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Article

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Value relevance of proportionate consolidation versus the equity method: Evidence from Hong Kong



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ABSTRACT

Whether proportionate consolidation (PC) or the equity method (EM) provides more informative financial statements is a controversial issue. This study uses data from listed companies in Hong Kong to investigate the value relevance of the EM compared with PC during 2005–2008 when the local word-for-word equivalent HKAS 31 offered the same options. The results of this study provide evidence that PC does not offer higher value relevance than the EM. PC's horizontal aggregation of a portion of the operations, assets and liabilities of the jointly controlled entities with those of the venturer is less informative to investors than the EM's vertical aggregation.

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1. Introduction

This study investigates the value relevance of two alternative accounting methods, proportionate consolidation (PC) and the equity method (EM), which were introduced for reporting interests in jointly

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controlled entities¹ (JCEs) in International Accounting Standard No. 31 “Financial Reporting of Interests in Joint Ventures” (IAS 31 (1990))² (IASB, 1990; IASCF, 2010a). Consistent with the recent value relevance studies in the literature (e.g., O’Hanlon and Taylor, 2007; and as summarized in Barth et al., 2001), this study measures value relevance as the association between the key accounting amounts available from the companies’ financial statements and their share prices.

In September 2007, as part of its efforts to eliminate choices in the existing standards (IASCF, 2010b), the International Accounting Standards Board (IASB) published Exposure Draft No. 9 “Joint Arrangements” (ED 9 (2007)) (IASCF, 2007a), which proposed to eliminate the PC option for reporting interests in JCEs from IAS 31 (1990), allowing only EM. Ironically, PC is the benchmark method in IAS 31 (1990) (IASB, 1990; IASCF, 2010a). An analysis of the comment letters received on ED 9 (2007) revealed, however, that about two thirds of the respondents disagreed with the proposed elimination of PC (Deloitte, 2008). The IASB was criticized for its haste in achieving convergence by adopting the U.S. standard (which allows only EM) without undertaking a detailed analysis of the accounting alternatives to select the most appropriate method (e.g., Knorr, 2008; Maes, 2008).

Joint venture arrangements provide ready access to new markets, expertise and technology, and the ability to reduce costs and spread risk (Koh and Venkatraman, 1991). A joint venture is an important form of business arrangement, making it essential to establish clear guidance on its reporting.

This study aims to investigate whether EM and PC result in financial statements that provide different value relevance for investors in the capital market. The Conceptual Framework identifies investors as the primary users of financial reports and the reports are primarily intended to facilitate their value estimations (IFRSF, 2010). Empirical studies specifically comparing EM and PC are sparse and their broad focus is on selected accounting ratios and more specifically on their differential accounting return predictability (Graham et al., 2003) and bond riskiness relevance (Kothavala, 2003; Stoltzfus and Epps, 2005; Bauman, 2007). By examining the value relevance of the key accounting figures derived from EM versus PC financial statements, this study provides a stronger and more comprehensive empirical input for the debate on ED 9 (2007), and on the suitability of the IASB’s removal of the PC option from IAS 31 (1990).

In this study, we examine the value relevance of EM versus PC in the context of public companies listed on the Hong Kong Stock Exchange (HKSE) since 2005, for two reasons. First, since their full convergence on 1 January 2005, the local Hong Kong Financial Reporting Standards (HKFRS) replicate the International Financial Reporting Standards (IFRS) word-for-word and paragraph-for-paragraph. The Hong Kong Accounting Standards No. 31 “Interests in Joint Ventures,” issued in December 2004 (HKICPA, 2004) (HKAS 31 (2004)), carries the same alternative options for interests in JCEs, and the results of this study can therefore serve as a strong reference for IAS 31 (1990) in the IFRS. Second, HKSE listers are likely to

