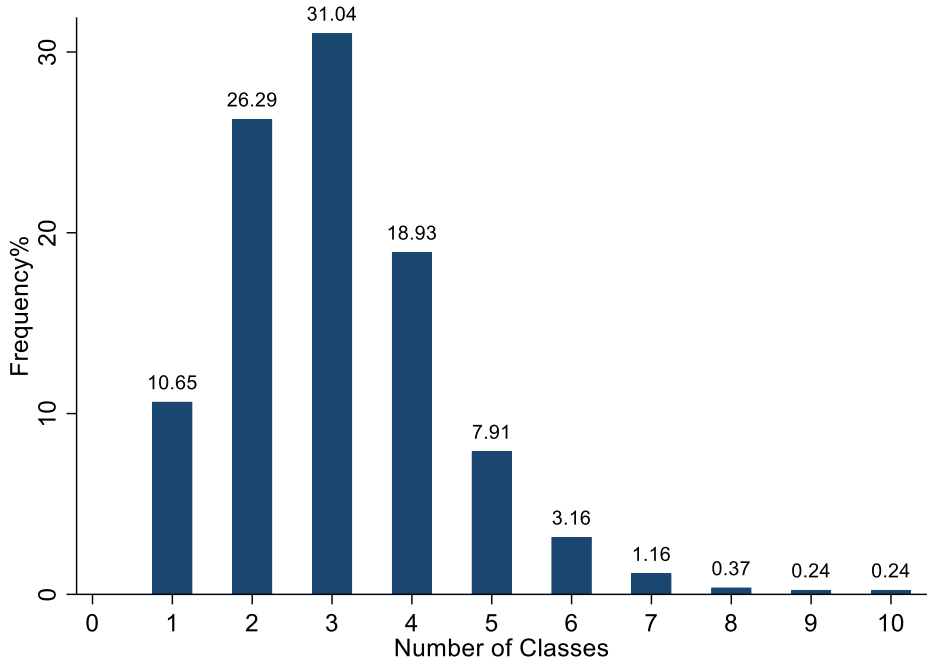

Figure 1. Frequency of the number of classes of non-goodwill intangibles

Figure 2 shows the frequency with which sample firms reported each of the six categories of non-goodwill intangibles that we examine in this report. The most common classes of non-goodwill intangibles in the sample are brands, customer-related intangibles (e.g. customer contracts and customer relationships), and software with a majority of sample firms reporting these types of intangibles. Licences, intellectual property and capitalised development costs are less common. For comparison, 84.8% of sample firms reported a positive closing balance of goodwill (untabulated) suggesting goodwill is more common than any one type of non-goodwill intangible.

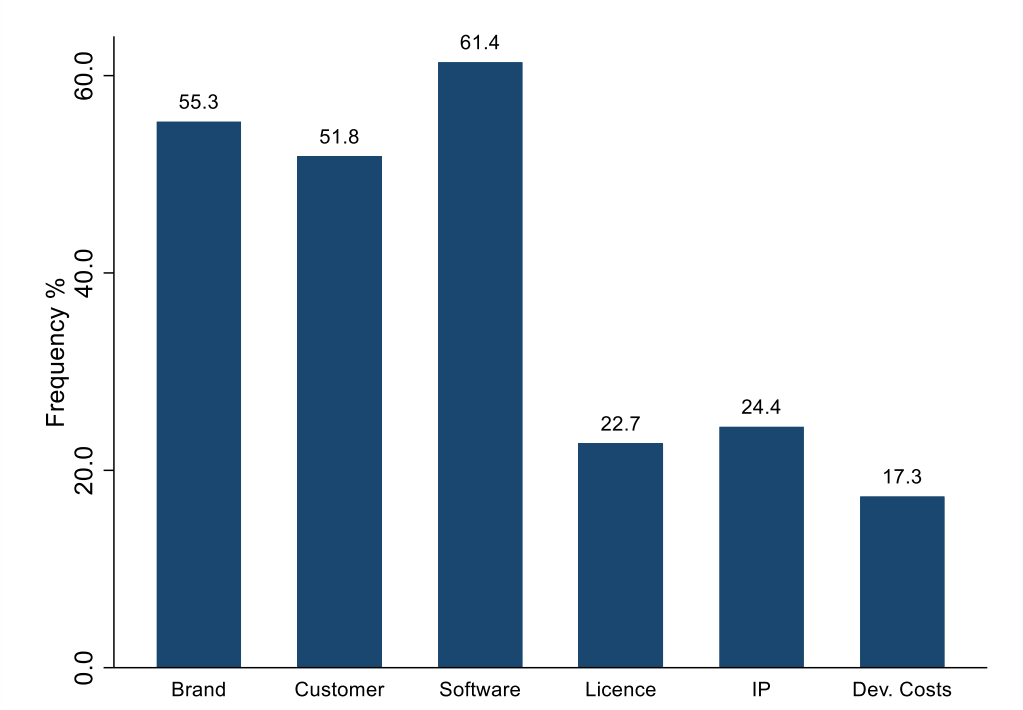

Figure 2. Frequency with which firms reported types of non-goodwill intangibles.

Figure 3 shows the mean yearly aggregate carrying amount of different types of intangibles. Although licences are not as common as other types of intangibles (see Figure 2), they have a greater yearly-average aggregate carrying amount than other types of intangibles ($16.9bn). Brand names and customer-related intangibles, which are normally externally-acquired and hence are important for our business combination sample, are economically important, with firms recognising $9.7bn of brands and $9bn of customer-related intangibles. For comparison, the yearly-average aggregate goodwill recognised by the sample firms was $103.9bn (untabulated), which dwarfs the amounts of individual types of non-goodwill intangibles.

