

The Value-relevance of Listed Associates: a Cross-country Investigation

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Abstract: Prior research findings are not conclusive on whether or not equity accounted carrying amounts and disclosed fair values of listed associates are value-relevant in different countries. Using a variety of statistical methods, this study compares the value-relevance of disclosed fair values of listed associates in South Africa, the United Kingdom and Australia. It finds that value-relevance differs between sample countries, especially when firms in the globalised financial services and mining industries are excluded from the sample, despite increased convergence in accounting standards. This study contributes to the existing literature by directly comparing the cross-country value-relevance of disclosed fair values of listed associates. Findings highlight that generalisation of value-relevance findings across countries and industries should be done with caution.

Keywords: Equity accounting; cross-country; investments in associates

JEL: M41; G12

1. Introduction

Over the past few decades the value-relevance of fair value measurements and disclosures has been extensively investigated. An accounting amount is considered to be value-relevant if it has a predicted association with equity market values (Barth, Beaver & Landsman, 2001:79), i.e. the amount is utilised by equity investors in valuing the firm's equity and is therefore decision-useful. Fair value measurements and disclosures have indeed been found to be value-relevant (and therefore decision-useful) for items as wide-ranging as intangible assets (Barth, Clement, Foster & Kaznik, 1998) and financial liabilities (Barth, Hodder & Stubben, 2008). However, research relating to the value-relevance of disclosed fair values for equity accounted associates is inconclusive.

Barth and Clinch (1998) use an Australian sample and find that disclosed fair values of investments in associates are not value-relevant in most industries. By contrast, Graham, Lefanowicz and Petroni (2003) use a similar sample period and conclude that the difference between the disclosed fair values and equity accounted carrying amounts of investments in listed associates is value-relevant for a sample of US firms. The apparent disagreement between these studies could be due to the different sample countries used. However, direct comparisons are complicated by differences in sample selection methods, research models and significant differences in the accounting requirements of Australia and the US during the sample periods.

However, it is plausible that cross-country differences could play a role, as Ball, Robin and Wu (2003) find, for example, that the surrounding environment has a greater impact on measures of financial reporting quality than the accounting standards being applied. As a result, this paper investigates whether the value-relevance characteristics of disclosed fair values of listed associates differ between three International Financial Reporting Standards (IFRS) countries, namely Australia, South Africa and the United Kingdom.

The main findings suggest that the surrounding environment has a significant impact on whether and how financial statement information about investments in listed associates is used by equity investors. More specifically, findings show that equity accounted carrying amounts and disclosed fair values of listed associates are both value-relevant in South Africa and the United Kingdom. By contrast, only the equity accounted carrying amounts of these associates tend to be value-relevant for the Australian sample. The main results also reveal that the detected differences in value-relevance are specific to investments in associates, with no significant differences in fixed cross-country value-relevance between the sample countries. However, when the sample is restricted to exclude mining, financial services and utility firms, the prevalence of cross-country differences increases. Under these restrictions the value-relevance of listed associates is significantly higher for the United Kingdom sample than either of the other sample countries. A plausible explanation is that removing relatively globalised industries from the sample highlights underlying country differences. Most interestingly, the findings of this study suggest that changes in accounting requirements have not altered the preference of Australian investors for carrying amounts (rather than fair values), which was identified by Barth and Clinch (1998).

This study contributes to the existing literature by directly comparing the cross-country value-relevance of disclosed fair values of listed associates. Findings highlight that generalisation of value-relevance findings across countries and industries should be done with caution. Moreover, results reveal that the preferences of equity investors could be dictated as much by history as the inherent characteristics of information. This is important, as it suggests that inherent differences in the requirements of investors remain despite increased convergence and harmonisation of accounting standards.

The rest of this paper is set out as follows: section two gives a short overview of the accounting requirements for investments in associates, section three reviews the findings of

prior research and section four discusses the research methodology. This is followed by the sample selection methodology, descriptive statistics and detailed findings. Thereafter the results of robustness tests are discussed, while the last section summarises and concludes the paper.

2. Accounting requirements for investments in associates

IAS 28, *Investments in associates*, effective January 2005 (hereafter: IAS 28) (IASB, 2003) details the accounting requirements for associates during the sample period. IAS 28 defines an associate as an investee over which the entity has significant influence, which is the power to participate in financial and operating decisions. Significant influence is presumed when an entity holds 20 per cent or more of the voting power of the investee, either directly or through its subsidiaries, unless it is clear that significant influence does not exist. In addition, an entity may have significant influence over an investee, even if another party has a controlling stake. If an investee meets the definition of an associate, most entities must equity account this investment in their financial statements¹.

Equity accounting starts with the cost of an investment and adjusts it for the investor's share of subsequent changes in net assets. Unlike consolidation, equity accounting results in a single line item (the investment in associate) on the statement of financial position. This is also true for the statement of profit or loss and other comprehensive income, where the entity's post-tax share of its associate's profit or loss and other comprehensive income is aggregated into two separate line items. However, in the statement of changes in equity the entity's share of changes in reserves of its associate is not distinguished from those of the entity and its subsidiaries. Dividends received from an associate are not recognised as income, as the entity's post-tax share of its associate's profit or loss already includes these. Instead, such dividends reduce the equity accounted carrying amount of the associate.

¹ This version of IAS 28 has been superseded by IAS 28, *Investments in associates and joint ventures*, effective January 2013 (IASB, 2011). However, the requirements for the application of the equity method detailed in this section are essentially unchanged.

In addition to describing the equity accounting requirements, IAS 28 also contains certain disclosure rules. Of importance for this study is that IAS 28 requires disclosure of the fair value of investments in associates with published price quotations.

The next section reviews the findings of prior research.

