The value relevance of disclosures of liabilities of equity-accounted investees: UK evidence

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Abstract—This study examines the value relevance of mandated disclosures by UK firms of the investor-firm share of liabilities of equity-accounted associate and joint venture investees. It does so for the six years following the introduction of FRS 9: *Associates and Joint Ventures*, which forced a substantial increase in such disclosures by UK firms. Since the increased disclosure requirements were partly motivated by concern that single-line equity accounting concealed the level of group gearing, and in light of previous US results, it is predicted that the mandated investee-liability disclosures have a negative coefficient in a value-relevance regression. The study also examines whether value-relevance regression coefficients on investee-liability disclosures are more negative for joint ventures than for associates and whether they are more negative in the presence of investor-firm guarantees of investee-firm obligations than in the absence of such guarantees. The study reports that the coefficient on all investee-liability disclosures taken together has the predicted negative sign, and is significantly different from zero. It finds little evidence that the negative valuation impact of liability disclosures is stronger for joint venture investees overall than for associate investees overall, or stronger for guarantee cases overall than for non-guarantee cases overall. There is, however, some evidence that the impact for joint venture guarantee cases is stronger than that for joint venture non-guarantee cases and stronger than that for associate guarantee cases.

Key words: Equity accounting; joint ventures; associates; FRS 9; value relevance

1. Introduction

By testing for their value relevance, this study examines the usefulness to investors of mandated disclosures by UK firms of the investor-firm share of liabilities of equity-accounted associate and joint venture investees. The study uses UK data for the period from 1998 to 2003, immediately following the date of the introduction by the UK's Accounting Standards Board (ASB) of FRS 9: *Associates and Joint Ventures* (ASB, 1997).

Motivated in part by concern that single-line equity accounting was being used as an off-balance-sheet-financing device which had the effect of concealing the level of group gearing (ASB,

1996), FRS 9 introduced for the first time strict thresholds governing disclosures by UK firms of the investor-firm share of the underlying gross assets and liabilities of equity-accounted investees, and forced a substantial increase in such disclosures. On the grounds that joint ventures are subject to joint control by the investor firm whereas associates are only subject to its significant influence, FRS 9 also introduced a distinction between associate investees and joint venture investees, requiring a higher and more prominent degree of disclosure in respect of joint ventures. We examine the value relevance of the FRS 9-mandated disclosures of the liabilities of equity-accounted investees, which are the amounts by which the net investments in investees for which disclosures are made would have to be grossed up to give the investor-firm share of the gross assets and liabilities of those investees. In light of the concerns about concealment of group gearing that partly motivated the investee-liability disclosure requirements of FRS 9 and in light of the findings of previous US research, we predict that the mandated disclosures are negatively associated with the market value of equity of the investor firm, and therefore have a negative coefficient in a value-relevance regression. In light of the possibility that the creditors of joint ventures might be more likely than those of associates to have explicit or implicit recourse to

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the assets of the investor firm and in light of the greater and more prominent disclosure that FRS 9 required for joint ventures relative to associates, we also examine whether the value-relevance regression coefficient on investee-liability disclosures is more negative for joint ventures than for associates. Furthermore, because of the recourse to the assets of the investor firm conferred by an investor-firm guarantee of investee-firm obligations, and in light of the findings of previous US research, we examine whether the value-relevance regression coefficient on investee-liability disclosures is more negative in the presence of investor-firm guarantees than in the absence of such guarantees.

The findings of the study indicate that disclosures of liabilities of equity-accounted investees, which enable equity-accounted net investments to be grossed up by financial statement users, are negatively associated with the market value of equity of the investor firm. This is consistent with the concerns about off-balance-sheet financing that helped motivate the requirement for such disclosures under FRS 9. The study finds little evidence that the negative valuation impact of liability disclosures is stronger for joint venture investees overall than for associate investees overall, or stronger for guarantee cases overall than for non-guarantee cases overall. There is some evidence that the impact for joint venture guarantee cases is stronger than that for joint venture non-guarantee cases and stronger than that for associate guarantee cases.

The remainder of the paper is organised as follows. Section 2 gives the background to the study, outlining relevant issues relating to accounting for associates and joint ventures and the results of related research. Section 3 describes the research design. Section 4 gives details of the data used in the study. Section 5 reports the results. Section 6 concludes.

2. Background

This section provides background for the empirical work reported in the study. Subsection 2.1 outlines the history of the accounting for investments in associates and joint ventures in US, international and UK generally accepted accounting practice (GAAP), with particular reference to the disclosure of the gross assets and liabilities of equity-accounted investees and to the provisions of the UK accounting standard FRS 9. Subsection 2.2 outlines related research. Subsection 2.3 summarises the section.

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[1] See FRS 9: *Associates and Joint Ventures* (ASB, 1997), IAS 28: *Investments in Associates* (IASB, 2003a) and IAS 31: *Interests in Joint Ventures* (IASB, 2003b) for definitions of associates and joint ventures in UK and international GAAP.

2.1. Accounting for associates and joint ventures

Associate and joint venture investees are each subject to an important degree of influence by the investor firm, where the influence falls short of the control that would classify the investee as a subsidiary of the investor firm. In the case of a joint venture, the investor firm and one or more other parties exercise joint control under a contractual arrangement; in the case of an associate, the investor firm merely exercises significant influence.[1] Some accounting regimes have drawn a distinction between the two types of investee, and others have not.

Until the early 1970s, an investment by one firm in another where the investee firm was not a subsidiary of the investor firm was generally accounted for at cost in the balance sheet, and income was recognised when a dividend was received from the investee. The inadequacies of such accounting for what might be vehicles for important activities motivated the development of a more informative method of accounting for investee firms over which the investor firm had significant influence short of control. Under this method, termed the equity method, the investee is accounted for in the investor firm's balance sheet as a single-line item comprising cost plus the investor-firm share of the post-acquisition change in the investee's equity, and in its income statement as the investor-firm share of aggregated components of investee net income. Use of the method was pioneered by the Royal Dutch Shell group in 1964 (Ernst & Young LLP, 2001), and was introduced into US GAAP and UK GAAP in 1971. The relevant US accounting standard was APB Opinion No. 18: *The equity method of accounting for investments in common stock* (Accounting Principles Board, 1971), and the relevant UK accounting standard was initially SSAP 1: *Accounting for Associated Companies* (ASC, 1971). Subsequently, international accounting standards incorporated the method in IAS 28: *Investments in Associates* (IASB, 2003a) and IAS 31: *Interests in Joint Ventures*, (IASB, 2003b), which were first issued in 1988 and 1990, respectively.

Concern has been expressed in some quarters that single-line equity accounting may reflect insufficient information about the activities of investee firms, a particular concern being that such accounting could be used to conceal the level of investor-group debt (Bierman, 1992; ASB, 1994; ASB, 1996; Crichton, 1996; Johnson and Holgate, 1996). This has led to the development of various methods for reflecting in the financial statements of investor firms more detailed information from the underlying income statements and balance sheets of equity-accounted investees. These methods include proportionate consolidation, where the investor-firm share of investee-firm financial-

statement line items is merged with the investor-firm line items, the expanded equity method, where the investor-firm share of investee-firm line items appears in the investor firm's financial statements but is not merged with the investor-firm line items, and note disclosures. There has been much debate about how far along the spectrum from single-line equity accounting to proportionate consolidation regulators should go with regard to associates and joint ventures, with single-line equity accounting being seen by some as reflecting an inadequate amount of information about important activities and proportionate consolidation being seen by some as implying a greater degree of control than is actually exercised (ASB, 1994; Milburn and Chant, 1999). Differences of opinion have been reflected in differences across regimes in accounting for associates and joint ventures.

With regard to disclosure of liabilities of equity-accounted investees, the US's APB Opinion No. 18 states that, where material, it might be necessary to disclose information on the assets and liabilities of the investee firm. Materiality thresholds are not defined by APB Opinion No. 18, but have been defined for SEC registrants by the SEC's Regulation S-X. This requires note disclosure of summarised information on assets, liabilities and results of operations of equity-accounted investees that exceed specified materiality thresholds, and the filing of separate financial statements of equity-accounted investees that exceed higher materiality thresholds (Accounting Series Release 302: *Separate Financial Statements Required by Regulation S-X*, SEC, 1981).[2] No distinction is drawn between associates and joint ventures with regard to the required method of accounting or the required disclosures.