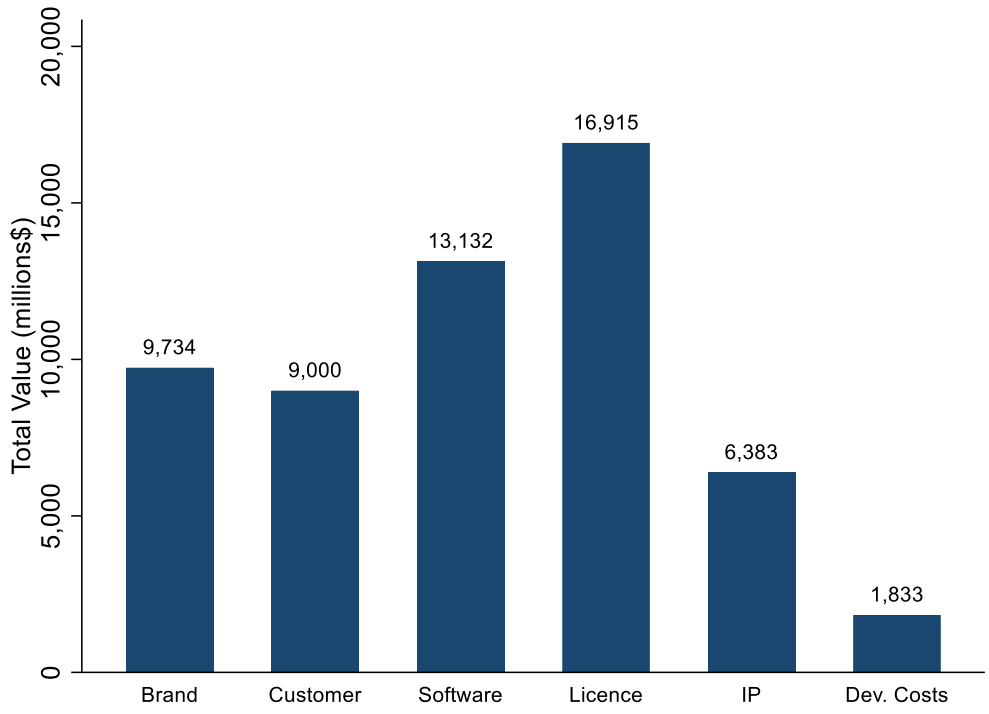

Figure 3. Mean yearly aggregate carrying amount of intangible classes

5. Results

5.1. Research Question One

Firms provided disclosures about how they determined the fair value of non-goodwill intangibles in 35 of the 146 firm-years (24%) in which firms recognised major non-goodwill intangibles via business combinations (untabulated). The lack of disclosure by the majority of firms is consistent with the voluntary nature of these disclosures. However, it is surprising that more firms do not voluntarily provide this information, given it is potentially useful to investors. Appendix A provides examples of non-goodwill intangible valuation disclosures by firms.

Table 4 shows the frequency with which firms disclosed using different valuation methods for non-goodwill intangibles during business combinations. Note that several firms used more than one method because they recognised different types of intangibles and used different methods for different intangibles, and hence the frequency sums to more than 35.

Table 4

Frequency of Intangible Valuation Methods in Business Combinations

Valuation Method	Frequency
Income approach: relief-from-royalty	28
Income approach: MPEEM	22
Income approach: with and without	2
Income approach: no details or generic DCF	4
Cost to replicate/replace	13

The relief-from-royalty and MPEEM methods were the most commonly disclosed valuation methods for non-goodwill intangibles. The relief-from-royalty method was usually used where the firm valued brands, trademarks, or other types of intellectual property that could be licenced. The MPEEM method was often used where the firm valued customer relationships/contracts. A replacement cost (or similar) method was often used with software or technology assets. Firms rarely disclosed using the with and without method, and no firms disclosed using the greenfield or distributor methods.

While 35 firms disclosed valuation methods for acquired non-goodwill intangibles, very few sample firms provided further details, such as details of key valuation inputs. One exception is Catapult Group (see Appendix A), which disclosed the assumed royalty rate, attrition rate, discount rate, and a range useful lives for its acquired intangibles.

Our sample is based on firms that recognised non-goodwill intangibles of at least 10% of opening total assets, which we view as major acquisitions. However, it is possible that the acquisitions are not sufficiently material for firms to view disclosure of valuation methods for acquired intangibles as necessary. In untabulated analysis, we considered a sub-sample of 26 firms that acquired non-goodwill intangibles of at least 50% of opening total assets. Only 6 of these firms disclosed any details of how they valued acquired non-goodwill intangibles. This is a similar rate of disclosure to the main sample, suggesting that the materiality threshold used in the main results is not too low.

In Table 5, we examine the potential determinants of a firm's decision to disclose valuation information for acquired intangibles. We use a logistic regression to model the likelihood that a firm provided any disclosure of valuation methods for acquired non-goodwill intangibles as a function of different explanatory variables. Because of the small sample size (146 firm-years), we model each determinant separately and then include selected variables together in one model.

Table 5

Determinants of Disclosing Non-Goodwill Intangible Valuation Methods in Business Combinations

	Dependent Variable: Indicator for Disclosure of Valuation Methods				
Size	0.34				0.30
	(2.77)***				(2.09)**
Big4		0.73			0.30
		(1.75)*			(0.57)
Materiality1			0.57		2.13
			(0.17)		(0.60)
Materiality2				-0.08	
				(0.09)	
Constant	-3.29	-1.61	-1.22	-1.11	-3.55
	(4.03)***	(4.65)***	(2.52)**	(2.56)**	(3.50)***
N	144	145	145	145	144
Pseudo R^2	0.05	0.02	0.00	0.00	0.06

This table reports the results of a logistic regression of the likelihood that a firm discloses any methods it used to value identifiable intangibles in a major business combination. Variables are defined in the text. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels (two–tail).