3. Prior research

The equity method remains a controversial accounting treatment (Nobes, 2002). However, some prior research has suggested that equity accounted carrying amounts of both associates and joint ventures are value-relevant (Soonawalla, 2006). Supporting this conclusion, Richardson, Roubi and Soonawalla (2012) find that the value-relevance of certain amounts (e.g. total assets) declined when Canadian firms were forced to switch from equity accounting to proportionate consolidation. By contrast, Graham, King and Morrill (2003) find that accounting return on equity is better forecasted by proportionate consolidation than equity accounting, suggesting that the equity method may not be the optimal accounting treatment for significant investments. The divergent nature of results in this area possibly lead some researchers to investigate fair values as an alternative measurement base for investments in associates.

Such researchers include Barth and Clinch (1998) who investigate the carrying amounts and disclosed fair values of investments in associates for Australian firms during 1991 to 1995. They find that the carrying amounts of associates are only value-relevant for mining and financial firms and that the related fair values are only value-relevant in the mining industry. Importantly, however, they do not investigate equity accounted carrying amounts, as Australian accounting standards required investments in associates to be carried at cost until 1998 (Nobes, 2002). In this respect, Graham, Lefanowicz and Petroni (2003) find that the equity accounted carrying amounts of listed associates as well as the difference between their disclosed fair values and equity accounted carrying amounts are value-relevant in the

United States during a similar sample period of 1993 to 1997. Importantly, Graham, Lefanowicz and Petroni (2003) only exclude financial services firms from their sample, implying that disclosed fair values of listed associates may be value-relevant across diverse industries. However, insights are limited as the results of these two studies are not directly comparable for reasons discussed below.

A first problem is the differing accounting requirements of the sample countries, which could potentially explain the divergent findings, but limit inferences under harmonised and converged accounting standards. In addition, Graham, Lefanowicz and Petroni (2003) only include firms in their sample where investments in associates represent more than one per cent of total assets. This contrasts with a broader sample of Barth and Clinch (1998) who investigate fair value disclosures for several different assets. A third factor hindering comparison of prior research findings is the difference in model specification of the two papers. Graham, Lefanowicz and Petroni (2003) include the difference between disclosed fair values and equity accounted carrying amounts in their model. As there may necessarily be some overlap between these two measurements, this possibly explains why both were found to be value-relevant. By contrast, Barth and Clinch (1998) include the full carrying amounts and disclosed fair values of investments in associates in their model. As a result, prior research does not offer unambiguous insight into whether or not cross-country differences affect the value-relevance of equity accounted carrying amounts and disclosed fair values of listed associates.

It is plausible, however, that cross-country differences could explain a significant part of the divergent findings. Ball, Robin and Wu (2003), for example, find that the surrounding financial reporting environment is more important than accounting standards as a determinant of the quality of financial reporting. Hung (2001) finds that stronger shareholder protection improves the comparative value-relevance of earnings. However, greater harmonisation and

convergence of accounting standards across countries in recent years may have affected cross-country differences (Barlev & Haddad, 2007). Certainly, the relative importance of book values compared to earnings has been increasing over time (Collins, Maydew & Weiss, 1997). Such research findings imply that the value-relevance of either or both measurement bases for investments in associates may have been affected in recent times. The null hypothesis for this study is therefore that the value-relevance of disclosed fair values and equity accounted carrying amounts of listed associates does not differ between countries.

The next section details the research methodology for the study.

4. Research methodology

The model used in this study is similar to those utilised in previous value-relevance studies (Graham, Lefonawicz & Petroni, 2003; O’Hanlon & Taylor, 2007) and bears a close relationship to that of previous papers investigating investments in associates (Badenhorst, Brümmer & de Wet, 2015; Barth & Clinch, 1998). Specifically, the model is a simplified Ohlson (1995) model, which relates market value of equity to the book value of equity and net income of the firm². In addition to these variables, those specific to the investigations of this paper are added, resulting in the following:

$$MV_E = \alpha_0 + \alpha_1 \Sigma Year + \beta_1 BV_{Excl} + \beta_2 NI + \beta_3 Neg + \beta_4 ASC_{CA} + \beta_5 ASC_{FV} + \varepsilon \quad (1)$$

Where:

MV_E represents the market value of equity three months after reporting date (unadjusted from the value obtained from Datastream);

² Value-relevance studies do not attempt to estimate fair value and merely investigate whether an accounting amount has a predicted association with market values (Barth, Beaver & Landsman, 2001). In other words, value-relevance studies restrict conclusions to the question of whether or not an accounting amount is used in the valuation process and not whether it is used appropriately or accurately. Therefore a more accurate version of the Ohlson (1995) model is not necessary for the purposes of this study. However, when the accuracy of the valuation is important to the research question, the model would not be appropriate.

- Year** represents an indicator variable, set to one if an observation falls into a given sample year and zero otherwise;
- BV_{Excl}** represents the book value of equity, excluding the equity accounted carrying amount of listed associates, at the reporting date;
- NI** represents net income from continuing operations attributable to ordinary shareholders of the reporting entity for the reporting period;
- Neg** is an indicator variable, set to one if net income from continuing operations attributable to ordinary shareholders is negative and zero otherwise;
- ASC_{CA}** reflects the equity accounted carrying amounts of listed associates; and
- ASC_{FV}** represents the disclosed fair value of listed associates.

Following Barth and Clinch (1998), amongst others, the dependent variable and all independent variables, except Year and Neg, are scaled by number of shares outstanding. Number of shares outstanding has been selected for scaling purposes as Barth and Clinch (2009) show that scaling by number of shares outstanding most reliably compensates for incorrect inferences as a result of scale effects. Time and firm subscripts are suppressed.

Model (1) is run separately for each country. Although R²s are reported for each regression, these do not form the basis of the comparison between countries, as Gu (2007) shows that comparison of R²s between countries result in incorrect inferences. Therefore, in order to investigate cross-country differences, an indicator variable technique similar to that of Ball, Robin and Wu (2003:256) is used. Each sample country is considered, within a pooled time-period regression, to another sample country, utilising the following specification:

$$MV_E = \alpha_0 + \alpha_1 \Sigma Year + \alpha_2 \Sigma CTRY + \beta_1 BV_{Excl} + \beta_2 NI + \beta_3 Neg + \beta_4 ASC_{CA} + \beta_5 ASC_{FV} + \varepsilon \quad (2)$$

CTRY is an indicator variable set to one if an observation falls in the sample country and zero if it does not. The other variables are as specified in model (1). All variables, except Year, CTRY and Neg, are scaled by number of shares outstanding. Time and firm subscripts are suppressed.