¹ IAS 31 (1990) defines a JCE as a joint venture arrangement that involves the establishment of a corporation, partnership or other entity in which each venturer has an interest. “Joint Arrangements” in ED 9 (2007), however, proposes replacing the term “JCE” with “joint venture” (IASCF, 2007a). ED 9 (2007) defines “joint venture” as a joint arrangement that is jointly controlled by venturers who do not have rights to individual assets or obligations for expenses of the venture but rather, each venturer is entitled to a share of the outcome (e.g., profit or loss) of the activities of the joint venture. “Joint venture” in ED 9 (2007) therefore has essentially the same meaning as “JCE” in IAS 31 (1990), where the venturers’ rights to the assets and liabilities of the venture are indirectly attained through their interests in the JCE. Throughout this paper, we use “JCE” to avoid an attempt to anticipate the outcome of ED 9 (2007), which is expected to be finalized in the first quarter of 2011 (IASB, 2011). The term “joint venture” is also used in this paper, but it refers to joint ventures in general. However, we admit that the definitions of “joint venture” under IAS 31 and ED 9 are not exactly the same. Under IAS 31, the definition is more based on the legal form of the joint arrangement. In contrast, under ED 9 the definition is mainly driven by the economic substance of the joint arrangement. This could be a caveat for our research.

² The two alternative accounting methods for JCEs (EM and PC) examined in this paper were first introduced in IAS 31 in 1990 by the former International Accounting Standards Committee (IASC). Although IAS 31 (1990) was reformatted in 1994, slightly amended in 1998, 1999 and 2000, re-adopted by the IASB in 2001, re-titled “Interests in Joint Ventures” in 2003, and further amended in 2004 and 2008 as a result of amendments in other accounting standards, no change has been made to the two alternative methods first introduced in 1990. Throughout this paper, reference is made to IAS 31 (1990), although it has been replaced by the subsequent updated versions and conveniently contained in the yearly bound volumes of the International Financial Reporting Standards (IFRSs) as approved at the beginning of each year.

have significant investments in joint ventures, especially those in mainland China,³ as a result of the latter's entry into the World Trade Organization, the popularity of Chinese–foreign joint ventures (Nippa et al., 2007) and the reported vast investments coming from Hong Kong in particular (Jiang, 2006). With the availability of more observations with more significant⁴ investments in joint ventures, the test power of this study will be higher.

Using models adapted from Easton and Harris (1991), Amir et al. (1993) and Barth (1994), this study provides evidence that PC does not offer higher value relevance than EM. Specifically, PC's horizontal aggregation of a portion of the operations, assets and liabilities of the JCEs is less informative to investors than EM's vertical aggregation.

This paper proceeds as follows. Section 2 describes joint venture accounting. Section 3 describes related studies and Section 4 details the research method. Section 5 discusses the empirical results, and the paper concludes in Section 6 with a summary and discussion of the research limitations.

2. Joint venture accounting

A JCE is an incorporated joint venture arrangement. Unlike investments in subsidiaries, control over a JCE is joint rather than exclusive and is shared with the other venturers through unanimous decisions on the financial and operating policies of the JCE (IASCF, 2010a, 2007a). It is the shared control over the essential activities of such an entity that gives rise to unique joint venture accounting issues.

2.1. Vertical versus horizontal aggregation

Technically, EM and PC are two very different methods and can significantly influence the amounts reported on the face of financial statements. The requirements for disclosure in the footnotes of the accounts are, however, essentially the same under the two methods.

IAS 31 (1990) allows a choice between the two methods but recommends PC as the benchmark method and permits EM as an alternative treatment. In contrast, the U.S. standard mandates EM (APB, 1971).

EM has been referred to as a “one-line consolidation,” whereby the venturer's interests in the JCE's individual assets and liabilities and individual income and expense items are “vertically” aggregated into a single line item on the balance sheet (labeled as “interests in JCE,” representing the venturer's share of the JCE's net assets) and income statement (labeled as “share of profit of JCE”), respectively. EM is illustrated in Panel A of Exhibit 1. Because the IFRS mandates EM for investments in associates,⁵ full details about EM are provided in IAS 28 “Investments in Associates” (IASCF, 2010c).

PC, in contrast, involves a “horizontal” line-by-line “bringing together” of the venturer's share of each of the individual assets and liabilities, income and expense items of the JCE with the venturer's own items (IASCF, 2010a). In taking a line-by-line approach, the method is similar to the full consolidation method as applied to subsidiaries, but dissimilar because only the venturer's share of the JCE is included.