In Table 5 Column 1, *Size* is the natural log of the firm's market capitalisation at the end of the financial year. Larger firms are more likely to disclose a valuation method for acquired non-goodwill intangibles. This is consistent with the general findings of accounting research that larger firms are generally provide higher-quality financial disclosures, because they have more resources and because they face more scrutiny from regulators and investors. In Column 2, *Big4* is a dummy variable equal to one (zero) where the firm is audited by a Big 4 audit firm (non-Big 4 audit firm). Firms audited by a Big 4 auditor are more likely to disclose a valuation method, consistent with the general finding in the accounting literature that firms audited by the Big 4 provide higher-quality disclosures. However, this result should be interpreted with caution because larger firms are more likely to use a Big 4 auditor and so the Big 4 result might be due to firm size. When we include *Size* and *Big4* in the same regression in Column 5, the coefficient on *Big4* is no longer significant. Columns 3 and 4 include two different measures of the materiality of additions to non-goodwill intangibles through business combinations. *Materiality1* is the addition to non-goodwill intangibles through business combinations as a percentage of total assets. *Materiality2* is the addition to non-goodwill intangibles as a percentage of the sum of the addition to non-goodwill intangibles and the addition to goodwill through business combinations. This measure therefore captures how much of the total intangibles acquired in business combination was allocated to identifiable intangibles versus goodwill. Surprisingly, neither measure of materiality is significantly associated with the disclosure of non-goodwill intangible valuation methods. In sum, the determinants analysis suggests larger firms and potentially firms that use a Big 4

auditor are more likely to provide disclosure, but disclosure is not affected by the materiality of the acquisition.

Comparison to US Practices

We conducted a small sample, supplementary analysis of major business combinations by US firms to provide a comparison of US (reflecting US GAAP) and Australian (reflecting IFRS) reporting practices. We focused on 15 large business combinations by US listed firms completed between 2020 and 2024.[15] Table 6 lists the acquisition date, acquirer, acquiree, purchase consideration, and whether the acquirer provided any disclosures about how it valued non-goodwill intangibles acquired in the business combination.

As shown in Table 6, 12 of the 15 US acquirers disclosed how they valued intangibles in the business combinations. This is a much higher frequency disclosure than we observed for Australian firms, although it is possible the business combinations in Table 6 might be more material on average than the business combinations in the Australian sample. US firms typically named the valuation method used to value each material class of acquired intangible. The methods used included relief-from-royalty, MPEEM, with-and-without method, and the greenfield method. The US firms sometimes described key assumptions made in applying these models, although none provided quantitative disclosures about the key assumptions. For example, a firm might disclose that customer churn rate is a key assumption made in estimating the value of customer relationships using the MPEEM, but would not disclose a figure for the churn rate assumption.

[15] We excluded business combinations in the financial services, real estate and extractive industries. The business combinations were selected based on media reports of large business combinations. This approach is not as rigorous or exhaustive as the method used in the main analysis for Australian firms, because this analysis is merely supplementary.

Table 6

Supplementary Analysis of US Business Combinations

Date	Acquirer	Acquiree	Purchase Consideration (US$m)	Disclosure of Valuation Method/s?
18-Mar-24	Cisco	Splunk Inc	27,090	Yes
14-Dec-23	Pfizer	Seagen	44,200	Yes
22-Nov-23	Broadcom	VMWare	86,290	Yes
6-Oct-23	Amgen	Horizon Therapeutics	27,800	Yes
13-Oct-23	Microsoft	Activision Blizzard	75,400	No
8-Jun-22	Oracle	Cerner	28,200	No
23-May-22	Take-Two Interactive	Zynga	9,522	Yes
14-Feb-22	AMD	Xilinx	48,800	Yes
8-Dec-21	Thermo Fisher Scientific	PPD	17,280	Yes
21-Jul-21	Salesforce	Slack	27,068	No
26-Aug-21	Analog Devices	Maxim Integrated Products	27,949	Yes
30-Oct-20	Teladoc	Livongo	13,877	Yes
23-Oct-20	Gilead Sciences	Immunomedics	20,597	Yes
27-Apr-20	Nvidia	Mellanox Technologies	7,134	Yes
1-Apr-20	T-Mobile	Sprint	40,827	Yes

5.2. Research Question Two

Table 7 Column 1 shows the results of a baseline value relevance regression for the sample firms. The R-Squared of the regression is 56%, suggesting that earnings and book value of equity explain more than half of the variation in market values.[16] Table 6 Column 2 shows the results of testing the value relevance of each type of intangible asset. Goodwill, Brand names, Software and Development costs are significantly, positively associated with market value, i.e. are value relevant. We do not find that Customer related intangibles, Licences and Intellectual property intangibles are significantly associated with market value. The lack of results for Licences and Intellectual property intangibles may be because most sample firms do not report these intangibles (see Figure 2) and hence there are many zero observations for these intangibles. The significant value relevance of software and development costs, which are typically internally-developed, is consistent with the findings of prior research using Australian firms and pre-IFRS samples (see Appendix B).

[16] Davern et al. (2019) find an average R-squared of 64% for a comparable regression using Australian firms over 1992-2015. Our R-squared is somewhat lower because our sample includes intangible-intensive firms by construction and the value relevance of earnings and book value is lower for intangible-intensive firms (e.g. Ciftci et al., 2014).