International GAAP has distinguished between the method of accounting for associates and the method of accounting for joint ventures, including with regard to the way in which investee liabilities are reflected in investor-firm financial statements. When first issued in 1988, IAS 28: *Investments in Associates* required associates to be accounted for by the equity method, with no requirement for disclosure of liabilities of associates. However, the current version of the standard, effective for accounting periods beginning on or after 1 January 2005, requires disclosure of summarised financial information of all associates, including their aggregate assets, liabilities, revenue and net income (IASB, 2003a). IAS 31: *Interests in Joint Ventures* requires that joint ventures be accounted for either by proportionate consolidation, which is the preferred method, or by the equity method as for associates. However, the IASB has recently sig-

nalled its intention to eliminate the main difference between IAS 31 and the corresponding US GAAP provisions by removing the option to account for joint ventures by proportionate consolidation and requiring that they be accounted for by the equity method (IASB, 2007). This will remove a significant distinction between the methods of accounting for associates and for joint ventures, although disclosures may continue to be made separately for each class of investee.

Similar to APB Opinion No. 18, the UK's SSAP 1 required that, if materially relevant from the perspective of the investor firm, information on the assets and liabilities of an equity-accounted investee should be disclosed in the investor firm's financial statements. However, no materiality thresholds were defined and, for the period during which SSAP 1 was in force, disclosure of such information by UK firms was rare (ASB, 1997, appendix 3, paragraph 3). During the 1990s, there was concern that this might be allowing equity-accounted investees to be used as a means of concealing debt (ASB, 1994; ASB, 1996; Crichton, 1996; Johnson and Holgate, 1996). Furthermore, on the grounds that joint ventures and associates are different in that the former is subject to joint control by the investor firm whereas the latter is merely subject to its significant influence, there was some debate as to whether joint ventures should be treated differently from associates. These concerns were reflected in the development by the UK's ASB of FRS 9: *Associates and Joint Ventures*, which came into effect for accounting periods ending on or after 23 June 1998. This defined for the first time strict thresholds governing the disclosure by UK firms of the investor-firm share of the liabilities of equity-accounted investees, bringing about a significant increase in such disclosure. It also introduced a clear distinction between associates and joint ventures, requiring a higher and more prominent degree of disclosure for the latter.

The disclosures required by FRS 9 took three principal forms. First, firms were required to account for all joint ventures by the gross equity method, whereby the investor-firm share of the investee firm's gross assets and gross liabilities appeared on the face of the investor firm's balance sheet and the investor-firm share of the investee firm's sales revenue appeared on the face of the investor firm's income statement. Second, if the investor-firm share of one or more designated items for aggregate associates or for aggregate joint ventures exceeded 15% of the corresponding item for the investor firm, a 15% materiality disclosure for that class of investee was required. The designated items were (i) gross assets, (ii) gross liabilities, (iii) sales revenue and (iv) the three-year average of operating profits. If the 15% threshold was ex-

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[2] The relevant Regulation S-X rules are 1-02(w), 3-09 and 4-08(g).

ceeded, the investor firm had to disclose in aggregate its share of the following items of the investees: sales revenue, fixed assets, current assets, liabilities due within one year, and liabilities due after one year. Third, if for any individual associate or joint venture the investor-firm share of any of the four designated items exceeded 25% of the corresponding item for the investor firm, a 25% materiality disclosure was required. In this case, the investor firm had to disclose its share of the following in respect of the individual investee: sales revenue, profit before tax, taxation, profit after tax, fixed assets, current assets, liabilities due within one year, liabilities due after one year.

It is notable that, although it was issued at a time of increasing support by the ASB for the International Accounting Standards Committee (IASC) harmonisation project, FRS 9 differed from the then current international accounting practice, as reflected in IAS 28 and IAS 31, in a number of significant respects. Areas of difference included the requirement in FRS 9 to disclose information about liabilities of associates, at a time when no such requirement existed in IAS 28, the lack of any provision within FRS 9 for proportionate consolidation, at a time when IAS 31 strongly encouraged its use in accounting for joint ventures, the definition of significant influence, criteria for exclusion from the requirement to apply equity accounting, the reporting of components of equity-accounted income, the treatment of loss-making equity-accounted investees, and the definition of types of joint venture (Ernst & Young LLP, 2001, ch. 7, Section 6). It is also notable that the revision to IAS 28 that post-dated FRS 9, requiring the disclosure of associate liabilities for accounting periods beginning on or after 1 January 2005, and the proposed revision to IAS 31, requiring joint ventures to be accounted for by the equity method, are moving international accounting practice with regard to the disclosure of the liabilities of equity-accounted investees closer to the FRS 9 position.[3] However, it should also be noted that the proposed change to IAS 31 runs counter to the path taken by FRS 9 in one respect, in that it substantially reduces the difference between the method used to account for investments in joint ventures and that used to account for investments in associates.

2.2. Related research

A number of previous studies examine the usefulness to investors of accounting disclosures re-

garding associates and joint ventures, focusing on their value relevance as measured by association with market value, on their risk relevance as measured by association with risk measures, or on their forecasting relevance as measured by their contribution to the forecasting of accounting numbers.

Motivated by the possibility that US GAAP's lack of distinction between associates and joint ventures might limit the usefulness of US accounting data, Soonawalla (2006) examines the relevance to investors of associate and joint venture disclosures in Canada and the UK for the periods 1995–2000 and 1997–2000, respectively. Relevance is measured both by forecasting relevance and by value relevance. The focus is on the potential incremental relevance of (i) equity-accounted income disaggregated into associate and joint venture components, beyond equity-accounted income of associates and joint ventures taken together, (ii) single-line equity-accounted net investment disaggregated into associate and joint venture components, beyond the single-line equity-accounted net investment in associates and joint ventures taken together, and (iii) joint venture revenues and expenses, beyond joint venture earnings. The study finds evidence that disaggregated associate and joint venture information is forecasting-relevant and value-relevant beyond aggregate information, and therefore suggests that failure to distinguish between associates and joint ventures may result in the concealment of valuable information. It does not consider the effect of investee-liability disclosures or of investor-firm guarantees.

Lourenço and Dias Curto (2006), using UK data from 1999 to 2004, report that investors value the gross assets of joint venture investees differently from investor-firm gross assets and that they value the liabilities of joint venture investees differently from investor-firm liabilities. The study does not consider associates or the effect of investor-firm guarantees.

For Canadian firms for the period from 1995 to 2000, Kothavala (2003) examines whether information on joint venture investees presented using proportionate consolidation, which reflects the liabilities of joint venture investees, explains market risk measures better (is more risk-relevant) than information based on single-line equity accounting, which does not. The study is motivated in part by suggestions that the use of equity accounting rather than proportionate consolidation, by failing to reflect liabilities of investees, may allow those investees to be used as an off-balance-sheet-financing device (Bierman, 1992). The results of the study are mixed. Accounting numbers based on proportionate consolidation are more risk-relevant than those based on single-line equity accounting when risk is measured using price volatility, but are less risk-relevant when risk is measured using

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[3] Unlike the international standards, FRS 9 made distinctions with regard to materiality, which resulted in liabilities of some non-material associates not being disclosed and details of particularly material associates and joint ventures being disclosed individually. Also, it required that disclosures with regard to aggregate joint ventures be made on the face of the balance sheet using the gross equity method.

bond ratings. A related study by Stolzfus and Epps (2005) uses US data for the period from 1996 to 1999 to examine whether accounting data constructed as if joint ventures are accounted for by proportionate consolidation explain risk premia better than reported accounting data based on the equity method. The study reports that, although proportionate consolidation does not dominate equity accounting in explaining risk premia for all joint ventures taken together, it does so for joint ventures where obligations are guaranteed by the investor firm.

Graham, King and Morrill (2003), using Canadian data for the period from 1995 to 2001, find that reported accounting data, in which joint ventures are accounted for by proportionate consolidation, have greater forecasting relevance than accounting data constructed as if joint ventures are accounted for by the equity method.

Bauman (2003) uses a sample of 150 US firm-years for the years 2000 and 2001 to examine the value relevance to investors in the investor firm of disclosures of the liabilities of equity-accounted investees, which he terms off-balance-sheet activities concealed by the equity method of accounting. Because of the possibility that investors in the investor firm might place a higher weight on investee-liability disclosures if there is an investor-firm guarantee of investee-firm obligations, a distinction is drawn between guarantee cases and non-guarantee cases. No distinction is drawn between joint ventures and other equity-accounted investees. In regression models in which the dependent variable is the market value of equity and explanatory variables include investee-liability disclosures, the coefficient on investee-liability disclosures is negative both in guarantee cases and in non-guarantee cases, both in 2000 and 2001. Consistent with investors placing greater weight on investee-liability disclosures in the presence of an investor-firm guarantee, the coefficient for guarantee cases is significant in both years whereas that for non-guarantee cases is significant in only one year, and the guarantee coefficient is lower (more negative) than the non-guarantee coefficient in both years.