Significance on the CTRY indicator variable would indicate a significant fixed difference between only two countries being compared. This enables a determination of whether or not significant differences between countries exist without comparing R^2 s. However, significance on the indicator variable cannot necessarily be attributed to changes in the value-relevance of either ASC variable, as prior research finds that the value-relevance of accounting numbers as a whole differ between countries (Hung, 2001). Therefore, the difference between the coefficients of the ASC variables in each country is assessed for significance. For this purpose the test proposed in Brame, Paternoster, Mazerolle and Piquero (1998) is utilised. This test is selected, as Brame *et al.* (1998) extensively model both available statistical tests and show that their proposed test is significantly less likely to incorrectly reject the null hypothesis than the competing test.

Based on prior research that the value-relevance of accounting numbers differ between countries (Hung, 2001), it is predicted that the coefficients between countries will differ significantly. However, because value-relevance changes will depend on unique differences between sample countries, no prediction is made of the likely sign. The next section details the sampling methodology and sample numbers.

5. Sample methodology and sample numbers

The initial sample consists of the 250 largest firms listed on the main boards of the Johannesburg Stock Exchange (JSE) in South Africa, the Australian Securities Exchange

(ASX) in Australia and the London Stock Exchange (LSE) in the United Kingdom, based on market capitalisation determined as at 31 December 2011³. The sample countries have been selected as they have all adopted IFRS as their accounting standards during 2005 and have a shared colonial history, which should mitigate some cross-country differences in the application of accounting standards. As a result, the importance of any remaining cross-country differences is increased.

The final sample includes those firms with investments in listed associates in a financial year ending from 31 December 2005 to 31 December 2011. This sample period ensures a consistent version of IAS 28 which only became effective for financial years starting on or after 1 January 2005. Sample firms include loss firms and firms from all industries. However, regression results are assessed for robustness where certain industries and loss firms have been excluded from the sample.

Price data and financial statement data for this study are obtained from Datastream and converted to South African Rands (ZAR) for analysis. Financial statement data per the published financial statements is used with no attempt to compensate for application differences in accounting requirements between different countries as this is the subject of the study. Disclosed fair values are not available on the database and are therefore hand-collected from published financial statements. In isolated cases, sample firms do not disclose the fair value of a listed associate in their financial statements or do not distinguish between listed and unlisted associates. In these cases, the fair value of the investment in listed associate is determined from publically available information⁴.

³ A sample firm is allocated to a specific sample country based on where its headquarters is located.

⁴ All disclosed fair values cannot be recalculated, because the exact interest held in the associate is not always disclosed. The associate's financial statements cannot be used for this purpose when its reporting date is not the same of the investor. Therefore, in the interest of comparability, disclosed fair values are used as far as possible and reliance is placed on the fact that all financial statements in the sample were audited.

Some sample firm-years are lost, as sample firms are required to be listed for the whole of each year to be included in the study. In addition, a large number of firms provide inadequate disclosure about their investments in associates in their financial statements and are therefore excluded from the final sample, where this information could not be rectified with reference to other publically available information. An example of such inadequate disclosure is where the equity accounted carrying amounts of associates and joint ventures have not been distinguished. A reconciliation of sample firm-years is provided in Panel A of Table 1, while Panel B of the table details the number of unique sample firms and their broad industry classifications.

[INSERT TABLE 1 ABOUT HERE]

6. Descriptive statistics

The descriptive statistics for unscaled variables are detailed in Table 2. For comparison purposes all amounts are converted to South African Rand (ZAR). It is immediately apparent from this table that average sample firms in the United Kingdom are larger than those of the other two sample countries. Mean (median) market value of equity three months after reporting date is ZAR 347 388 million (ZAR 170 262 million) in the United Kingdom, compared to a mean (median) of market value of ZAR 48 092 million (ZAR 34 438 million) in South Africa and ZAR 65 074 million (ZAR 27 063 million) in Australia. A similar trend is evident for book value of equity, which excludes the equity accounted carrying amounts of listed associates for the purposes of this study, and net income from continuing operations.

When the variables of interest (the equity accounted carrying amounts of listed associates and their disclosed fair values) are considered, the mean and median values of these variables are still much higher in absolute terms for the United Kingdom. However,

their relative sizes are similar to that of South Africa. More specifically, the mean (median) disclosed fair values of listed associates are 120 per cent (68 per cent) higher than their mean (median) equity accounted carrying amounts for the United Kingdom sample firms. This compares to a difference between the mean (median) disclosed fair values and equity accounted carrying amounts of listed associates for South African sample firms of 156 per cent (44 per cent). Indeed, for these variables, the Australian sample firms represent the anomaly. For Australian sample firms the mean (median) disclosed fair values of ZAR 1 843 million (ZAR 389 million) exceed (are below) the mean (median) equity accounted carrying amounts of listed associates by 22 per cent (8 per cent).

Excluding financial services firms from the sample, reduces the skew evident from the main descriptive statistics almost universally across the different variables and sample countries. However, untabulated results reveal that Australian sample firms still represent an anomaly in respect of the disclosed fair values and equity accounted carrying amounts of listed associates. The mean (median) disclosed fair values of listed associates in Australia now differ by 18 per cent (7 per cent) from their mean (median) equity accounted carrying amounts. By contrast, the mean (median) difference is 236 per cent (32 per cent) in South Africa and 125 per cent (89 per cent) in the United Kingdom.

[INSERT TABLE 2 ABOUT HERE]

The descriptive statistics therefore suggest that the disclosed fair values and equity accounted carrying amounts of listed associates for Australian sample firms are much closer together than in the other sample countries. This provides an initial indication that analysing cross-country differences could be insightful.