Table 7 Column 3 shows the results of a robustness test where we permit coefficient on Earnings Per Share to vary between firms that reported a profit and loss by include a dummy variable (*Loss*) equal to one (zero) where the firm reported a loss (profit), and the interaction of Earnings Per Share and the loss dummy. This is a common alternative value relevance specification in the accounting literature. In this specification, the coefficient on Brands is no longer significant at conventional levels.

Table 7 also reports the results of an F-test for whether the coefficient on Goodwill is significantly different than the coefficient on Brands. The F-statistic is not significantly different from zero in Column 2 or 3, suggesting that the market places a statistically indistinguishable value on Goodwill and Brands. This is similar to King et al.'s (2024) findings for 'organic intangibles' (which includes brands) using US firms.

One concern with Table 7 is that many of the variables are highly correlated. For example, goodwill per share and brands per share (customer-related intangibles per share) are 36.3% (48.6%) correlated (untabulated). However, the variance inflation factors (untabulated) suggest only moderate multicollinearity. Using the specification in Column 2, the highest variance inflation factor is 2.11 for *GoodwillPerShare*, which is within acceptable bounds.

We conduct several untabulated robustness tests which produce qualitatively similar results to Table 7:

- Including industry fixed effects (six-digit GICS codes) to control for differences in the market valuation of firms in different industries
- Disaggregating customer-related intangibles into customer contracts and customer relationships. Neither is statistically significantly associated with market value.
- Not breaking out development costs, intellectual property and licence intangibles from book value of equity (because they are rare) to preserve statistical power
- Removing firms with share prices over $22 (90th percentile of share price) to further reduce the skewness in the dependent variable

Table 7

Intangible Value Relevance Analysis

	Dependent variable: *Share Price*		
EarningsPerShare	4.45	4.57	6.23
	(4.01)***	(4.83)***	(3.88)***
BVEquityPerShare	1.35		
	(10.73)***		
BVEExclntangiblesPerShare		0.82	0.59
		(3.90)***	(3.11)***
GoodwillPerShare		1.49	1.32
		(5.48)***	(4.62)***
BrandPerShare		1.99	1.50
		(1.99)**	(1.41)
CustomerPerShare		0.26	-0.06
		(0.16)	(0.04)
SoftwarePerShare		9.70	8.75
		(4.70)***	(4.33)***
Dev. Costs Per Share		7.90	7.31
		(1.87)*	(1.85)*
IP Per Share		-0.06	-0.33
		(0.02)	(0.11)
Licence Per Share		0.70	0.42
		(0.89)	(0.51)
Loss			-1.33
			(3.50)***
EarningsPerShare × *Loss*			-7.33
			(3.87)***
Constant	1.86	1.41	1.73
	(5.81)***	(4.74)***	(4.48)***
Year Fixed Effects			
N	1,551	1,551	1,551
R^2	0.56	0.62	0.63
F-test:			
Coefficient on Goodwill=Brand		0.22	0.03

This table reports the results of an ordinary least square regression of a firm's share price three months after the end of the financial report on earnings and book value per share. Book value is disaggregated into the carrying amounts of different types of intangibles in Columns 2 and 3. Variables are defined in the text. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels (two–tail).

6. Concluding Discussion/Recommendations

AASB standards do not require firms to disclose information about how they determined the acquisition-date fair values of identifiable assets or liabilities acquired in business combinations. Our sample includes business combinations where a substantial amount of identifiable intangible assets were recognised at fair value through business combinations (more than 10% of a firm's opening total assets), but where most firms provided little or no information about how they determined these fair values. Even where firms disclosed the valuation methods they used, such as relief from royalties or the MPEEM, they typically did not provide further details, such as key valuation inputs or how key valuation inputs were determined. Investors therefore typically lack information about how firms determined the fair values of identifiable intangibles in business combinations.

A major concern in the academic literature (see Appendix B) is that firms will over or understate the value of identifiable intangibles compared to goodwill in business combination (Shalev et al., 2013; Su and Wells, 2015; Hellman et al., 2016; Lynch et al., 2019). Most sample firms did not provide any disclosures about how they valued any assets acquired or liabilities assumed in material business combinations, because this disclosure is not required by AASB 3. Yet, given the concerns expressed in the literature, it might be prudent for AASB 3 to require firms to disclose details of how they determined the fair value of certain assets acquired in business combinations. Disclosures about intangible assets that the acquiree had not previously recognised, such as brands, customer relationships, and internally-developed intellectual property would be especially important, because the fair values of these intangible assets are likely to be highly uncertain and subject to possible misstatement. It is notable that US firms typically do disclose information about how they valued non-goodwill intangibles acquired in material business combinations, suggesting that disclosure is likely possible.

Most firms that voluntarily disclosed details of how they valued intangibles acquired in business combinations applied valuation methods that are described in the IVSC standards. A possible approach would be to expand AASB 13 to provide more guidance about valuing intangible assets, perhaps following a similar approach to the IVSC standards. The disclosure requirements could require firms to disclose the main valuation method/s employed, the key valuation assumptions and how they were determined (similar to AASB 136's requirements for impairment testing).[17] For example, a firm might disclose that the royalty rate was a key assumption made in estimating the value of brand names and the how the royalty rate was determined. Because virtually all firms do not

[17] Disclosure of valuation methods for intangibles could be limited to major identifiable intangibles, such as those with large acquisition-date fair values relative to the purchase consideration. For example, King et al. (2024) find that 'strategically important' intangibles are especially value relevant to investors.

provide this type of disclosure at present, it is unclear whether providing this information would be useful for investors and whether it would alter investors' perceptions of the value relevance of different types of intangibles.