2.3. Summary

The issues of whether and how to reflect in the financial statements of investor firms information about equity-accounted investees have been debated extensively and have generated a considerable degree of regulatory activity, some of which is ongoing at the time of writing. Prior research has reported evidence on the value-relevance, risk-relevance and forecasting-relevance of such information, and has found that investors view information about equity-accounted investees differently depending upon whether it relates to associates or to joint ventures and depending upon whether or not there is an investor-firm guarantee of investee-firm obligations. A US study by Bauman (2003) has found a negative association between the market value of the investor firm and disclosures of liabilities of equity-accounted investees, with the valuation impact being more pronounced in the presence of guarantees than in the absence of guarantees.

In this study, we use a sample of UK firm-years, substantially larger than that used in Bauman's US study and drawn from the six years immediately following the major increase in disclosure requirements brought about by FRS 9, to examine the value relevance to investors in the investor firm of disclosures of liabilities of equity-accounted investees. We also examine whether this differs between associates and joint ventures, and whether it differs between guarantee cases and non-guarantee cases.

3. Research design

The main objective of this study is to examine whether disclosures of the investor-firm share of the liabilities of equity-accounted investees are value-relevant to investors in the investor firm. In order to address this objective, the following regression model is estimated:

$$\frac{MVE_{it}}{BVA_{i,t-1}} = \alpha_1 + \beta_{11}\frac{ILD_{it}}{BVA_{i,t-1}} \tag{1}$$

$$+\beta_{12}\frac{BVA_{it}}{BVA_{i,t-1}} + \beta_{13}\frac{BVL_{it}}{BVA_{i,t-1}} + \beta_{14}\frac{NI_{it}}{BVA_{i,t-1}} + \beta_{15}\frac{NI_{it}}{BVA_{i,t-1}} \cdot LOSS_{it}$$

$$+\sum_{j=2}^{5}\delta_{1,j}I_{j,it} + \sum_{s=1999}^{2003}\eta_{1,s}Y_{s,it} + e_{1,it}\,.$$

[4] Market value of equity is measured on an ex-dividend basis, in order to be consistent with the balance sheet. The adjustment by the total return on the firm's shares for the three months after the balance sheet date gives a market value measure which (i) reflects information becoming available in the three months following the balance sheet date, and (ii) is consistent with the balance sheet with respect to capital changes that may have occurred in that three-month period.

where: MVE_{it} is the ex-dividend market value of equity of the investor firm i at the balance sheet date t, adjusted by the total return on the firm's shares for the three months after that date;[4] $BVA_{i,t-1}$ is the book value of assets of firm i at the previous balance sheet date $t-1$, inclusive of its equity-accounted net investment in associates and/or joint

ventures, and is used to scale all variables in the model other than dummy variables; ILD_{it} is the FRS 9-mandated investee-liability disclosure in respect of material associates and all joint ventures, taken together; BVA_{it} is the book value of assets of firm i at the balance sheet date t, inclusive of its equity-accounted net investment; BVL_{it} is the book value of liabilities of firm i at the balance sheet date t, inclusive of any equity-accounted net-liability position recorded within provisions; NI_{it} is the net income of firm i for the period ended at the balance sheet date t; $LOSS_{it}$ is a dummy variable that takes the value of 1 if firm i reports a loss in the period ended at balance-sheet date t and zero otherwise; $I_{j,it}$ is a dummy variable that takes the value of 1 if firm i is from industry group j and zero otherwise, and allows for differences in the intercept term across five industry groups (see below); $Y_{s,it}$ is a dummy variable that takes the value of 1 if year t is equal to s and zero otherwise, and allows for differences in the intercept term across six years (see below); the α, β, δ and η terms are regression coefficients; and $e_{1,it}$ is a random error term. The first digit in each coefficient subscript refers to the number of the regression model, of which there are four in total (see below).

The explanatory variable of interest is $ILD_{it}/BVA_{i,t-1}$, which is the book-value-scaled investee-liability disclosure for material associates and all joint ventures. ILD_{it} is the amount by which the equity-accounted net investments in the investees for which disclosures are made would have to be grossed up to give the investor-firm share of the gross assets and liabilities of those investees. In the majority of cases for which a disclosure is made, the equity-accounted net investment appears as an asset on the investor firm's balance sheet. In such cases, ILD_{it} comprises the investor-firm share of the total liabilities of the relevant investees. In some cases a disclosure is made where the equity-accounted investor-firm share of investee net liabilities is recorded within provisions by the investor firm. In such cases, ILD_{it} comprises the investor-firm share of the total assets of the relevant investees, equal to the investor-firm share of the total liabilities of the relevant investees less the provi-

sion already recorded by the investor firm in respect of its share of those investees' net liabilities.[5] ILD_{it} does not reflect liabilities of non-material associates that are not disclosed in the financial statements of the investor firm. In light of the fact that the requirement for UK firms to make investee-liability disclosures was partly motivated by concern that single-line equity accounting was being used as an off-balance-sheet financing device which had the effect of concealing the level of group gearing (ASB, 1996; Crichton, 1996; Johnson and Holgate, 1996), and in light of the US findings of Bauman (2003), we predict that the coefficient on these mandated disclosures is negative ($\beta_{11} < 0$).

The other variables on the right-hand side of model (1) are control variables. We predict a positive coefficient on book value of assets ($\beta_{12} > 0$) and a negative coefficient on book value of liabilities ($\beta_{13} < 0$). The dummy variable for loss cases is included because of the evidence in Hayn (1995) that losses have a lesser impact on firms' market value than profits. β_{14} is the coefficient on net income for profit cases and β_{15} is the coefficient on net income for loss cases less the coefficient on net income for profit cases; we predict $\beta_{14} > 0$ and $\beta_{15} < 0$. The control variables used in model (1) also appear in models (2), (3) and (4) described below, and their predicted signs in these models are as in model (1).

We also estimate two further regression models, each of which is an expansion of model (1), in order to examine the value relevance of different classes of investee-liability disclosure. We test whether there is a difference in the value-relevance regression coefficients (i) between investee-liability disclosures for associates and investee-liability disclosures for joint ventures and (ii) between investee-liability disclosures in the absence of investor-firm guarantees of investee-firm obligations and investee-liability disclosures in the presence of such guarantees. In model (2), investee-liability disclosures are divided into associate and joint venture components. In model (3), they are divided according to whether or not there is an investor-firm guarantee of investee-firm obligations, without distinguishing between associates and joint ventures, as in the model used by Bauman (2003). Models (2) and (3) are as follows:

$$\frac{MVE_{it}}{BVA_{i,t-1}} = \alpha_2 + \beta_{21}\frac{ILDA_{it}}{BVA_{i,t-1}} + \beta_{22}\frac{ILDJ_{it}}{BVA_{i,t-1}} \tag{2}$$

$$+ \beta_{23}\frac{BVA_{it}}{BVA_{i,t-1}} + \beta_{24}\frac{BVL_{it}}{BVA_{i,t-1}} + \beta_{25}\frac{NI_{it}}{BVA_{i,t-1}} + \beta_{26}\frac{NI_{it}}{BVA_{i,t-1}} \cdot LOSS_{it}$$

$$+ \sum_{j=2}^{5}\delta_{2,j}I_{j,it} + \sum_{s=1999}^{2003}\eta_{2,s}Y_{s,it} + e_{2,it},$$

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[5] It is possible that an equity-accounted net-asset position and an equity-accounted net-liability position, recorded within provisions, might appear within the same balance sheet. This is observed in a small number of cases in our data. In such cases, ILD_{it} comprises both the gross-up of a net-asset position and the gross-up of a net-liability position.

$$\frac{MVE_{it}}{BVA_{i,t-1}} = \alpha_3 + \beta_{31}\frac{ILD_{it}}{BVA_{i,t-1}}\cdot N_{it} + \beta_{32}\frac{ILD_{it}}{BVA_{i,t-1}}\cdot G_{it} \qquad (3)$$

$$+ \beta_{33}\frac{BVA_{it}}{BVA_{i,t-1}} + \beta_{34}\frac{BVL_{it}}{BVA_{i,t-1}} + \beta_{35}\frac{NI_{it}}{BVA_{i,t-1}} + \beta_{36}\frac{NI_{it}}{BVA_{i,t-1}}\cdot LOSS_{it}$$

$$+ \sum_{j=2}^{5}\delta_{3,j}I_{j,it} + \sum_{s=1999}^{2003}\eta_{3,s}Y_{s,it} + e_{3,it},$$

where: $ILDA_{it}$ and $ILDJ_{it}$ are the separate investee-liability disclosures for firm i's associates and joint ventures, respectively; $N_{it}(G_{it})$ is a dummy variable that takes the value of 1 if there is not (if there is) an investor-firm guarantee of investee-firm obligations and zero otherwise; and other notation is as previously defined. Our use of the dummy variables N_{it} and G_{it} in model (3) is as in the US study by Bauman (2003).