Potential implications for analyses, highlighted by the descriptive statistics, are dealt with in several ways. Skew is reduced by deleting outliers more than 2.5 standard deviations from the mean. The potential impact of financial services firms on inferences is assessed with reference to robustness tests, where these firms are excluded from the sample. The next section details the results of univariate investigations.

7. Univariate investigations

The discussion in this section focuses on the results of univariate investigations, tabulated in Table 3. Generally speaking, the independent variables all reflect significant positive correlation with the dependent variable (market value of equity) at the one per cent level. The first exception is disclosed fair values of listed associates for South African firms where the Pearson correlation is only significant at the five per cent level ($p = 0.047$). The second exception is equity accounted carrying amounts of listed associates which have insignificant Pearson correlations with the dependent variable in South Africa and the United Kingdom. However, the equity accounted carrying amounts of listed associates in Australia have a significant positive Pearson correlation with market value of equity at the one per cent level ($p < 0.001$). This is suggestive of cross-country differences, but this study relies on the findings of the multivariate regressions, which are discussed in the section which follows.

[INSERT TABLE 3 ABOUT HERE]

8. Detailed multivariate regression findings

This section discusses the findings from multivariate regression findings, run separately for each sample country and then compared. Each country sample represents a time series and initial Durbin-Watson statistics reveal significant serial correlation (autocorrelation).

Therefore the results reported in this study are based on autoregression results from

maximum likelihood estimation⁵. The detailed findings of the main investigation are tabulated in Table 4.

[INSERT TABLE 4 ABOUT HERE]

Consistent with prior research, the coefficients of book value of equity and net income from continuing operations are positive (as predicted) and significantly associated with market value of equity at the one per cent level for all sample countries in Table 4. The coefficients of equity accounted carrying amounts of listed associates are negative and significant at the one per cent level in South Africa and the United Kingdom. The anomaly is the Australian sample where the coefficient of equity accounted carrying amounts is positive (5.669) and significant at the one per cent level ($p = 0.001$). Similarly the coefficients of disclosed fair values of listed associates in South Africa and the United Kingdom are positive and significant at the one per cent level ($p < 0.001$), but negative in Australia (-0.915), although insignificant ($p = 0.467$)⁶.

These results suggest that both measurement alternatives are value-relevant in South Africa and the United Kingdom, but that only one measurement alternative is value-relevant in Australia. Importantly, the results for the Australian sample are consistent with that of prior research. Barth and Clinch (1998) find that disclosed fair values of listed associates are only value-relevant for the mining and financial services firms within their sample of Australian firms. It could therefore be that the results for Australia in this study are

⁵ Autoregression with maximum likelihood estimation corrects for serial correlation and, as an added advantage, tends to be less sensitive to the impact of outliers, skewness and heteroskedasticity than ordinary least squares as it is a nonparametric estimation method.

⁶ The negative signs on the equity accounted carrying amounts in South Africa and the United Kingdom as well as the disclosed fair values in Australia are somewhat surprising, given the findings of Graham, Lefanowicz and Petroni (2003). This is further investigated in a subsequent robustness test.

dominated by firms operating in other industries. This possibility is further investigated in subsequent robustness tests.

When an indicator variable approach is used to compare overall value-relevance between countries, all of the indicator variables are insignificant (with p-values of 0.254 and higher). This implies that overall value-relevance does not differ between the sample countries. Given these countries' shared history and similar accounting standards (IFRS) during the sample period, this finding is not entirely surprising. Despite a lack of significance, it is interesting that the indicator variable between South Africa (a developing country) and each of the other sample countries (both developed countries) is negative when South Africa is the base country. The implied market premium may be specific to the sample period as it straddles a global financial crisis, which originated in developed markets. In addition to the indicator variable approach, a Chow-test (Chow, 1960) is also performed, which tests whether the coefficients of the variables as a group differ between sample countries. These results are all significant at the one per cent level, suggesting that, while fixed cross-country differences are insignificant, variable factors might be at play. This would imply that the value-relevance of individual variables could differ significantly between countries.

This is confirmed when the value-relevance of the individual variables of interest is compared, using the test statistic recommended by Brame *et al.* (1998). These investigations show that the coefficients of equity accounted carrying amounts of listed associates differ significantly between Australia and each of the other sample countries at the one per cent level ($p < 0.001$). By contrast, the coefficients of equity accounted carrying amounts of listed associates do not differ significantly between South Africa and the United Kingdom ($p = 0.886$). Australian sample firms therefore continue to represent an anomaly.

Interestingly, the same does not apply to the disclosed fair values of listed associates. Here the coefficient of the variable for United Kingdom sample firms differs significantly from that of South Africa at the one per cent level ($p < 0.001$) and that of Australia at the five per cent level ($p = 0.011$). By contrast, no significant difference in the coefficients of disclosed fair values of listed associates is detected when the South African and Australian sample firms are compared ($p = 0.202$). This would suggest that disclosed fair values of listed associates are more readily used by equity investors in the United Kingdom than in the other two sample countries.

Maximum likelihood regression successfully correct for serial correlation in the Australian and United Kingdom samples, while the Durbin-Watson test statistic for the South African sample is 1.907, which is an inconclusive result at the five per cent level. However, as the test statistic is very close to the upper limit and results for South Africa are consistent with those from ordinary least squares, any remaining serial correlation is unlikely to alter inferences. Graphical analyses reveal that residuals are approximately normally distributed in each sample country and do not exhibit heteroskedasticity. Multi-collinearity does not appear to be significant for the South African and United Kingdom samples, with VIF-scores well below ten for all variables. In Australia, the VIF-score for the disclosed fair values and equity accounted carrying amounts of listed associates is approximately 13. When one or the other of these variables is omitted for the Australian sample firms, the remaining variable is significant at the one per cent level. It is therefore likely that the reason for the findings for Australia is that the disclosed fair values and equity accounted carrying amounts of listed associates are statistically indistinguishable. However, these findings merely confirm earlier conclusions that, unlike in the other sample countries, only one of the measurement alternatives is value-relevant in Australia.