In PC (IASCF, 2010a), two reporting formats may be used for the “bringing together.” The venturer may aggregate the venturer's share of each of the individual assets and liabilities, income and expense items of the JCE horizontally with the venturer's own items line-by-line. Alternatively, the venturer may maintain them in separate line items. The two reporting formats are illustrated in Panels B1 and B2 of Exhibit 1 and are labeled as “combined” and “separate” formats, respectively.

³ Mainland China, Continental China and the Chinese mainland are geopolitical terms that refer to the area under the jurisdiction of the People's Republic of China, excluding Hong Kong and Macau, which run on different economic and political systems. This is the so-called one country, two systems.

⁴ As of 31 December 2008, 202 HKSE listers had interests in JCEs (comprising 23% of the total 867 HKSE listers with December year ends). Of the 342 observations (firm-years) in this study, 304 had JCEs in mainland China, of which 18 had 20–43 such JCEs and the mean number of mainland China JCEs per observation was 4.44.

⁵ An associate is an entity over which the investor has significant influence and is neither a subsidiary nor an interest in a joint venture (IASCF, 2010c). It is presumed that an investor has significant influence if the investor holds, directly or indirectly (e.g. through subsidiaries), 20% or more of the voting power of the investee, unless it can be clearly demonstrated that this is not the case (IASCF, 2010c).

The separate format of PC is, however, rarely used in practice,⁶ presumably because it results in large and cumbersome statements. This separate format is therefore not examined in this study. Throughout this paper, the term “PC” refers to the combined format of PC.

IAS 31 (1990) also has specific requirements for the supplementary disclosure in the notes to the accounts. It requires that a venturer using EM or the combined format of PC also disclose the aggregate amounts of current assets, non-current assets, current liabilities and non-current liabilities and income and expenses related to its interests in JCEs. These additional disclosures closely resemble those that are otherwise presented on the face of the financial statement if the separate format of PC is adopted. No supplementary disclosure in the notes to the accounts is therefore required for the separate PC format in IAS 31 (1990). In this paper, which limits its scope to EM and the combined format of PC, there is therefore no difference in their supplementary footnote disclosure requirements.

Although EM and PC differ only in their means of aggregation, the resulting accounting amounts presented in financial statements are, however, different except for the bottom-line profit and shareholders’ equity, which are the same regardless of whether EM or PC is used. This study focuses on the key accounting amounts of total operating income (or revenue), total operating expenses, other income and expenses (net) and total assets and liabilities, which are intrinsically different under EM and PC.

2.2. Arguments for and against

The arguments for and against the two methods are discussed at great length in a special report “Reporting Interests in Joint Ventures and Similar Arrangements,” issued by the U.S. FASB in cooperation with the G4 + 1⁷ in September 1999 (Milburn and Chant, 1999). There are two main issues in the arguments: (1) the control debate, and (2) the need for informativeness about the assets and liabilities of JCEs. The former revolves around the accounting definitions of assets and liabilities and tends to reject PC, while the latter assumes a user’s perspective and tends to disapprove of EM. Testing definition-based arguments is difficult because it depends on the validity of the definitions themselves. This paper aims to clarify the second issue, informativeness, by testing empirically whether accounting amounts reported in PC financial statements provide a higher association with share prices than those in EM financial statements. A higher association indicates that the information is more relevant to the investors (as the major group of users of financial statements) and is therefore more informative.⁸

2.2.1. Control debate

The two methods can be compared in terms of their consistency with the definitions of an asset in terms of “control” and a liability as a present obligation. Such comparison tends to disprove PC. This is also the main concern raised in ED 9 (2007): by adding the venturer’s share of assets and liabilities line-by-line horizontally to those of the venturer’s, “PC can lead to the recognition of assets that are not controlled and liabilities that are not obligations” (IASCF, 2007b Paragraph BC 8). A venturer shares control of the activities of the JCE via “shared decisions” only. ED 9 (2007) stresses that “when a party has an interest in only a share of the outcome generated by the activities of a group of assets and liabilities that it jointly controls, the only asset it controls is its investment in the joint venture”⁹ (IASCF, 2007c Paragraph IN8). This is the only asset that is recognized using EM.