Regression coefficients in models (2) and (3) can be interpreted as follows: β_{21} is the coefficient on associate-liability disclosures; β_{22} is the coefficient on joint venture-liability disclosures; β_{31} is the coefficient on all investee-liability disclosures taken together where there is no investor-firm guarantee; β_{32} is the coefficient on all investee-liability disclosures taken together where there is a guarantee. Consistent with model (1), we predict a negative coefficient on each of the investee-liability disclosures in models (2) and (3) ($\beta_{21} < 0$, $\beta_{22} < 0$, $\beta_{31} < 0$, $\beta_{32} < 0$). Because the creditors of joint ventures might be more likely than those of associates to have explicit or implicit recourse to the assets of the investor firm, we predict that the coefficient on joint venture-liability disclosures is lower (more negative) than the corresponding coefficient on associate-liability disclosures ($\beta_{22} - \beta_{21} < 0$). Also, because of the recourse to the assets of the investor firm conferred by an investor-firm guarantee of investee-firm obligations and in light of the US findings of Bauman (2003), we predict that the coefficient on investee-liability disclosures is lower (more negative) in the presence of such guarantees than in the absence of such guarantees ($\beta_{32} - \beta_{31} < 0$).

Finally, we estimate a fourth model that combines the two dimensions considered in (2) and (3). This allows us to test whether there is a difference in the value-relevance regression coefficients (i) between associate non-guarantee cases and associate guarantee cases and (ii) between joint venture non-guarantee cases and joint venture guarantee cases. It also allows us to test whether there is a difference in the value-relevance regression coefficients (i) between associate non-guarantee cases and joint venture non-guarantee cases, and (ii) between associate guarantee cases and joint venture guarantee cases. In Model (4) below, AN_{it} (AG_{it}) is a dummy variable that takes the value of 1 if there is not (if there is) an investor-firm guarantee of associate obligations and zero otherwise; JN_{it} (JG_{it}) is a dummy variable that takes the value of 1 if there is not (if there is) an investor-firm guarantee of joint venture obligations and zero otherwise; and other notation is as previously defined.

Regression coefficients in model (4) can be interpreted as follows: β_{41} is the coefficient on associate-liability disclosures where there is no associate guarantee; β_{42} is the coefficient on associate-liability disclosures where there is an associate guarantee; β_{43} is the coefficient on joint venture-liability disclosures where there is no joint venture guarantee; β_{44} is the coefficient on joint venture-liability disclosures where there is a joint venture guarantee. Consistent with models (1), (2) and (3), we predict a negative coefficient on each of the investee-liability disclosures ($\beta_{41} < 0$, $\beta_{42} < 0$, $\beta_{43} < 0$, $\beta_{44} < 0$). Consistent with model (3), we predict that the coefficients on investee-liability disclosures are lower (more negative) in the presence of an investor-firm guarantee than in the absence of such a guarantee ($\beta_{42} - \beta_{41} < 0$, $\beta_{44} - \beta_{43} < 0$). Also, consistent with model (2), we predict that coefficients on joint venture-liability disclosures are lower (more negative) than the corresponding coefficients on associate-liability disclosures ($\beta_{43} - \beta_{41} < 0$, $\beta_{44} - \beta_{42} < 0$).

In light of the possibility that the relative complexity of model (4) might reduce its power to distinguish between guaranteed and non-guaranteed

$$\frac{MVE_{it}}{BVA_{i,t-1}} = \alpha_4 + \beta_{41}\frac{ILDA_{it}}{BVA_{i,t-1}}\cdot AN_{it} + \beta_{42}\frac{ILDA_{it}}{BVA_{i,t-1}}\cdot AG_{it} \qquad (4)$$

$$+ \beta_{43}\frac{ILDJ_{it}}{BVA_{i,t-1}}\cdot JN_{it} + \beta_{44}\frac{ILDJ_{it}}{BVA_{i,t-1}}\cdot JG_{it}$$

$$+ \beta_{45}\frac{BVA_{it}}{BVA_{i,t-1}} + \beta_{46}\frac{BVL_{it}}{BVA_{i,t-1}} + \beta_{47}\frac{NI_{it}}{BVA_{i,t-1}} + \beta_{48}\frac{NI_{it}}{BVA_{i,t-1}}\cdot LOSS_{it}$$

$$+ \sum_{j=2}^{5}\delta_{4,j}I_{j,it} + \sum_{s=1999}^{2003}\eta_{4,s}Y_{s,it} + e_{4,it},$$

associates and between guaranteed and non-guaranteed joint ventures, we also estimate the model in two restricted forms: (i) including joint venture disclosures, but not associate disclosures; (ii) including associate disclosures, but not joint venture disclosures. The relevant coefficients from these restricted forms of model (4) are very similar to those from the full model (4), and are not reported. The restricted forms of the models are referred to in the account of sensitivity tests given in subsection 5.2 below.

For the purposes of measuring differences between coefficients on different classes of investee-liability disclosure within regression models (2), (3) and (4) as described above, we re-estimate each model in an alternative incremental formulation in which each coefficient relating to investee-liability disclosures is equal to the difference between a pair of investee-liability-disclosure coefficients from the relevant model. The coefficients from these alternative incremental formulations of models (2), (3) and (4), and t-statistics thereon, are reported together with the results for those models.[6]

We also estimate each of models (1) to (4) separately for each of the six years covered by the study, exclusive of the dummy variable relating to the year ($Y_{s,it}$), and report the results from these yearly regression models in summary form.

The overall data set is trimmed of outliers by removing cases for which $MVE_{it}/BVA_{i,t-1}$, $ILD_{it}/BVA_{i,t-1}$, $BVA_{it}/BVA_{i,t-1}$, $BVL_{it}/BVA_{i,t-1}$ and $NI_{it}/BVA_{i,t-1}$ fall in the most extreme 2% of the distribution for that variable. The results from estimating each individual regression model are reported after deleting cases that meet the DFFITS cutoff criterion of Belsey, Kuh and Welsch (1980, p. 28) for that model.[7]

4. Data and descriptive statistics

The data used in this study are drawn from the set of UK listed non-financial firms for which financial statement and market value data are available from Extel and Datastream, respectively, for accounting year-ends from 23 June 1998, the mandatory adoption date for FRS 9, to 31 December 2003. We identify from balance-sheet data and income-statement data provided by Extel those firm-years where there is an investment in an associate and/or a joint venture, including cases where the firm's share of associate and/or joint venture net liabilities is recorded within provisions. For these firm-years, we obtain published financial statements from the Thomson Research database or from the Perfect Information database. From these financial statements, we identify the firm-years for which an FRS 9-mandated investee-liability disclosure is made, and note in each case the aggregate amount of the investee-liability disclosure,

the amount corresponding to associates and the amount corresponding to joint ventures. These amounts are used to construct the investee-liability-disclosure regression variables ILD, $ILDA$, and $ILDJ$. (From here on, notation referring to regression variables omits the subscripts and the scaling item.) In order to construct the dummy variables in respect of guarantees (N, G, AN, AG, JN and JG), we also note from the financial statements whether there is an investor-firm guarantee of investee-firm obligations, whether there is a guarantee of associate obligations and whether there is a guarantee of joint venture obligations.[8] A guarantee is deemed to exist if the investor firm provides a guarantee in respect of an investee firm's liabilities, performance or any of its contractual obligations.[9] In order to conduct tests of the sensitivity of our results to the use of more restrictive definitions of guarantees, we also note where there is a guarantee specifically in respect of an investee firm's liabilities and, where this is disclosed, we record information that is disclosed with regard to the amount of the guaranteed liabilities. For all firm-years for which an investee-liability disclosure is made, we obtain the following items from Extel (Extel item names in parentheses): book value of assets, denoted BVA in regression models (TotalAssets); book value of liabilities, denoted BVL in regression models (Debt + Creditors + OtherLiabilities + OtherLTLiabilities + TotalLiabMisc + (Deferred Liabilities − DeferredLiabMinorityInterest)); net income, denoted NI in regression models (ProfitAfterTax); creditor for dividends, used to restate the market value of equity to an ex-dividend basis (CreditorsDividendsDue). We also obtain the following items from DATASTREAM: market value of equity (item: HMV); return indices, used to adjust the market value of equity by the total return for the three months after the balance sheet date (data type: RI). For sensitivity tests referred to below, we also collect from Extel and Datastream the available financial statement and market value data for all firms for which no

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[6] For each of the three models, all results other than those relating to investee-liability disclosures are identical in both the initial formulation and the alternative incremental formulation.