Our value relevance results suggest that, on average, the market significantly values brand intangibles but not customer-related intangibles. Furthermore, the market appears to place the same value on brand intangibles and goodwill. Both brands and customer-related intangibles can only be recognised where they are externally acquired, normally through business combinations. It is possible that because firms do not typically provide any disclosure about how they value these identifiable intangibles acquired in business combinations, the market views the value of brands and customer-related intangibles with scepticism. In particular, the current approach in AASB 3 which calls for distinguishing between brands, which are normally treated as indefinite life intangibles, and goodwill might provide no information for investors where firms do not provide disclosures about how they determined the value of brands. However, it is unclear whether investors would place a different value on brands and goodwill if firms were to provide more disclosure about how they valued brands.

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Appendix A
Example Disclosures

Business Combinations

Catapult Group

During financial year 2022, Catapult Group International Limited acquired SBG Sports Limited. The identifiable intangibles in the acquisition were SBG's brand, software and customer contracts and relationships with a total fair value of $25.7m. Catapult Group disclosed details of how it valued these intangibles assets as follows:

> The valuation methodologies of each of the identifiable intangible assets are set out as follows:
>
> - Brand – Relief from Royalty method
> - Software – Relief from Royalty method
> - Customer contracts and relationships – Multi-period excess earnings method
>
> The fair value measurements are based on significant inputs that are not observable in the market. The fair value estimates are based on:
>
> - An assumed discount rate of 21%
> - A royalty rate of 15%
> - An attrition rate of 5%
> - Useful lives of between 5 and 10 years

This is the amongst the most detailed disclosures about how a firm valued intangible assets in a business combination. Catapult describes the valuation methods used for each intangible and provides some details about the major inputs used in applying the valuation methods.

Bigtincan

During financial year 2022, Bigtincan Limited acquired Brainshark Inc. It recognised $68.8m of identifiable intangibles in the business combination, consisting of software and customer contracts and relationship.

Bigtincan provided the following disclosure about how it measured the fair value of identifiable intangibles:

> ***Measurement of fair values – identifiable intangible assets***
>
> *Relief-from-royalty method and multi-period excess earnings method:* The relief-from-royalty method considers the discounted estimated royalty payments that are expected to be avoided as a result of the patents being owned. The multi-period excess earnings method considers the present value of net cash flows expected to be generated by the customer relationships, by excluding any cash flows related to contributory assets.

The company did not provide any further information, such as information about the assumed royalty rate or forecasts/discount rates used to apply the MPEEM.

Kogan

During financial year 2021, Kogan.com Limited acquired Might Ape Limited. It recognised $43.7m of identifiable intangibles in the business combination, consisting of software and brands.

Kogan provided the following disclosure about how it measured the fair value of identifiable intangibles:

Assets acquired	Valuation technique
Software	Cost to replicate method: the cost to replicate method considers the time and cost incurred to develop the web-based e-commerce platform of Mighty Ape. This is considered appropriate as the platform does not directly generate independent cash flows.
Brands	Relief from royalty method: the relief-from-royalty method considers the discounted estimated royalty payments that are expected to be avoided as a result of the Mighty Ape Brands being owned.

The company did not provide any further information, such as information about the assumed royalty rate.

Orica

During financial year 2020, Orica acquired Exsa SA. It recognised $42.5m of identifiable intangibles in the business combination. Orica provided the following disclosure about how it measured the fair value of identifiable intangibles:

> The valuation techniques used for measuring the fair value of material intangibles were the relief-from-royalty method and income approach. The relief-from-royalty method was used to value Exsa's brand and associated trademarks and patents and Intellectual Property. This method measures the after-tax royalties or licence fees saved by owning the intangible asset.
>
> Exsa's customer contracts have been valued using the income approach (specifically the multi-period excess earnings method). This method considers the earnings that are reasonably attributable to the existing customers based on analysis of the customer churn, relevant sales, margins and contributory assets.

Appendix B
Literature Review

This appendix provides a literature view of academic research related to the valuation of intangibles by firms and how investors perceive the value of intangibles. The literature review focuses largely on the modern intangible accounting regime internationally and in the United States, which means international research conducted after AASB 138/IAS 38 was first adopted on a widespread basis in 2005 and on US research conducted after SFAS 142 was first adopted in 2002. We also include research that compares pre-IFRS/pre-SFAS 142 with post-IFRS/post-SFAS 142 accounting practices. We find there is a scarcity of research on intangibles accounting that is relevant to this report. This literature review is therefore necessarily brief.

The literature review is divided into four major sections. The first two sections (B1 and B2) describe the pre-IFRS Australian GAAP requirements and US GAAP requirements, which is important background information for understanding the academic literature. IFRS requirements are discussed in the body of the report. In the third section (B3) we summarise the relevant academic research.

B1. AGAAP Requirements

Some of the relevant literature compares accounting practice before and after the adoption of IFRS in Australia. We therefore briefly summarise the relevant requirements in pre-IFRS Australian accounting standards (AGAAP).