⁶ None of the sample companies in this study follows the “separate” format of PC.

⁷ G4 + 1 was an informal group formed in the early 1990 s, initially comprising representatives of the Australian Accounting Standards Board, Canadian Accounting Standards Board, United Kingdom Accounting Standards Board, U.S. FASB and observation by the former International Accounting Standards Committee (IASC, reorganized into the International Accounting Standards Board, IASB, in 2001). It aimed to work cooperatively on new issues in financial reporting and to eliminate some of the accounting differences between countries. Its activities came to a halt in 2001 when the former IASC was restructured into the IASB, which is designed to include an active partnership with national standard setters to achieve global convergence.

⁸ “Joint venture” in ED 9 (2007) is essentially the same as “JCE” in IAS 31 (1990), where the venturer’s interest in the assets and liabilities of the JCE are indirect. This paper continues to use “JCE” because it is more descriptive and less generic.

⁹ The “expanded EM” of accounting presents the venturer’s proportionate interest in major classes of assets, liabilities, revenues and expenses (e.g., property, plant and equipment, intangibles, current assets, cost of sales, operating expenses, etc.) of a JCE as separate line items within the venturer’s financial statements (Dieter, Wyatt, & Reklau, 1978). The “expanded equity method” is equivalent to the “separate” format of proportionate consolidation in IAS 31 (1990).

2.2.2. Informativeness debate

The vertically aggregated consolidation of EM has been criticized as uninformative in conveying the scope of operation and the assets and liabilities of the venturer because it reports its share of the JCE net asset only in one line. EM is sometimes regarded as enabling a venturer to avoid balance sheet recognition of its share of the JCE's individual assets and liabilities, to hide debts and facilitate off-balance-sheet activities (e.g., [Milburn and Chant, 1999](#)). Similarly, [Penman \(2007\)](#) and [White, Sondhi and Fried \(2003\)](#) comment that EM income statements lack detail on the venturer's share of JCE revenues and expenses, and effective financial analyses are potentially hindered as a result.

Mathematically, EM tends to improve financial ratios. For example, by including the venturer's share of JCE earnings in the profit for the period while at the same time excluding the sales revenue and asset base used to generate these earnings, EM reports a higher profitability margin and return on assets although return on equity is unaffected. Similarly, netting joint venture assets and liabilities in the "interests in JCE" account results in a lower leverage ratio, and shielding JCE interest expense in the one-line presentation of "share of JCE profit" results in higher interest coverage ([Bauman, 2003](#)). This is illustrated in Panel C of Exhibit 1.

Proponents of PC strongly believe that because PC involves less aggregation (line-by-line horizontal aggregation), it provides more useful information (e.g., [Feld et al., 2008](#)). Thus, the issue for the proponents of PC is not whether there are faults in the underlying conceptual validity, but whether the resulting accounting information is more useful for its users.

The informativeness debate is clearly an empirical question. This paper aims to provide an answer to this question by testing empirically the value relevance of EM versus PC statements.

3. Related studies

Practitioners and academics have discussed the issues concerning the concepts and procedures underlying the alternative accounting methods for joint ventures since the 1960s. [Kocan \(1962\)](#), [Nielsen \(1965\)](#) and [Reklau \(1977\)](#) suggest that PC should be used if joint ventures are a way to extend the venturers' activities, and the joint venture debts are in reality venturers' obligations. [Dieter et al. \(1978\)](#) recommend their "expanded EM,"⁹ which is essentially PC in the separate format. [Neuhausen \(1982\)](#) points out that EM may not provide useful information about the venturer's resources and obligations arising from its JCE investment. These viewpoints are largely consistent with the preference for PC in IAS 31 (1990) that "*the substance and economic reality are reflected in the consolidated financial statements of the venturer when the venturer recognizes its pro-rata share of interests in the assets, liabilities, income and expenses of the JCE using ... PC*" ([IASCF, 2010a](#) Paragraph 32).