[7] As indicated below, we test the sensitivity of the results to an alternative treatment of outliers.

[8] In all but one of the cases in which guarantees of equity-accounted investee-firm obligations are disclosed in the financial statements, it is stated whether they relate to associates, to joint ventures or to both. In the remaining case, it is not specified whether guarantees relate to associates or joint ventures, and we assume that they relate to both classes of investee.

[9] For accounting periods ending on or after 23 March 1999, the disclosure of guarantees in UK financial statements was required by FRS 12: *Provisions, Contingent Liabilities and Contingent Assets* (ASB, 1998). For earlier accounting periods, it was required by SSAP 18: *Accounting for Contingencies* (ASC, 1980).

Table 1
Profile of sample by year and industry

	Total number of firm-years available	Firm-years with investment in associate or joint venture	Firm-years with FRS 9-mandated associate- and/or joint venture-liability disclosure (used in the study)	Firm-years with gross equity method disclosure for joint venture(s)	Firm-years with materiality disclosure for associate(s)
Classified by year					
1998	825	285	127	108	29
1999	1,254	406	214	182	54
2000	1,286	400	221	197	45
2001	1,315	393	230	207	38
2002	1,304	364	219	200	38
2003	1,227	336	209	184	42
Total	7,211	2,184	1,220	1,078	246
Classified by industry group					
Consumer goods	1,204	340	167	111	56
Industrial	2,048	669	378	349	65
Mineral extraction	359	128	88	80	24
Services	3,497	971	519	472	91
Utilities	103	76	68	66	10
Total	7,211	2,184	1,220	1,078	246
Cases where equity-accounted net-liabilities are recorded			184	177	11
Guarantees:					
With investor-firm guarantee of investee-firm obligations			232	191	59
With investor-firm guarantee of investee-firm liabilities			174	146	43

Note: This table summarises the cases used in the study by year and by industry group, and provides information on net-liability cases and guarantee cases. The first column of data reports the numbers of firm-years for which accounting data and market value data for UK non-financial firms are available from Extel and Datastream, respectively, for accounting periods ended from 23 June 1998 (mandatory implementation date of FRS 9) to 31 December 2003. The second column reports the numbers of firm-years for which an equity-accounted investment in an associate and/or joint venture is recorded in the financial statements. The third reports the numbers of cases for which there is an FRS 9-mandated disclosure regarding the underlying asset and liability position of an equity-accounted investment in an associate and/or joint venture. This is the sample used in the study. The fourth and fifth columns report, respectively, the numbers of cases of those summarised in the previous column for which there is (i) a gross equity method disclosure regarding a joint venture and (ii) an associate materiality disclosure. We do not distinguish between 15% and 25% materiality disclosures. We also report for each FRS 9 disclosure category the numbers of firm-years for which an equity-accounted net liability is recorded within provisions. Under the heading of 'Guarantees', we report in the first row the numbers of firm-years in each FRS 9 disclosure category for which there are (i) an associate- and/or joint venture-liability disclosure and a guarantee of associate and/or joint venture obligations, (ii) a gross equity method joint venture disclosure and a guarantee of joint venture obligations, and (iii) an associate materiality disclosure and a guarantee of associate obligations. In the second row, we report corresponding figures for guarantees in respect of investee liabilities.

investee-liability disclosure is made.

Table 1 shows the breakdown of our data set by year, broad industry group and class of FRS 9-mandated investee-liability disclosure. The year and industry-group breakdowns correspond with the year and industry-group dummy variables included in regression models (1) to (4). There are 7,211 firm-years for which accounting and market value data are available from Extel and Datastream. In 2,184 of these firm-years (30% of 7,211), there are associate and/or joint venture investments. It is notable that the proportion of firms with investments in associates and/or joint ventures is particularly high in the utilities industry group.[10] In 1,220 of the 2,184 firm-years (56% of 2,184), there is an FRS 9-mandated associate-and/or joint venture-liability disclosure. Within the 1,220 FRS 9 investee-liability disclosures, there are 1,078 cases with joint venture gross equity method disclosures (88% of 1,220) and 246 cases with associate materiality disclosures (20%). We do not distinguish between 15% and 25% materiality disclosures. The table also reports for each FRS 9 disclosure category, the numbers of cases for which an equity-accounted net liability is reported within the investor firm's provisions. Of the 1,220 cases for which there is an associate- and/or joint venture-liability disclosure, there are 184 such cases (15%); of the 1,078 cases for which there is a joint venture gross equity method disclosure, there are 177 such cases (16%); of the 246 cases for which there is an associate materiality disclosure, there are 11 such cases (4%). The final two rows of the table report, respectively, the number of firm-years in each disclosure category for which there is an investor-firm guarantee of investee-firm obligations and, relevant to a sensitivity test referred to below, the number of firm-years in each disclosure category for which there is an investor-firm guarantee of investee-firm liabilities. Of the 1,220 cases for which there is an associate-and/or joint venture-liability disclosure, there are 232 cases (19%) where there is a guarantee of associate and/or joint venture obligations; of the 1,078 cases for which there is a joint venture gross equity method disclosure, there are 191 cases where there is a guarantee of joint venture obligations (18%); of the 246 cases for which there is an associate materiality disclosure, there are 59 cases where there is a guarantee of associate obligations (24%). The corresponding figures for liability guarantees are 174 (14%), 146 (14%) and 43 (17%), respectively.

Table 2 gives descriptive statistics for regression variables prior to outlier deletion, including non-zero cases of associate disclosures (ILDAs) and non-zero cases of joint venture disclosures (ILDJs), both unscaled and scaled by lagged book value of assets. The means for associate disclosures are higher than those for joint venture disclosures, which is understandable in light of the fact that FRS 9 required disclosure of investee liabilities for all joint ventures, but only required disclosure for associates if they were material. The statistics for the scaled data reveal the existence of some extreme cases that suggest the need for the outlier deletion referred to above. It is notable that some large losses cause the mean of scaled net income to be negative. Also, the median of book-value-scaled net income is only 4%, reflecting the relatively high proportion of loss cases in the period covered by the study.[11] Table 3 gives correlation coefficients between scaled variables used in regression model (1). These statistics are for the data after deletion of outliers, which reduces the data set from 1,220 cases to 1,167 cases. It is notable that the correlation between market value of equity and investee-liability disclosures overall is very close to zero (−0.01), and that the correlation between ILDAs and ILDJs is low (−0.12).

5. Results

5.1. Results from regression models (1), (2), (3) and (4)

Table 4 reports the results of estimating regression models (1), (2), (3) and (4). The first column lists the explanatory variables for the regression models, excluding the year and industry-group dummy variables, the second column gives the predicted signs of the regression coefficients, and the remaining four columns report the regression coefficients and related information for each of the four regression models. The table also reports results from the alternative incremental formulations of each of models (2), (3) and (4), which give the differences between pairs of regression coefficients on different classes of investee-liability disclosure. In each case, the difference reported is equal to the coefficient on the first-named regression variable less the coefficient on the second-named regression variable. Beneath each coefficient in Table 4, we report the *t*-statistic and the result of a significance test on the coefficient. For all coefficients, other than intercept terms, and for all differences between coefficients, significance tests are one-tailed. For the intercept terms, significance tests are two-tailed. For all regression coefficients, other than intercept terms, we also report the number of years out of six for which the coefficient is of the predicted sign and the number of years out of six for which it is of the predicted sign and significantly different from zero at the 5% level.

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[10] Outlier deletion did not result in significant variation from the distribution across time, industry group and disclosure category reported in Table 1.

[11] A loss is reported in about 38% of the 7,211 firm-years from which the data set is drawn, and in about 26% of the firm-years used in the study.