There was no specific accounting standard for non-goodwill intangibles under AGAAP, except for research and development (R&D) (Alfredson, 2001; Su and Wells, 2018). Intangible assets with a finite useful life were subject to amortisation over their useful life under AASB 1021 *Depreciation* (which encompassed tangible and intangible assets), similar to the requirements in AASB 138 *Intangible Assets*. AASB 1011 *Accounting For Research and Development Costs* required immediate expensing of research and permitted capitalisation of development costs, similar to AASB 138 (Wyatt et al., 2001). AASB 1041 *Revaluation of non-current assets* permitted non-goodwill intangible assets to be carried at either cost or fair value, similar to AASB 138. However, AASB 138 requires that there be an active market for an intangible for the intangible to be carried at fair value, which effectively prohibits carrying intangibles at fair value, whereas AASB 1041 was more liberal (Su and Wells, 2018). AASB 1010 *Recoverable Amount of Non-Current Assets* required firms to impair non-current assets (including intangibles) where their carrying amount was greater than their recoverable amount, similar to AASB 136.

The lack of specific guidance for intangible assets under AGAAP allowed firms to capitalise expenditure on internally-generated intangible assets that would not be permitted under IFRS if these intangible assets met the general definition of an asset (Godfrey and Koh, 2001). For example, Australian firms recognised internally-generated intangibles under AGAAP, such as brand names and mastheads, which are expressly prohibited by AASB 138 (¶20).

B2. US GAAP Requirements

Some of the relevant literature is based on a US GAAP setting. We therefore briefly discuss the similarities and differences between accounting for intangibles under IFRS and US GAAP.

Accounting for non-goodwill intangibles is similar under IFRS and US GAAP with some notable exceptions. Firms recognise identifiable intangibles at fair value during a business combination, similar to IFRS (ASC 350-30). The criteria for an intangible to be identifiable are essentially the same under US GAAP and IFRS: the intangible is separable or a contractual/legal right (AASB 138, ¶12; ASC 350-30). Intangibles cannot be subsequently carried at fair value under US GAAP, whereas this is technically possible under IFRS (AASB 138, ¶75). Most internally-developed intangibles cannot be recognised as assets, similar to IFRS. US GAAP has no equivalent of capitalised development costs unlike IFRS (AASB 138, ¶57). However, US GAAP does permit capitalising internal-use software development costs (ASC 350-40) once similar conditions are met to capitalising development costs under IFRS. US GAAP also permits capitalising direct response advertising costs (ASC 340-20), whereas this is not permitted under IFRS. Both US GAAP and IFRS require firms to test indefinite life intangibles for impairment annually (ASC 350-30). Similar to IFRS, indefinite life intangibles can be test for impairment individually or as part of a group of assets (ASC 350-30).

B3. Literature Review

Purchase Price Allocation of Goodwill vs. Identifiable Intangibles

Under AGAAP and US GAAP before SFAS 141/142, goodwill was subject to amortisation, whereas acquired indefinite life intangibles were not. A significant theme in the literature examines whether firms over-recognised and/or overvalued indefinite life intangibles during business combinations to minimise subsequent goodwill amortisation charges. In a seminal paper, Wines and Ferguson (1993) describe the issue and discuss the evolution of these concerns in Australia.

A related question is how this behaviour might have changed after IFRS or SFAS 141/142 adoption. These standards abolished goodwill amortisation, which reduces firms' incentive to undervalue goodwill and overvalue indefinite life intangibles. However, IFRS adoption also resulted in stricter amortisation rules for finite life intangible assets under AGAAP (Dinh et al., 2018). This might create an incentive for firms to undervalue finite life intangibles and overvalue goodwill and indefinite life

intangibles in business combinations to minimise subsequent amortisation. The fact that goodwill is a 'residual' value (the difference between the purchase price and the fair value of net identifiable assets) means that acquirers can maximise goodwill by simply failing to identify all intangible assets of the acquiree. This could result in finite life intangible assets being swept into goodwill.

Su and Wells (2015) examine whether Australian firms opportunistically recognised more non-goodwill intangibles during business combinations under AGAAP and whether this practice continued after IFRS adoption. Su and Wells find that post-acquisition performance (measured as accounting performance before amortisation) is positively associated with the amount of goodwill recognised in a business combination, but it is not significantly associated with the total amount of identifiable intangibles recognised in a business combination. This suggests that goodwill is value relevant in the sense it is associated with better future performance, but identifiable intangibles are not, consistent with firms overvaluing/over-recognising acquired, identifiable intangibles to reduce amortisation under AGAAP. However, Su and Wells find that these results do not change after IFRS adoption despite the abolition of goodwill amortisation and hence the incentive to undervalue goodwill/overvalue indefinite life intangibles. One limitation of the Su and Wells study is that they do not appear to distinguish between finite life (subject to amortisation) and indefinite life (not subject to amortisation) acquired intangible assets. Another limitation is that their sample is dominated by metals and mining companies that do not normally recognise any goodwill during business combinations and might recognise different identifiable intangibles (e.g. mining licences) than the typical identifiable intangibles (e.g. brand names, customer relationships) recognised by other types of firms. Finally, Su and Wells's sample includes very few post-IFRS adoption years (2006-2008).

In a follow-up paper, Su and Wells (2018) find a positive relationship between the proportion of the purchase price allocated to identifiable intangible assets and the acquisition premium paid in business combinations under AGAAP. This relationship disappears after IFRS adoption. These results suggest that Australian firms overvalued identifiable intangibles under AGAAP, because they were not subject to amortisation, unlike goodwill. This encouraged firms to overpay for acquisitions, because the overpayment could be allocated to non-amortisable identifiable life intangibles and hence would have no income statement effects.[18] This explains the Su and Wells (2015) result that identifiable intangibles were not associated with subsequent performance under AGAAP. This behaviour ceases after IFRS adoption because goodwill is no longer subject to amortisation, and hence there is no incentive to overvalue identifiable intangibles and undervalue goodwill. However, the Su and Wells (2018) study is subject to similar to limitations as the Su and Wells (2015) study, such as not

[18] These results are similar to US studies that find that US firms were prepared to pay higher acquisition premia when they could use the pooling of interests method to avoid recognising goodwill, which was subject to amortisation (e.g. Ayers et al., 2002).

distinguishing between finite life and indefinite life intangible assets and having a short post-IFRS period (2006-2008).