[Bierman \(1992\)](#) uses finance theory to argue that PC is superior and should be used for all material intercorporate common stock investments, even majority-owned subsidiaries. [King and Lembke \(1994\)](#) also consider the contentious issue of joint venture accounting, recommending EM when the operations of the venturer and the joint venture are dissimilar and PC when they are similar. [Davies and Largay \(1999\)](#) perform a hypothetical analysis but find "*no substantive justification for continued use of the EM... due to the method's intrinsically limited informational characteristics*" ([Davies and Largay, 1999](#), p. 281). Instead, they recommend PC in two formats, combined or separate (labeled as "expanded EM"), as in IAS 31 (1990), depending on whether the operations of the venturer and the joint venture are similar or dissimilar. In contrast, the earlier mentioned FASB/G4 + 1 report ([Milburn and Chant, 1999](#)) reviews and concludes that EM is the more appropriate method, primarily because of the conceptual fault of the PC alternative. [Nobes \(2002\)](#) criticizes EM for its lack of independent theoretical justification, and warns that the pressure for international harmonization ("harmonization haste") can lead to worldwide use of bad methods as well as good ones, an issue also addressed in [Miller and Leo \(1997\)](#).

Addressing the concern that EM promotes off-balance-sheet activities, [Bauman \(2003\)](#) proxies the magnitude of off-balance-sheet activities concealed under EM by the incremental amount of assets/liabilities under *pro forma* PC. The finding that market participants place greater weight on off-balance-sheet liabilities than assets for companies that provide explicit guarantees of investee obligations provides some empirical support for PC in the financial statements.

There is also concern about the conceptual validity of using the same EM to account for both investments in JCEs and associates if the option of PC is removed for JCEs. Joint control typically envisages a higher degree of influence than that of a “significant influence” over an associate, although this is not supported by the results of related empirical studies (O’Hanlon and Taylor, 2007; Soonawalla, 2006).

To date, there are few empirical studies directly comparing EM and PC, and those that do focus on the implications for the venturer’s bond rating arising from the differential off-balance-sheet nature of the reported interests in the joint venture under the two methods. Using a sample of Canadian firms, Kothavala (2003) finds that accounting ratios such as leverage, return on assets and profit margin produced from EM statements are more relevant for bond ratings than are those from PC statements. As the findings are surprising, Bauman (2007) re-examines the issue using a sample of U.S. manufacturing firms and finds, in contrast, that PC ratios have greater bond rating relevance. He attributes the differing results to the greater sample homogeneity in his study. An earlier study by Stoltzfus and Epps (2005), using a sample of U.S. firms, also finds that selected PC-computed accounting ratios are more strongly associated with bond risk premiums, but the strong association is only for firms that guarantee the debt of their joint venture investments. Graham et al. (2003) examine the predictability of profits and find that PC provides more informative DuPont ratios than EM for predicting future returns on shareholders’ equity (book/accounting based) for a set of Canadian firms. Lourenco and Dias Curto (2010) examine the determinants of the management choice between EM and PC and their results support their prediction that venturers are more likely to change to PC when the majority of their JCEs are “linked” cases; i.e., when each venturer contributes its own critical resources to enter a new business and each controls its own share of the JCE assets and liabilities.

To the best of our knowledge, no study has directly compared the relevance of the two accounting practices for share pricing in the capital market (i.e., value relevance). Following Ball and Brown (1968), the examination of share price behavior is deemed to be an effective way to study investors’ behavior as a group, and an accounting number is value relevant to an investor if it is capable of influencing that investor’s decision, and has a predicted significant relation with the share price (Amir et al., 1993; Barth et al., 2001; Hu et al., 2014). Brown and Howieson (1998) identify a number of areas for future capital research in an accounting standard setting, one of them being joint venture accounting. This study aims to address this apparent gap in the literature and seeks to understand the value relevance of the two alternative accounting practices for joint ventures.