Table 2
Descriptive statistics for regression variables

	Number of cases	Mean	Standard deviation	Minimum	25th percentile	50th percentile	75th percentile	Maximum
Variables expressed in £m:								
MVE	1,220	2,670.57	11,171.72	0.22	47.05	217.55	1,164.32	187,287.79
ILD	1,220	218.64	810.34	<0.01	1.32	10.23	91.80	10,042.00
ILDA (non-zero cases only)	246	398.71	1,370.80	<0.01	3.89	20.00	156.00	9,954.00
ILDJ (non-zero cases only)	1,078	156.46	520.67	<0.01	1.20	8.35	86.00	6,212.00
BVA	1,220	2,917.31	11,758.48	0.30	73.57	314.44	1,746.95	172,390.00
BVL	1,220	1,536.77	4,603.55	0.10	33.44	199.90	1,131.95	55,331.39
NI	1,220	62.36	794.95	-15,679.00	-0.33	9.16	50.70	8,007.77
Variables expressed as a proportion of beginning-of-period total assets:								
MVE	1,220	2.98	45.59	0.01	0.39	0.69	1.40	1,586.89
ILD	1,220	0.19	2.07	<0.01	0.01	0.04	0.12	71.53
ILDA (non-zero cases only)	246	0.44	4.56	<0.01	0.04	0.07	0.15	71.53
ILDJ (non-zero cases only)	1,078	0.11	0.27	<0.01	0.01	0.03	0.10	5.06
BVA	1,220	1.42	3.42	0.04	0.96	1.06	1.21	85.55
BVL	1,220	0.70	0.75	0.02	0.47	0.61	0.78	13.05
NI	1,220	-0.03	0.57	-9.39	<0.01	0.04	0.08	5.25

Notes:
1. This table reports descriptive statistics in £m and as a proportion of previous-period assets, before deletion of outliers, for the 1,220 cases for which there is an investee-liability disclosure (see Table 1).
2. The notation used in the table is as follows:

ILD   MVE is the ex-dividend market value of equity of the investor firm at its balance sheet date, adjusted by the total return on the firm's shares for the three months after that date;

ILD   is the FRS 9-mandated investee-liability disclosure in respect of material associates and all joint ventures, taken together;

ILDA is the investee-liability disclosure for associates;

ILDJ is the investee-liability disclosure for joint ventures;

BVA is the book value of assets at the firm's balance sheet date, inclusive of its equity-accounted net investment in associates and/or joint ventures;

BVL is the book value of liabilities at the firm's balance sheet date, inclusive of any equity-accounted net-liability position recorded within provisions;

NI is the net income of the firm for the accounting period ended at the balance sheet date.

Table 3
Pearson correlation coefficients for regression variables

	MVE	ILD	ILDA	ILDJ	BVA	BVL	NI
MVE	1.00						
ILD	−0.01	1.00					
ILDA	0.02	N/A	1.00				
ILDJ	−0.02	N/A	−0.12	1.00			
BVA	0.50	0.05	0.00	0.05	1.00		
BVL	0.18	0.14	−0.04	0.18	0.52	1.00	
NI	−0.17	0.08	0.06	0.05	0.02	0.11	1.00

Number of cases: 1,167

Note:
This table reports the Pearson correlation coefficients for the following regression variables, scaled by previous-period assets and after outlier deletion as described in the text:
MVE   is the ex-dividend market value of equity of the investor firm at its balance sheet date, adjusted by the total return on the firm's shares for the three months after that date;
ILD   is the FRS 9-mandated investee-liability disclosure in respect of material associates and all joint ventures, taken together;
ILDA   is the investee-liability disclosure for associates;
ILDJ   is the investee-liability disclosure for joint ventures;
BVA   is the book value of assets at the firm's balance sheet date, inclusive of its equity-accounted net investment in associates and/or joint ventures;
BVL   is the book value of liabilities at the firm's balance sheet date, inclusive of any equity-accounted net-liability position recorded within provisions;
NI   is the net income of the firm for the accounting period ended at the balance sheet date.

For all four models, all control variables (*BVA*, *BVL*, *NI* and *NI·LOSS*) are of the predicted sign and significantly different from zero at the 1% level, *BVA*, *NI* and *NI·LOSS* are each of the predicted sign and significant in all six years, and *BVL* is of the predicted sign in four years and significant in one year.

Model (1) examines the value relevance of investee-liability disclosures (*ILDs*), without distinguishing between associate and joint venture cases and without distinguishing between guarantee and non-guarantee cases. The coefficient on the *ILD* is of the predicted negative sign and is significant. When the model is estimated separately for each of the six years from 1998 to 2003, the coefficient is of the predicted sign in all six years, although it is significant in only two years. The result suggests that FRS 9-mandated disclosures, which facilitated the grossing up of equity-accounted net investments in associates and joint ventures to reflect the investor-firm share of the liabilities of those investees, gave investors a negative signal consistent with the concerns about concealment of off-balance-sheet financing reflected in ASB (1994), ASB (1996), Bierman (1992), Crichton (1996), Johnson and Holgate (1996) and Milburn and Chant (1999). This finding is consistent with the US finding of Bauman (2003).

Model (2) shows whether the regression coefficient on investee-liability disclosures is lower (more negative) for joint ventures, over which the investor firm exercises joint control (regression variable: *ILDJ*), than for associates, over which it merely exercises significant influence (regression variable: *ILDA*). The coefficients on associate disclosures and on joint venture disclosures are each of the predicted negative sign; the coefficient on joint venture disclosures is significant whilst that for associate disclosures is not. When model (2) is estimated separately for each year, the coefficients on associate and joint venture disclosures are each of the predicted negative sign in five of the six years, the coefficient on associate disclosures is never significant, and the coefficient on joint venture disclosures is significant in only one year. In that the coefficient for joint ventures is significant whilst that for associates is not, the overall six-year findings are consistent with our prediction that the negative impact of joint venture disclosures is stronger than that of associate disclosures. However, the coefficient for joint ventures is higher (less negative) than that for associates, and in the yearly regression models the difference between the coefficients is of the predicted sign in only two of the six years, and is never significant.

Model (3) shows whether the regression coefficient on investee-liability disclosures is lower (more negative) in the presence of investor-firm guarantees of investee-firm obligations (regression variable: *ILD·G*) than in the absence of such guar-

Table 4
Regression results

Regression variable (scaling item and subscripts are suppressed in notation)	Predicted sign	Model (1) Coefficients (t-statistics) [years: note 3]	Model (2) Coefficients (t-statistics) [years: note 3]	Model (3) Coefficients (t-statistics) [years: note 3]	Model (4) Coefficients (t-statistics) [years: note 3]
Intercept	?	−1.06 (−7.46)**	−1.04 (−7.52)**	−1.04 (−7.37)**	−0.99 (−6.86)**
ILD	Negative	−0.34 (−2.06)* [6; 2]			
ILDA	Negative		−0.56 (−1.43) [5; 0]		
ILDJ	Negative		−0.33 (−2.07)* [5; 1]		
ILD·N	Negative			−0.34 (−1.86)* [5; 1]	
ILD·G	Negative			−0.37 (−1.47) [5; 0]	
ILDA·AN	Negative				−1.33 (−4.04)** [5; 3]
ILDA·AG	Negative				0.37 (0.65) [3; 0]
ILDJ·JN	Negative				−0.23 (−1.21) [5; 0]
ILDJ·JG	Negative				−0.73 (−3.01)** [6; 0]
BVA	Positive	1.50 (9.52)** [6; 6]	1.53 (10.03)** [6; 6]	1.50 (9.38)** [6; 6]	1.46 (8.66)** [6; 6]
BVL	Negative	−0.33 (−2.44)** [4; 1]	−0.37 (−2.70)** [4; 1]	−0.36 (−2.57)** [4; 1]	−0.35 (−2.49)** [4; 1]
NI	Positive	7.82 (10.53)** [6; 6]	7.76 (10.54)** [6; 6]	7.87 (10.62)** [6; 6]	7.96 (9.78)** [6; 6]
NI·LOSS	Negative	−10.48 (−10.57)** [6; 6]	−10.37 (−10.63)** [6; 6]	−10.47 (−10.72)** [6; 6]	−10.75 (−10.53)** [6; 6]

Table 4
Regression results *(continued)*

Regression variable (scaling item and subscripts are suppressed in notation)	Predicted sign	Model (1) Coefficients (t-statistics) [years: note 3]	Model (2) Coefficients (t-statistics) [years: note 3]	Model (3) Coefficients (t-statistics) [years: note 3]	Model (4) Coefficients (t-statistics) [years: note 3]
Differences (note 2):					
ILDJ less *ILDA*	Negative		0.23 (0.57) [2; 0]		
ILD·G less *ILD·N*	Negative			−0.03 (0.12) [4; 0]	
ILDA·AG less *ILDA·AN*	Negative				1.70 (2.70) [1; 0]
ILDJ·JG less *ILDJ·JN*	Negative				−0.50 (−1.90)* [5; 0]
ILDJ·JN less *ILDA·AN*	Negative				1.10 (3.04) [1; 0]
ILDJ·JG less *ILDA·AG*	Negative				−1.10 (−1.72)* [5; 1]
Adjusted R-squared		50.6%	50.8%	50.0%	48.5%
Number of cases		1,167	1,167	1,167	1,167