In summary, the main findings are that equity accounted carrying amounts and disclosed fair values of listed associates are both value-relevant in South Africa and the United Kingdom, but not in Australia, where only the equity accounted carrying amounts are value-relevant. Overall value-relevance does not differ significantly between sample countries. However, the individual value-relevance of equity accounted carrying amounts of listed associates differs significantly between Australia and each of the other sample countries. In addition, the individual value-relevance of disclosed fair values of listed associates differs significantly between the United Kingdom and each of the other sample countries. The results therefore suggest that equity accounted carrying amounts of listed associates play a much more important role in Australia than the other two sample countries and that the same is true for disclosed fair values in the United Kingdom. The next section details the results of several robustness tests.

9. Results of robustness tests

In this section the results of various robustness tests are detailed. The robustness tests are grouped into subsections according to the elements which they address in order to facilitate the discussion process.

9.1.1. Using market value of equity at reporting date

The main regression specifies the dependent variable as market value of equity three months after reporting date. This allows for the natural period of time between the end of the reporting period and the date that financial reports are published. However, the results of the main regression are assessed for robustness by running the regression when the dependent variable (market value of equity) is specified to be at reporting date (rather than three months thereafter). Untabulated results show that specifying the dependent variable at reporting date reduces the significance of the equity accounted carrying amount of listed associates for the Australian sample to the ten per cent level ($p = 0.066$). In addition, the Neg variable now

becomes insignificant at conventional levels for this country ($p = 0.180$). However, all other regression and cross-country comparison results are qualitatively unchanged from those of the main investigations. Findings are therefore robust to specifying the dependent variable at reporting date.

9.1.2. Excluding loss firm-years and certain industries

A robustness test is also performed where loss firms and financial services, mining and utility firms are excluded from the sample. The descriptive statistics highlighted the skew induced by financial services firms in the sample and therefore an analysis excluding these firms appears warranted. Omitting mining firms is of particular interest, as prior research concludes that disclosed fair values of listed associates are only value-relevant for financial services and mining firms in Australia (Barth & Clinch, 1998). Utility firms are omitted as their unusual regulatory burden may impact on inferences⁷.

The results are detailed in Table 5. Applying these restrictions result in relatively small sample sizes and low power for the individual countries, which appear to reflect in the results for control variables. Although net income from continuing operations is positive and significant in all sample countries at the one per cent level ($p < 0.001$), book value of equity is only significant at conventional levels in South Africa and the United Kingdom. Results for the variables of interest, namely equity accounted carrying amounts of listed associates and their disclosed fair values, also differ from those of the main regression. Although equity accounted carrying amounts of listed associates remain negative and significant at the one per cent level ($p = 0.001$) in South Africa and the United Kingdom, they are now also negative in Australia (-0.131), although insignificant ($p = 0.962$). In addition, disclosed fair values of listed associates are now positive in all three countries. However, they are significant (at the

⁷ Another aspect to consider for these industries is that they are all relatively globalised, as firms in these industries tend to resemble each other closely regardless of their country of origin. Mining firms, for example, operate where the resources that they seek are located while financial services firms are all inextricably linked in a global network which is increasingly regulated on an international level.

one per cent level) in South Africa and the United Kingdom, but insignificant in Australia ($p = 0.711$). Overall, results of the robustness test reflect that investments in associates are relatively unimportant in the Australian context, if firms are profitable and operate in less globalised industries.

[INSERT TABLE 5 ABOUT HERE]

Comparing the countries using indicator variables, reveals that overall value-relevance between countries are impacted by industry and profitability. As Table 5 shows, overall value-relevance now differs at the one per cent level between countries when South Africa is compared to each of the other sample countries. Moreover, the indicator variables are now positive which suggest these firms, in contrast to those of the full sample, command a market premium in the United Kingdom and Australia (South Africa is the base country). However, consistent with the main regression results, overall value-relevance between Australia and the United Kingdom does not differ significantly ($p = 0.965$). In summary, it therefore appears that a market premium for developed countries exists outside of the globalised mining and financial services industries. The results of the Chow-test (Chow, 1960) is also consistent with the main findings, although the difference between South Africa and Australia is now only significant at the ten per cent level ($p = 0.080$). This therefore continues to imply that variable differences between sample countries are important and that the value-relevance of individual variables may differ between sample countries.

Disclosed fair value findings are generally consistent with the main results. The coefficient differs significantly at the one per cent level when South Africa and the United Kingdom are compared and is still insignificant for a comparison between South Africa and Australia. The only difference with the main results is that the level of significance of the difference decreases when comparing the coefficient between Australia and the United

Kingdom ($p = 0.084$). However, findings for the equity accounted carrying amounts of listed associates reflect greater differences than those of the main results. The coefficients in the United Kingdom and South Africa now differ significantly at the one per cent level ($p = 0.001$) where it was previously insignificant. Although the coefficients still differ significantly between the United Kingdom and Australia ($p = 0.004$), the difference between Australia and South Africa is now insignificant ($p = 0.504$). These results confirm that cross-country differences of the individual measurement alternatives exist. However, they also imply that listed associates are more important to investors in the United Kingdom than in the other sample countries.

Because of the low power of the preceding results, regressions are also run where only loss firms are excluded from the main sample, which results in regressions with notably higher power (sample sizes range from 61 to 79 firm-years per country). These results (untabulated) are qualitatively unchanged from those of the main regression, with the exception of equity accounted carrying amounts of listed associates for the Australian sample. This variable is now only significant at the five per cent level ($p = 0.036$). Cross-country comparisons are, however, qualitatively unchanged, although the Chow-tests (Chow, 1960) are now significant at the five per cent level when South Africa and Australia or the United Kingdom and Australia are compared. These findings provide an indication that cross-country differences are dominated by industry rather than profitability.