A review of the studies by Kothavala (2003), Graham et al. (2003), Stoltzfus and Epps (2005) and Bauman (2007) raises a common question about their research design—the use of artificial “pro forma” financial statements and the accounting ratios computed from them. These studies are conducted in either the U.S. or Canada, where only one method is allowed (Canada generally requiring PC and the U.S. requiring EM). To make comparisons between the two alternative methods, accounting numbers and ratios are computed from pro forma statements constructed for the other method “as if” the users have full knowledge about the differences in the two methods and have correctly made all of the necessary adjustments accordingly. Unlike these earlier studies, this study utilizes the uniqueness of the regulatory financial reporting setting in Hong Kong for accounting years beginning on or after 1 January 2005, when a choice between EM and PC was available. The use of differential reporting practices in Hong Kong enables us to examine the two alternative methods in a “real” setting where the “true” share price implications are known and measurable.

4. Research method

Value relevance research typically examines the association between accounting amounts and share price levels or firm value in aggregate (Landsman, 1986; Barth, 1994). Examining changes in share price levels, or returns, is an alternative approach to assessing value relevance (Easton and Harris, 1991; Amir et al., 1993). This study examines the association with both firm value and returns. Consistent results for both associations allow us to be more confident about the robustness of the subsequent inferences, despite the econometric limitations¹⁰ arising from the use of price-based models (Christie, 1987; Kothari and Zimmerman, 1995).

¹⁰ The econometric limitations of the price-based valuation and returns model are largely due to dependencies between the error term of the regression and the independent variables (Christie, 1987). These dependencies may be due to errors in variables, correlated omitted variables or variation in coefficients across observations (Christie, 1987).

Another frequently used model for value relevance research is that based on Ohlson (1995), which conveniently incorporates both the balance sheet and income statement effects in a single equation (Barth et al., 2001). Nevertheless, we do not use Ohlson's (1995) model in this study because its "clean surplus" assumption¹¹ is more restrictive than the accounting standard requirement (Barth 1994) and may not reflect the real situation.

The difference between EM and PC is not confined to just a few specific financial statement items. The difference is wide-ranging and simultaneously affects almost all of the reported items, except the bottom-line profit and shareholders' equity (or net assets). Because it is practically impossible to include all of the affected items, we focus on the key summary statement items that are affected by whether EM or PC is used. For the return model, we include total operating income (or revenue), total operating expenses and other income/expenses (net) reported on the income statements. For the firm value model, we include total assets and total liabilities reported on the balance sheets. By including a dummy variable in both models to indicate whether EM or PC is used during the accounting year, the value relevance of the two methods can be compared.

Control variables are also included in our regressions. To ensure that our results fully capture the effects from the key summary statement items, which are intrinsically different between EM and PC, we ensure that the control variables are measured in such a way that they are the same whether EM or PC is used.

Following Fan and Wong (2002) and Haw et al. (1999), we include typical control variables of firm size, growth opportunity, industry and accounting year. Because the use of EM or PC in the financial statements changes the amounts reported for total assets and total revenue, this study uses market capitalization to measure firm size. For the same reason, growth opportunity is measured by the market-to-book value of equity, which is not affected by the JCE method used.

Because previous studies suggest the possible impact of the operational similarity between a JCE and a venturer (King and Lembke, 1994; Davies and Largay, 1999), we also include control variables indicating whether the venturer provides a guarantee related to the JCE debt (Stoltzfus and Epps, 2005), whether a significant portion of business is conducted through JCEs (Feld et al., 2008), operational similarity, guarantee provision and the size of JCE interest. The size of JCE interest is measured as the venturer's share of JCE net assets as a proportion of the venturer's net assets, both of which are unaffected by the JCE method used.

While previous studies include leverage and return on assets (Fan and Wong, 2002; Kothavala, 2003; Graham et al., 2003; Stoltzfus and Epps, 2005; Bauman, 2007), this study uses the ratio of the venturer's share of the JCE's total liabilities to the venturer's own total liabilities (i.e., without including the venturer's share of the JCE's total liabilities) and return on equity to avoid the difference introduced by the use of either EM or PC in the financial statements.

Mainland China-based companies (red chips¹² and H-shares¹³) are significant in the Hong Kong stock market. The total market capitalization of these companies in December 2008 was HK\$5608 billion, representing 55% of the total market capitalization of all HKSE equities (51% in 2007, 48% in 2006 and 37% in 2005) (HKSE, 2005, 2006, 2007, 2008). These mainland China-based companies have to comply with HKFRS or IFRS in the same way as all other companies listed on the HKSE. However, because investors may have different criteria for these companies (Cheung et al., 2007), a dummy variable is included to distinguish them from the other Hong Kong-based companies.