Hellman et al. (2016) argue that IFRS creates an incentive for managers to minimise the value of finite life identifiable intangibles, because the subsequent amortisation lowers future earnings, whereas goodwill is subject to impairment testing rather than amortisation. The authors conduct an experiment with 40 equity analysts where the analysts evaluate the effect of a business combination on the value of the acquirer. They find that the analysts view a business combination more favourably when the purchase consideration is allocated to goodwill rather than finite life identifiable intangibles. The authors argue that analysts anchor only on earnings and therefore could be misled by a firm overvaluing goodwill and undervaluing finite life intangibles, which overstates subsequent earnings through reducing amortisation. However, one limitation of the Hellman et al. study is that firms sometimes recognise indefinite life intangibles, which are also not subject to amortisation, in business combinations.[19] It would be interesting to consider whether analysts view goodwill and indefinite life identifiable intangibles differently.

Shalev et al. (2013) test whether US acquirers overvalue goodwill and indefinite life intangibles, and undervalue other assets, in business combinations after SFAS 141/142 adoption. They find that the proportion of the purchase price allocated to goodwill/indefinite life intangibles is positively associated with the CEO's earnings-based bonus. This result is consistent with CEOs overvaluing non-depreciable/non-amortisable assets, and undervaluing other assets, to overstate future earnings where they stand to benefit more through higher bonuses.

Zhang and Zhang (2017) conduct a similar study to Shalev et al. (2013) also using US firms, but in only one industry (business services). They find that firms allocate more of the purchase price in a business combination to goodwill/indefinite life intangibles where the firm is likely to have more discretion around the timing of impairments post-acquisition (if goodwill/indefinite life intangibles are overvalued, they are more likely to be subsequently impaired). They further find that these results do not hold pre-SFAS 141/142 when goodwill was amortisable and hence there was less incentive to overvalue it. Zhang and Zhang also examine the role of independent valuation experts (also called appraisers) in business combinations. Interestingly, they find that independent valuation experts were used in 59 of the 137 business combinations they examined. They find that the presence of an independent valuation expert moderates their main results, consistent with a reduction in opportunistic overvaluation of goodwill/indefinite life intangibles.

[19] For example, some firms treat brand names as having an indefinite useful life

Another consideration in purchase price allocation is tax. Under US regulations, firms can tax-deduct depreciation and amortisation of acquired assets based on their fair value in certain types of acquisitions (Lynch et al., 2019). The fair value used for tax purposes is often the same as the fair value estimated for financial accounting purposes. This creates a tax accounting incentive to maximise (minimise) the value of short-lived (long-lived) assets to maximise the present value of tax deductions by claiming the deductions sooner. Long-lived assets are typically indefinite life intangibles and goodwill. However, firms must trade off this tax saving against the larger depreciation and amortisation expenses recognised under financial accounting for the same assets, which depresses financial accounting earnings. Lynch et al. find that firms that prioritise tax savings over financial performance, such as private companies and firms that benefit more from tax savings, allocate more purchase price to short-lived assets than firms, such as public companies and companies that would not benefit as much from tax savings, that prioritise financial performance. In sum, Lynch et al.'s results suggest that firms might bias their estimates of the fair value of intangibles in business combinations for tax planning reasons as well as for financial reporting purchases.

Relationship between Goodwill and Business Combination Disclosure Quality

Shalev (2009) examines the extent of disclosure during business combinations by US firms. He predicts that firms that recognise more goodwill will disclose less information about business combinations. This is based on the argument that goodwill partly reflects overpayment for the target. Overpaying is bad news and disclosure theory suggests managers will attempt to withhold the disclosure of bad news.[20] Shalev creates a disclosure index based on the business combination disclosure requirements in SFAS 141. He finds significant variation in disclosure quality. Importantly for the present work, he finds that 66.6% (71%) of acquirers disclosed the amount of finite life (indefinite life) intangibles acquired in business combinations, and only 43.9% of acquirers disclosed a breakdown of the amount of intangible assigned to major intangible classes. Consistent with his predictions, Shalev find that an abnormal proportion of goodwill to purchase consideration in a business combination predicts lower-quality business combination disclosures. He further finds that poor-quality disclosures are associated with worse subsequent acquirer performance. Overall, Shalev's evidence suggests that acquirers are likely to provide better disclosures about acquired identifiable intangibles where they recognise less goodwill and are more confident about the success of the acquisition.

[20] Shalev acknowledges another possibility, which leads to the same prediction. Firms have an incentive to overstate goodwill and understate the fair value of identifiable assets during a business combination, for example, because this reduces future depreciation and amortisation expenses. Firms that engage in this manipulation are also expected to disclose less information about business combinations to obscure the manipulation.

Value Relevance of Non-Goodwill Intangibles

Value relevance refers to whether an accounting amount is associated with the expected sign with equity market values (Barth, 2001). Equity market values reflect investors' expectations of the future cash flows of the firm and their required rate of return. Hence if an accounting item is statistically associated with equity market values in the expected direction it is viewed as informative to investors' expectations of future cash flows or discount rates, and hence is value relevant. Prior research has explored the value relevance of non-goodwill intangibles largely in the context of internally developed intangibles, rather than externally acquired intangibles (King et al., 2024 is an exception).