In summary, the robustness tests of this subsection find that loss firms do not have a significant impact on inferences on their own. However, when the industries in which sample firms operate is also restricted, the findings of the main regression are impacted. Cross-country differences become more prevalent when financial services, mining and utility firms are excluded from the sample.

9.1.3. Comparisons to prior research

Most of the findings of this paper are in line with prior research. For example, results for the Australian sample compare well to those of Barth and Clinch (1998). However, the negative coefficient on the equity accounted carrying amounts of listed associates in the South African and United Kingdom samples is in stark contrast to positive coefficients found by researchers such as Graham, Lefanowicz and Petroni (2003). Therefore, in order to assess the impact of model specification on results, the regressions are also run utilising the model specification of Graham, Lefanowicz and Petroni (2003). In this model the equity accounted carrying amount of listed associates and the difference between the disclosed fair value and the equity accounted carrying amount are included.

Untabulated results show that the difference variable is positive and significant at the one per cent level ($p < 0.001$) for the South African and United Kingdom samples. For the Australian sample this variable is negative, but insignificant ($p = 0.467$). More importantly, the sign of the equity accounted carrying amounts of listed associates remains negative for the South African and United Kingdom samples and the variable is still positive for the Australian sample. It is therefore concluded that the negative signs in the main regression are not due to model specification. As a result, it may be specific to the sample firms and the sample period.

When cross-country differences are compared for this model (replacing the disclosed fair value variable with the difference variable), almost all results are qualitatively unchanged from those of the main results. The exception is that the individual value-relevance for equity accounted carrying amounts now differs significantly at the five per cent level between the South African and United Kingdom samples ($p = 0.036$). Results therefore continue to imply that, although overall value-relevance differences between the sample countries are insignificant, value-relevance differs significantly for individual elements.

9.1.4. Change specification

The main results of this study are based on a price level regression. Modifying the model to reflect a change specification results in the following:

$$\Delta MV_E = \alpha_0 + \alpha_1 \Sigma Year + \beta_1 \Delta BV_{Excl} + \beta_2 \Delta NI + \beta_3 Neg + \beta_4 \Delta ASC_{CA} + \beta_5 \Delta ASC_{FV} + \varepsilon \quad (3)$$

where Δ denotes change and other variables are as previously specified. Scaling and the treatment of outlying observations are identical to that of the main regression.

As the change specification requires an opening and closing value, the sample and resultant power of the regression is much reduced. Nonetheless, untabulated results reveal that findings for cross-country differences in value-relevance are qualitatively unchanged for both the indicator approach and Chow-test (Chow, 1960). In the case of differences for individual variables, value-relevance only differs at conventional levels of significance between South Africa and the United Kingdom and then only for the change in disclosed fair values ($p < 0.001$). These results therefore suggest that the timeliness of individual value-relevance is fairly similar between the sample countries, although the power of the regressions limits generalisation. However, the change specification results continue to support a conclusion that while significant fixed differences in overall value-relevance between sample countries do not exist, variable differences in value-relevance remain.

9.1.5. Cum-dividend market capitalisation and opening book value

The main results of this study do not consider the implications of different dividend payment dates or longer time periods. Adjusting the model to consider such implications, results in the following:

$$MV_{Cum} = \alpha_0 + \alpha_1 \Sigma Year + \beta_1 BV_{Open} + \beta_2 NI + \beta_3 Neg + \beta_4 ASC_{CA} + \beta_5 ASC_{FV} + \varepsilon \quad (4)$$

where MV_{Cum} is the market value of equity at reporting date, adjusted for the total return three months after reporting date, BV_{Open} is the book value of equity (excluding the equity accounted carrying amount of investments in listed associates) as at the start of the reporting date and other variables are as previously specified. Scaling and the treatment of outlying observations are identical to that of the main regression. However, as this specification requires the book value of equity at the start of the reporting period, the sample period now ends on 31 Desember 2012.

Untabulated results for the individual sample countries are generally consistent with those of the main regression. However, the equity accounted carrying amounts of associates are now insignificant in the United Kingdom ($p = 0.517$), although the coefficient remains negative. Interestingly, disclosed fair values of associates in Australia is now significant at the five per cent level ($p = 0.044$). These results suggest that investments in associates are incorporated into market prices over a longer period of time (the robustness test allows 15 months, while the main regression allows only 3 months). However, they confirm an earlier conclusion that disclosed fair values of associates are far more important to investors in the United Kingdom than in the other sample countries.

Untabulated results for differences between sample countries now detects significant fixed country differences between South Africa and the United Kingdom at the one per cent level, although fixed differences between Australia and the United Kingdom remain insignificant ($p = 0.358$). However, results continue to suggest that variable cross-country differences are more prevalent. The results for all of the Chow-tests remain significant at the one per cent level, while the test of Brame *et al.* (1998) now finds that all differences between individual variables are significant at the one per cent level.

In conclusion, the adjusted model specification continues to suggest that fixed cross-country differences are less prevalent than variable cross-country differences. In addition,

earlier conclusions about the relative importance of information about investments in listed associates between the various sample countries are similar.

10. Summary and conclusion

This study investigates the null hypothesis that the value-relevance of fair values and equity accounted carrying amounts of listed associates does not differ between countries. Findings show that both equity accounted carrying amounts and disclosed fair values of listed associates are value-relevant in South Africa and the United Kingdom. However, only the equity accounted carrying amounts are value-relevant for the Australian sample. Overall, value-relevance does not differ significantly between sample countries, but the value-relevance of equity accounted carrying amounts differs significantly between Australia and each of the other sample countries. In addition, the value-relevance of disclosed fair values of listed associates differs significantly between the United Kingdom and each of the other sample countries.

Results are robust to specifying the dependent variable at reporting date, rather than three months thereafter, and to excluding loss firms from the sample. However, results suggest that restricting the sample to exclude mining, financial services and utility firms increases the prevalence of cross-country differences in respect of overall value-relevance as well as differences in the value-relevance of individual variables. A plausible explanation is that removing firms from relatively globalised industries from the sample (especially in the case of mining and financial services firms) highlights underlying country differences by which other firms are more affected. Generally speaking, the results from these robustness tests indicate that equity investors attach greater importance to investments in listed associates in the United Kingdom, than in the other two sample countries.