Notes:
1. Regression models are as follows:

$$\frac{MVE_{it}}{BVA_{i,t-1}} = \alpha_1 + \beta_{11}\frac{ILD_{it}}{BVA_{i,t-1}} \tag{1}$$

$$+ \beta_{12}\frac{BVA_{it}}{BVA_{i,t-1}} + \beta_{13}\frac{BVL_{it}}{BVA_{i,t-1}} + \beta_{14}\frac{NI_{it}}{BVA_{i,t-1}} + \beta_{15}\frac{NI_{it}}{BVA_{i,t-1}} \cdot LOSS_{it}$$

$$+ \sum_{j=2}^{5}\delta_{1,j}I_{j,it} + \sum_{s=1999}^{2003}\eta_{1,s}Y_{s,it} + e_{1,it} \,,$$

$$\frac{MVE_{it}}{BVA_{i,t-1}} = \alpha_2 + \beta_{21}\frac{ILDA_{it}}{BVA_{i,t-1}} + \beta_{22}\frac{ILDJ_{it}}{BVA_{i,t-1}} \tag{2}$$

$$+ \beta_{23}\frac{BVA_{it}}{BVA_{i,t-1}} + \beta_{24}\frac{BVL_{it}}{BVA_{i,t-1}} + \beta_{25}\frac{NI_{it}}{BVA_{i,t-1}} + \beta_{26}\frac{NI_{it}}{BVA_{i,t-1}} \cdot LOSS_{it}$$

$$+ \sum_{j=2}^{5}\delta_{2,j}I_{j,it} + \sum_{s=1999}^{2003}\eta_{2,s}Y_{s,it} + e_{2,it} \,,$$

$$\frac{MVE_{it}}{BVA_{i,t-1}} = \alpha_3 + \beta_{31}\frac{ILD_{it}}{BVA_{i,t-1}} \cdot N_{it} + \beta_{32}\frac{ILD_{it}}{BVA_{i,t-1}} \cdot G_{it} \tag{3}$$

$$+ \beta_{33}\frac{BVA_{it}}{BVA_{i,t-1}} + \beta_{34}\frac{BVL_{it}}{BVA_{i,t-1}} + \beta_{35}\frac{NI_{it}}{BVA_{i,t-1}} + \beta_{36}\frac{NI_{it}}{BVA_{i,t-1}} \cdot LOSS_{it}$$

$$+ \sum_{j=2}^{5}\delta_{3,j}I_{j,it} + \sum_{s=1999}^{2003}\eta_{3,s}Y_{s,it} + e_{3,it} \,,$$

Table 4
Regression results (continued)

$$
\frac{MVE_{it}}{BVA_{i,t-1}} = \alpha_4 + \beta_{41} \frac{ILDA_{it}}{BVA_{i,t-1}} \cdot AN_{it} + \beta_{42} \frac{ILDA_{it}}{BVA_{i,t-1}} \cdot AG_{it} \tag{4}
$$

$$
+ \beta_{43} \frac{ILDJ_{it}}{BVA_{i,t-1}} \cdot JN_{it} + \beta_{44} \frac{ILDJ_{it}}{BVA_{i,t-1}} \cdot JG_{it}
$$

$$
+ \beta_{45} \frac{BVA_{it}}{BVA_{i,t-1}} + \beta_{46} \frac{BVL_{it}}{BVA_{i,t-1}} + \beta_{47} \frac{NI_{it}}{BVA_{i,t-1}} + \beta_{48} \frac{NI_{it}}{BVA_{i,t-1}} \cdot LOSS_{it}
$$

$$
+ \sum_{j=2}^{5} \delta_{4,j} I_{j,it} + \sum_{s=1999}^{2003} \eta_{4,s} Y_{s,it} + e_{4,it} ,
$$

where:

MVE_{it} — is the ex-dividend market value of equity of the investor firm i at the balance sheet date t, adjusted by the total return on the firm's shares for the three months after that date;

$BVA_{i,t-1}$ — is the book value of assets of firm i at the previous balance sheet date t-1, inclusive of the equity-accounted net investment in associates and/or joint ventures, and is used to scale all variables in the model other than dummy variables;

ILD_{it} — is the FRS 9-mandated investee-liability disclosure of the investor firm i at the balance sheet date t in respect of material associates and all joint ventures, taken together;

$ILDA_{it}$ and $ILDJ_{it}$ — are the investee-liability disclosures for associates and joint ventures, respectively;

N_{it} (G_{it}) — is a dummy variable that takes the value of 1 if there is not (if there is) an investor-firm guarantee of investee-firm obligations, and zero otherwise;

AN_{it} (AG_{it}) — is a dummy variable that takes the value of 1 if there is not (if there is) an investor-firm guarantee of associate obligations, and zero otherwise;

JN_{it} (JG_{it}) — is a dummy variable that takes the value of 1 if there is not (if there is) an investor-firm guarantee of joint venture obligations, and zero otherwise;

BVA_{it} — is the book value of assets of firm i at the balance sheet date t, inclusive of the equity-accounted net investment;

BVL_{it} — is the book value of liabilities of firm i at the balance sheet date t, inclusive of any equity-accounted net-liability position recorded within provisions;

NI_{it} — is the net income of firm i for the period ended at the balance sheet date t;

$LOSS_{it}$ — is a dummy variable that takes the value of 1 if firm i reports a loss in the period ended at balance-sheet date t, and zero otherwise;

$I_{j,it}$ — is a dummy variable that takes the value of 1 if firm i is from industry group j, and zero otherwise;

$Y_{s,it}$ — is a dummy variable that takes the value of 1 if $t = s$, and zero otherwise;

the α, β, δ, and η terms are regression coefficients;

the e terms are random error terms.

2. For each regression variable, the table reports (i) the coefficient estimated from the overall six-year data set from 1998 to 2003, (ii) the t-statistic thereon (in parentheses), (iii) the result of a significance test on the coefficient, where * (**) indicates that the coefficient is significantly different from zero at the 5% (1%) level and (iv) except for intercept coefficients, information on regression coefficients for models estimated separately for each year [in square parentheses]. See note 3 for details of the information reported in respect of yearly regression coefficients. Under the heading of 'Differences', the table reports coefficients and related statistics from alternative incremental formulations of models (2), (3) and (4), where each coefficient relating to investee-liability disclosures is equal to the difference between a pair of investee-liability-disclosure coefficients reported above. For each of the alternative incremental formulations of models (2), (3) and (4), all other coefficients (and t-statistics thereon) are identical to those reported above, and are not separately reported. All t-statistics are calculated using the heteroskedasticity-consistent covariance matrix estimator (White, 1980). For the intercept terms, significance tests are two-tailed. For all other coefficients, including those from the alternative incremental formulations of models (2), (3) and (4), significance tests are one-tailed, with the predicted sign of each coefficient being given in the second column of the table.

3. The pairs of figures reported in square parentheses relate to the coefficients estimated when regression models are estimated separately for each of the six years from 1998 to 2003. The first figure of each pair indicates the number of years out of six for which the coefficient is of the predicted sign; the second figure of each pair indicates the number of years out of six for which the coefficient is of the predicted sign and significantly different from zero at the 5% level.

antees (regression variable: $ILD \cdot N$). Consistent with models (1) and (2), both coefficients are of the predicted negative sign; the coefficient for non-guarantee cases is significant, whilst that for guarantee cases is not. When model (3) is estimated separately for each year, the coefficients for each class are each of the predicted negative sign in five of the six years, the coefficient for non-guarantee cases is significant in only one year, and the coefficient for guarantee cases is never significant. Although the coefficient for guarantee cases is, as predicted, lower (more negative) than that for non-guarantee cases, the difference between coefficients is not significant. In the yearly regression models, the difference between coefficients is of the predicted sign in four out of six years, but is never significant. The lack of evidence in our results that the negative valuation impact of investee-liability disclosures is more pronounced in the presence of investor-firm guarantees contrasts with the conclusion of the US study by Bauman (2003).