US GAAP permits capitalisation of expenditure on software development, but not other forms of research and development expenditure. Using a sample of software companies, Aboody and Lev (1998) find that capitalised software development assets are value relevant suggesting that capitalising software provides useful information to investors. In a related study, Mohd (2005) finds a significant reduction in information asymmetry for software firms relative to other high-tech firms when they were permitted to begin capitalising software development costs. However, one unavoidable limitation of research on capitalisation of software development costs is that the relevant US accounting standard allows firms considerable flexibility to avoid capitalising expenditure on software development, and hence the choose of whether a firm capitalises or expenses software development is to some extent endogenous.

AGAAP permitted capitalisation of research and development expenditure and the requirements for capitalisation were considerably less onerous than IFRS requirements, especially before changes to AGAAP in 2000 (Ahmed and Falk, 2006). A body of Australian research examines whether capitalised R&D expenditure was value relevant under these more liberal capitalisation rules. Capitalising R&D involves a potential trade-off between relevance and reliability. Managers might have exploited the discretion afforded by AGAAP to over-capitalise expenditures, inflating current period earnings, leading investors to view capitalised R&D as unreliable. On the other hand, if R&D produces future economic benefits, treating R&D expenditure as an asset rather than an expense should produce more relevant information for investors. The literature finds that capitalised R&D expenditure was value relevant (i.e. significantly positively associated with share prices) under AGAAP's liberal capitalisation rules (Abrahams and Sidhu, 1998; Smith et al., 2001; Ahmed and Falk, 2006; Ritter and Wells, 2006).

Prior research also supports the value relevance of capitalised development costs in the United Kingdom before and after IFRS adoption (Oswald, 2008; Tsoligkas and Tsalavoutas, 2011; Shah et al., 2013).

The evidence on the value relevance of capitalised R&D expenditure is more mixed in Europe. Cazavan-Jeny and Jeanjean (2006) find that capitalised R&D was *negatively* associated with market values in France under pre-IFRS GAAP. This is a very surprising result, which they attribute to earnings management concerns. Similarly, Dinh et al. (2016) find that capitalised R&D expenditure is not value relevant for German firms. They further find evidence that earnings management incentives affect a firm's decision to capitalise development costs. This suggests that investors might perceive internally-developed intangibles as not being value relevant because of concerns over their reliability.

King et al. (2024) appears to be the only paper to examine the value relevance of externally acquired intangibles. King et al. obtain a sample of identifiable intangibles and goodwill acquired in US business combinations over 2009-2016 and test for the value relevance of different types of intangibles immediately after business combinations. The authors categorise intangibles in several ways. First, the data vendor King et al. use categories acquired intangibles into: developed technology, in-process R&D, trademarks and trade names, customer-related, and contract-related. Second, King et al. divide intangibles into 'wasting' and 'organic'. Wasting intangibles are developed technology and contract-related intangibles. Organic intangibles are all other types of intangibles. King et al. claim that wasting intangibles have a finite useful life and an 'identifiable revenue stream' whereas organic intangibles require 'significant ongoing expenditures to maintain or enhance their value'. Third, they categorise intangibles into 'strategically important' and non-strategically important. Strategically important intangibles are essentially intangibles with a large acquisition date fair value relative to industry or economy-wide norms. King et al. find that both strategically important and non-strategically important acquired intangibles are value relevant and that the market places a greater value on strategically important intangibles. Similarly, they find that both wasting and organic acquired intangibles are value relevant, but the market places a greater value on wasting intangibles. They further find no consistent difference in the market's perception of the value of goodwill and organic intangibles. In sum, King et al.'s findings suggest investors view acquired intangibles as value relevant, but only certain types of intangibles (strategically important and wasting) are viewed significantly differently than goodwill. Their findings are consistent with the argument that some acquired intangibles should be separated from goodwill while others could be subsumed within goodwill.

However, a limitation of the King et al. (2024) study is that the authors do not examine what disclosures firms make to support their purchase price allocation, especially to what extent firms communicate how they valued acquired intangibles. For example, firms might be more likely to disclose information about how they valued strategically important intangibles than non-strategically important intangibles (given that strategically important intangibles are larger), and hence investors might view the fair value of the former as more credible than the latter.

Summary

In sum, the limited academic literature on the valuation of intangibles by firms has focused primarily on the purchase price allocation during business combinations. The valuations of identifiable assets in business combinations are often subjective with a range of plausible valuations (Lynch et al., 2019). Under modern IFRS and US GAAP, various incentives could cause a firm to bias its estimates of the fair values of identifiable intangibles vis-a-vis goodwill and other assets. For example, firms might seek to maximise (minimise) the fair value of finite life identifiable intangibles if they can tax-deduct amortisation of these intangibles to maximise the present value of tax deductions (to minimise financial accounting amortisation expenses). They might seek to maximise the value of identifiable intangibles and minimise the value of goodwill if goodwill is seen as reflecting overpayment for the acquiree. In any event, the concern remains the same: that firms might bias the fair values of identifiable intangibles during business combinations, which are often uncertain and subjective. One potential solution would be to improve disclosure of valuation methods such that investors and analysts can scrutinise the fair values and assess their plausibility.

Most of the academic literature on how investors perceive the value of intangibles (value relevance) finds that both internally generated intangibles (e.g. development costs) and externally acquired intangibles are perceived by investors as valuable, especially in common law markets like Australia, the United Kingdom and United States that offer strong investor protection against earnings management. However, King et al. (2024) find that investors perceive certain types of acquired intangibles as significantly more valuable than others, and that investors view certain types of intangibles as indistinguishable from goodwill.

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