This study contributes to the existing literature by directly comparing cross-country value-relevance of disclosed fair values of listed associates. Findings highlight that caution

should be exercised when value-relevance findings are generalised across countries and industries. Moreover, results reveal that the preferences of equity investors are dictated, as much by history, as the inherent characteristics of information. This is important, as it suggests that converged and harmonised accounting standards have not altered the inherent differences between investors of different countries.

For this reason, the specific value-relevance findings of this study should be cautiously extrapolated to other countries or time periods. Furthermore, the findings of this study only apply to listed associates and not to equity accounted investees in general. Lastly, the nature of the subject matter for this study limits the sample size. As a result, the limited power of investigations imply that caution should be exercised if results are generalised to broader situations.

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Table 1: Composition of sample firm-years

<i>Panel A: Reconciliation of sample firm-years</i>			
	South Africa	United Kingdom	Australia
Initial sample (250 largest listed firms as at 31 December 2011)	1 750	1 750	1 750
Firm-years not listed for full year	(422)	(278)	(396)
Number of firm-years listed for full year	1 328	1 472	1 354
No investment in associate	(650)	(800)	(881)
No investment in listed associates	(384)	(194)	(167)
Incomplete disclosure in the financial statements	(154)	(362)	(206)
Investments in associates carried at fair value	(15)	(2)	(10)
Financial statements not available	-	(30)	(6)
Other	(35)	(5)	-
Sample firm-years for the study	90	79	84
<i>Panel B: Industry classifications of sample firms</i>			
	South Africa	United Kingdom	Australia
Financial services	6	3	3
Manufacturing	4	5	3
Mining	4	7	9
Other services	5	4	6
Telecommunications	0	1	1
Transport	1	1	2
Real Estate	4	0	4
Utilities	0	1	1
Number of unique firms in the sample	24	22	29

Table 2: Descriptive statistics for unscaled variables

	N	Mean ZAR million	Median ZAR million	Standard Deviation ZAR million	Minimum ZAR million	Maximum ZAR million
<i>Panel A: South Africa</i>						
MV _E	90	48 092	34 438	48 955	288	269 352
BV _{Excl}	90	19 168	16 428	17 577	-1 360	64 043
NI	90	3 027	2 174	3 451	-4 275	12 779
ASC _{CA}	90	3 174	540	6 218	0	25 061
ASC _{FV}	90	8 125	780	19 932	3	137 700
<i>Panel B: United Kingdom</i>						
MV _E	79	347 388	170 262	393 775	8 923	1 590 911
BV _{Excl}	79	145 304	61 045	253 707	-31 585	1 141 598
NI	79	23 902	11 547	29 024	-1 237	135 561
ASC _{CA}	79	14 329	2 128	27 943	0	135 918
ASC _{FV}	79	31 557	3 579	60 875	11	267 401
<i>Panel C: Australia</i>						
MV _E	84	65 074	27 063	99 303	659	455 198
BV _{Excl}	84	34 775	16 015	54 933	-145	251 001
NI	84	3 380	1 220	7 499	-8 065	37 208
ASC _{CA}	84	1 505	421	2 882	0	13 308
ASC _{FV}	84	1 843	389	3 835	13	18 576
MV _E	Market value of equity, three months after reporting date					
BV _{Excl}	Book value of equity, excluding the equity accounted carrying amounts of listed associates					
NI	Net income from continuing operations, attributable to ordinary shareholders of the parent					
ASC _{CA}	Equity accounted carrying amounts of the listed associates					
ASC _{FV}	Disclosed fair values of the listed associates					

Table 3: Univariate correlations

	MV_E	BV_{Excl}	NI	ASC_{CA}	ASC_{FV}
<i>Panel A: South Africa (N = 90)</i>					
MV _E		***0.806 (<0.001)	***0.738 (<0.001)	0.091 (0.394)	**0.210 (0.047)
BV _{Excl}	***0.844 (<0.001)		***0.648 (<0.001)	0.165 (0.121)	*0.205 (0.053)
NI	***0.629 (<0.001)	***0.563 (<0.001)		***0.311 (0.003)	**0.222 (0.036)
ASC _{CA}	***0.429 (<0.001)	**0.226 (0.032)	***0.440 (<0.001)		***0.616 (<0.001)
ASC _{FV}	***0.465 (<0.001)	**0.267 (0.011)	***0.513 (<0.001)	***0.938 (<0.001)	
<i>Panel B: United Kingdom (N = 79)</i>					
MV _E		***0.510 (<0.001)	***0.772 (<0.001)	0.116 (0.311)	***0.475 (<0.001)
BV _{Excl}	***0.436 (<0.001)		***0.609 (<0.001)	0.066 (0.564)	0.040 (0.728)
NI	***0.788 (<0.001)	***0.495 (<0.001)		***0.324 (0.004)	***0.463 (<0.001)
ASC _{CA}	***0.296 (0.008)	***0.418 (<0.001)	***0.372 (0.001)		***0.737 (<0.001)
ASC _{FV}	***0.394 (<0.001)	***0.367 (0.001)	***0.441 (<0.001)	***0.933 (<0.001)	
<i>Panel C: Australia (N = 84)</i>					
MV _E		***0.752 (<0.001)	***0.828 (<0.001)	***0.557 (<0.001)	***0.538 (<0.001)
BV _{Excl}	***0.843 (<0.001)		***0.693 (<0.001)	*0.184 (0.093)	*0.183 (0.096)
NI	***0.777 (<0.001)	***0.728 (<0.001)		***0.370 (0.001)	***0.397 (<0.001)
ASC _{CA}	***0.664 (<0.001)	***0.583 (<0.001)	***0.492 (<0.001)		***0.957 (<0.001)
ASC _{FV}	***0.644 (<0.001)	***0.540 (<0.001)	***0.498 (<0.001)	0.955 (<0.001)	
MV _E	Market value of equity, three months after reporting date				
BV _{Excl}	Book value of equity, excluding the equity accounted carrying amounts of listed associates				
NI	Net income from continuing operations, attributable to ordinary shareholders of the parent				
ASC _{CA}	Equity accounted carrying amounts of the listed associates				
ASC _{FV}	Disclosed fair values of the listed associates				
	* Significant at the 10% level		** Significant at the 5% level		*** Significant at the 1% level
	(p-values for 2-tailed significance are indicated within the brackets)				