Model (4) combines the two dimensions considered separately in models (2) and (3), in that it compares coefficients for investee-liability disclosures in respect of the following four cases: associate cases in the absence of associate guarantees (regression variable: $ILDA \cdot AN$); associate cases in the presence of associate guarantees (regression variable: $ILDA \cdot AG$); joint venture cases in the absence of joint venture guarantees (regression variable: $ILDJ \cdot JN$); joint venture cases in the presence of joint venture guarantees (regression variable: $ILDJ \cdot JG$). The coefficients for associate non-guarantee cases and for joint venture guarantee cases are of the predicted negative sign and are significant; the coefficient for joint venture non-guarantee cases is of the predicted negative sign, but is not significant; the coefficient for associate guarantee cases is positive, but would not be significantly different from zero in a two-tailed hypothesis test. With the exception of the coefficient for associate guarantee cases, these results are consistent with those for models (2) and (3) with regard to the negative sign of the coefficients on investee-liability disclosures. When model (4) is estimated separately for each year, the coefficients on investee-liability disclosures are of the predicted negative sign in three years for associate guarantee cases, and in

five or six years for the other three classes, but only in the case of associate non-guarantee disclosures are any of the yearly regression coefficients significant (three out of six). With regard to differences between coefficients, two of our predictions are supported by the results. The coefficient for joint venture guarantee cases is more negative than that for joint venture non-guarantee cases, and the difference is significant; also, the coefficient for joint venture guarantee cases is more negative than that for associate guarantee cases, and the difference is significant. In both cases, the difference between coefficients is of the predicted sign in five out of six years; the difference between coefficients for joint venture guarantee cases and joint venture non-guarantee cases is not significant in any year; the difference between coefficients for joint venture guarantee cases and associate guarantee cases is significant in one year only. Our prediction regarding the difference between the coefficients for associate guarantee cases and associate non-guarantee cases and our prediction regarding the difference between the coefficients for joint venture non-guarantee cases and associate non-guarantee cases are not supported: both differences are opposite to the predicted sign, and would be significantly different from zero in a two-tailed hypothesis test.

5.2. Sensitivity tests

We test the sensitivity of our results to a number of alternative procedures.

First, we test the sensitivity of our results to alternative methods for distinguishing between guarantee cases and non-guarantee cases. For this purpose, we repeat our analysis using data in which guarantee-related dummy variables are defined by reference to guarantees of liabilities, rather than by reference to guarantees of the broader category of 'obligations'. We also repeat our analysis using data in which investee-liability disclosures are divided into (i) amounts that we can identify from notes to the financial statements as likely to be viewed by readers as guaranteed by the investor firm (classified as 'guaranteed') and (ii) other amounts (classified as 'non-guaranteed'). Furthermore, we allow for the possibility that recognition within the investor firm's provisions of a negative (net-liability) equity-accounted investment might be interpreted as signalling the existence of an implicit guarantee of the investee's obligations. In order to do this, we repeat our analysis using data in which investee-liability disclosures in respect of all net-liability investees are treated as guaranteed, regardless of whether a guarantee is explicitly mentioned in the financial statements of the investor firm.[12]

Second, because comparability of the value relevance of associate-liability disclosures and joint venture-liability disclosures might be reduced due

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[12] This treatment of disclosures in respect of net-liability investees that are reflected within provisions will tend to overstate the extent of implicit guarantees under FRS 9. FRS 9 required that equity-accounted net liabilities should only be omitted from the investor firm's balance sheet if the investor firm had irreversibly withdrawn from its relationship with the investee (ASB, 1997, paragraphs 44–45). If the provisions had been recorded under IAS 28, the treatment in our sensitivity test would be clearly justified, since IAS 28 requires that net-liability cases should only appear on the investor firm's balance sheet if the investor firm has entered into an obligation with respect to the investee (IASB, 2003a, paragraphs 29–30).

to the fact that FRS 9 required disclosures for all joint ventures but only for material associates, the analysis is repeated using only those disclosures that relate to material associates and material joint ventures.

Third, the analysis is repeated using only those cases for which there is both an associate disclosure and a joint venture disclosure.

Fourth, the analysis is repeated including (i) all cases for which there is an associate and/or joint venture investment, regardless of whether an investee-liability disclosure is made, and (ii) all cases for which accounting and market value data are available from Extel and Datastream, respectively, regardless of whether there is an equity-accounted investment.

Fifth, as mentioned earlier, in light of the relatively complex nature of model (4), the model is estimated in two restricted forms: (i) including joint venture disclosures, but not associate disclosures; (ii) including associate disclosures, but not joint venture disclosures.

Finally, the analysis is repeated after deleting as outliers 1% of extreme cases, instead of 2% of cases.

None of these alternative procedures gives results that differ materially from those reported in Table 4.

5.3. Summary of results

Overall, our results suggest that FRS9-mandated investee-liability disclosures had a negative valuation impact. The value-relevance regression coefficient on all investee-liability disclosures taken together is negative and significant. Seven of the eight value-relevance regression coefficients for particular classes of investee-liability disclosures are negative, although only four of these are significant. The negative sign of the coefficients on investee-liability disclosures is consistent with the US findings of Bauman (2003). Contrary to our predictions, we do not find convincing evidence that joint venture disclosures overall have a stronger negative valuation impact than associate disclosures overall or that disclosures in guarantee cases overall have a stronger negative valuation impact than disclosures in non-guarantee cases overall. However, consistent with our predictions, we do find evidence that disclosures for joint venture guarantee cases have stronger negative value relevance than those for joint venture non-guarantee cases and those for associate guarantee cases. Our results should be viewed in light of the fact that, although our yearly value-relevance regression coefficients on investee-liability disclosures are of negative sign in 83% of cases (45 out of 54), they are significant in only 13% of cases (7 out of 54), but the weaker results from our yearly regression models may be due in part to the relatively

small sample sizes available for individual years.

A feature of our results is the lack of convincing evidence of a difference between the value relevance of investee-liability disclosures for joint ventures and those for associates. This could indicate that there is limited economic difference between joint ventures and associates, at least with regard to information on investee indebtedness disclosed in financial statements. We should also bear in mind the possibility that the distinction between the two types of investee entity may have been blurred because investor firms may have structured investments as associates rather than as joint ventures in order to avoid increased disclosure. This issue is not addressed in this study. However, the question of whether the existence of different accounting and disclosure requirements for different classes of investee may have influenced managers' choices with regard to how investments are structured would be a worthwhile subject for further research.

6. Conclusion

The issues of whether and how to reflect in investor-firm financial statements information about the liabilities of equity-accounted investees have given rise to some debate and to some differences in practice across GAAP regimes. This study examines the value relevance of disclosures mandated by the UK accounting standard FRS 9: *Associates and Joint Ventures* (ASB, 1997) regarding the investor-firm share of liabilities of equity-accounted associates and joint ventures. FRS 9 defined for the first time strict thresholds governing such disclosure by UK investor firms, and brought about a significant increase in disclosure. In light of the concerns about concealment of group gearing that partly motivated the investee-liability disclosure requirements of FRS 9, and the findings of previous US research, we predict that the mandated disclosures are negatively associated with the market value of equity of the investor firm. In light of the distinction that FRS 9 drew between joint ventures and associates because the former are subject to the investor firm's joint control whereas the latter are merely subject to its significant influence, and the possibility that the creditors of joint ventures might be more likely than those of associates to have explicit or implicit recourse to the assets of the investor firm, the study also examines whether the negative valuation impact of investee-liability disclosures is more pronounced for joint ventures than for associates. In light of findings of previous US research, it also examines whether the negative valuation impact of investee-liability disclosures is more pronounced in the presence of investor-firm guarantees of investee-firm obligations than in the absence of such guarantees.

Subject to caveats regarding the significance of results from yearly regression models, our results confirm the prior US finding of Bauman (2003) regarding the negative valuation impact of disclosures of the liabilities of equity-accounted investees. From the perspective of the accounting regulator, this evidence provides some confirmation of the value to investors of disclosures about liabilities of equity-accounted investees, and suggests that such disclosures are seen as negative signals, consistent with the concerns about off-balance-sheet financing that partly motivated the requirements for such disclosures. These results are supportive of revisions made to IAS 28: *Investments in Associates* (IASB, 2003a), which post-dated FRS 9 and which have required disclosure of associate liabilities for accounting periods beginning on or after 1 January 2005.

Our results relating to the distinction between joint ventures and associates have some relevance in light of the proposed revision of IAS 31: *Interests in Joint Ventures* (IASB, 2003b), which would eliminate the use of proportionate consolidation and require that joint ventures be accounted for by the equity method, as is required for associates. There is some evidence in our study that the value-relevance of investee-liability disclosures is more pronounced for guaranteed joint venture liabilities than for guaranteed associate liabilities. However, the lack of overall evidence of a difference between the value relevance of investee-liability disclosures for joint ventures and those for associates could indicate that there is limited economic difference between joint ventures and associates, at least with regard to information on investee indebtedness disclosed in financial statements, and we would not claim to report strong evidence of the need for different treatments for joint venture liabilities and associate liabilities. In any event, provided that the liabilities of equity-accounted joint ventures are required to be disclosed by way of note, separately from those of associates, the removal of the proportionate consolidation option in international GAAP would not significantly reduce the quality of information regarding the liabilities of joint ventures.

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