Table 4: Regression findings

$MV_E = \alpha_0 + \alpha_1 \Sigma Year + \beta_1 BV_{Excl} + \beta_2 NI + \beta_3 Neg + \beta_4 ASC_{CA} + \beta_5 ASC_{FV} + \varepsilon$				
	Predicted Sign	South Africa	United Kingdom	Australia
BV _{Excl}	+	***1.922 (<0.001)	***0.502 (0.004)	***0.689 (<0.001)
NI	+	***6.578 (<0.001)	***8.027 (<0.001)	***7.173 (<0.001)
Neg	+ / -	**58.863 (0.017)	22.943 (0.415)	**12.819 (0.023)
ASC _{CA}	+ / -	***-2.717 (0.001)	***-2.853 (<0.001)	***5.669 (0.001)
ASC _{FV}	+ / -	***0.694 (<0.001)	***2.466 (<0.001)	-0.915 (0.467)
N		87	78	82
Structural R ²		88.5%	79.9%	93.1%
Country comparisons (Indicator variable results above and Chow-test results below the diagonal):				
		South Africa	United Kingdom	Australia
South Africa			-10.063 (0.254)	-6.538 (0.340)
United Kingdom		***7.354 (<0.001)		-0.113 (0.986)
Australia		***7.839 (<0.001)	***3.169 (0.001)	
Difference in coefficients (ASC_{CA} above and ASC_{FV} below the diagonal):				
		South Africa	United Kingdom	Australia
South Africa			0.144 (0.886)	***4.461 (<0.001)
United Kingdom		***3.899 (<0.001)		***4.779 (<0.001)
Australia		1.277 (0.202)	**2.560 (0.011)	
MV _E	Market value of equity, three months after reporting date			
BV _{Excl}	Book value of equity, excluding the equity accounted carrying amounts of listed associates			
NI	Net income from continuing operations, attributable to ordinary shareholders of the parent			
ASC _{CA}	Equity accounted carrying amounts of the listed associates			
ASC _{FV}	Disclosed fair values of the listed associates			
Neg	Indicator variable set to one if a firm-year reflects a loss from continuing operations and zero otherwise			
The number of firm-years differs from that in Table 1, due to the deletion of outlying observations more than 2.5 standard deviations from the mean.				
The Chow-test (Chow, 1960) whether the regression coefficients are the same between the sample countries.				
The difference in coefficients utilises the test statistic recommended in Brame <i>et al.</i> (1998) and test whether the coefficient of the variable in the specific sample country is equal to that of the comparative sample country.				
* Significant at the 10% level ** Significant at the 5% level *** Significant at the 1% level (Autoregression maximum likelihood p-values for 2-tailed significance are indicated within the brackets)				

Table 5: Regression findings when certain industries and loss firm-years are excluded

$MV_E = \alpha_0 + \alpha_1 \Sigma \text{Year} + \beta_1 BV_{\text{Excl}} + \beta_2 NI + \beta_3 ASC_{CA} + \beta_4 ASC_{FV} + \varepsilon$				
	Predicted Sign	South Africa	United Kingdom	Australia #
BV_{Excl}	+	**0.689 (0.041)	***0.877 (<0.001)	0.148 (0.207)
NI	+	***7.239 (<0.001)	***12.122 (<0.001)	***15.845 (<0.001)
ASC_{CA}	+ / -	***-1.960 (0.001)	***-11.376 (0.001)	-0.131 (0.962)
ASC_{FV}	+ / -	***0.888 (<0.001)	***3.979 (<0.001)	0.648 (0.711)
N		41	42	37
Structural R^2		92.8%	92.6%	95.1%
Country comparisons (Indicator variable results above and Chow-test results below the diagonal):				
		South Africa	United Kingdom	Australia
South Africa			***30.617 (0.006)	***19.095 (0.004)
United Kingdom		***5.942 (<0.001)		0.344 (0.965)
Australia		*1.776 (0.080)	***2.782 (0.006)	
Difference in coefficients (ASC_{CA} above and ASC_{FV} below the diagonal):				
		South Africa	United Kingdom	Australia
South Africa			***3.191 (0.001)	0.669 (0.504)
United Kingdom		***3.624 (<0.001)		***2.849 (0.004)
Australia		0.139 (0.890)	*1.730 (0.084)	
MV_E	Market value of equity, three months after reporting date			
BV_{Excl}	Book value of equity, excluding the equity accounted carrying amounts of listed associates			
NI	Net income from continuing operations, attributable to ordinary shareholders of the parent			
ASC_{CA}	Equity accounted carrying amounts of the listed associates			
ASC_{FV}	Disclosed fair values of the listed associates			
The number of firm-years differs from that in Table 1, due to the deletion of outlying observations more than 2.5 standard deviations from the mean and the elimination of firms in financial services, mining and utilities, using industry classifications per Datastream.				
The Chow-test (Chow, 1960) whether the regression coefficients are the same between the sample countries.				
The difference in coefficients utilises the test statistic recommended in Brame <i>et al.</i> (1998) and test whether the coefficient of the variable in the specific sample country is equal to that of the comparative sample country.				
#	One additional observation was deleted from the sample for this country in order to normalise the distribution of residuals. Retaining this observation leaves inferences qualitatively unchanged.			
	* Significant at the 10% level	** Significant at the 5% level	*** Significant at the 1% level	
	(Autoregression maximum likelihood p-values for 2-tailed significance are indicated within the brackets)			