¹¹ Ohlson's (1995) model expresses firm value in terms of accounting earnings and equity book value. Ohlson's "clean surplus" assumes that all changes in assets/liabilities (except those arising from dividends and capital contributions) must pass through the income statement, i.e., the change in book value is equal to earnings minus dividends (net of capital contributions).

¹² An H-share company is a company incorporated in mainland China but traded on the HKSE. H-share companies' activities are based in mainland China (HKSE 2004). Their financial statements are in Renminbi, the currency of mainland China, and are prepared following the mainland China accounting standards for reporting in mainland China and the IFRS or HKFRS for reporting in Hong Kong. Their shares are quoted in Hong Kong dollars on the HKSE. According to the statistics published by the HKSE, 1261 companies were listed on the HKSE by the end of 2008, of which 150 were H-share companies (HKSE, 2008).

¹³ A red chip company is a company incorporated outside mainland China and listed on the HKSE. Although red chips are not mainland-China-incorporated, they are controlled by mainland China entities (individuals or companies), by way of direct or indirect shareholdings and/or representation on the board of directors (HKSE 2004). If they are part of a mainland China group, their financial statements are to be consolidated and must be in Renminbi and prepared following the mainland China accounting standards. According to HKSE statistics, among its 1261 listed companies, 95 were red-chip companies (HKSE, 2008).

Although Hong Kong companies are free to choose their accounting year-end dates, 31 December is the most popular date, chosen by around 72% of HKSE companies from 2005 to 2008 (as estimated from Datas-tream). To ensure a simpler research design, this study includes only companies with 31 December year-ends. The sample years in this study are 2005–2008, covering the four-year period when the two alternative options for JCE accounting are available.

Because the choice between EM and PC is an endogenous decision for each company and the factors that determine the EM-PC choice can also influence the dependent variables in the study, we calculate the inverse Mills ratio¹⁴ (Heckman, 1976) and include it in both the return and firm value regressions to control for the possible selection bias in the estimations.

Following Haw et al. (1999), to mitigate the scale effect, we deflate all of the variables (except the dummy and ratio variables) in the returns association with the market value of common equity on the first day of the fifth month after the beginning of the accounting year, and those in the firm value association with the number of common shares outstanding on the last day of the fourth month after the end of the accounting year. As HKSE listed companies are required to announce their results and publish their annual reports within four months of the accounting year end, an important part of the analyses in this study is based on the 12-month period extending from the first day of the fifth month after the beginning of the accounting year until the last day of the fourth month after the end of the accounting year, which captures the period between the results announcements. As the sample companies in this study all have 31 December year-ends, the between-results announcement period is the 12-month period from May 1 to April 30 of the next year.

4.1. Return association

The return association approach is based on Beaver's (1981) information perspective on financial reporting, which posits that in response to the release of a company's financial statements, investors will analyze the statements for new and unexpected information and revise their beliefs about the company's future performance, causing movements in the company's share prices and resulting in abnormal returns to investors (as first hypothesized by Ball and Brown, 1968). Thus, financial statement information is informative and decision-useful or value-relevant if it results in abnormal returns to investors. Easton and Harris (1991) confine the financial information to reported income or earnings from the income statement and develop a model relating unexpected earnings to abnormal returns. Easton and Harris (1991) measure unexpected earnings by earnings change and earnings level. Earnings change is identified as the dominant measure, while earnings level is included to reduce the measurement error bias in the regression estimates¹⁵ (Brown et al., 1987; Easton et al., 1991). Amir et al. (1993) devise a simple method to measure an abnormal return as the difference between the company's return during the period and the return on the market portfolio, also known as the market-adjusted rate of return.¹⁶ The market-wide return is removed and the abnormal return thus obtained represents a company-specific return, a major indication of abnormal returns. Barth (1994) extends earnings to earnings components and examines the informativeness of a particular component—securities gains and losses. This study focuses on the key summary components of the venturer's earnings that are intrinsically

¹⁴ The inverse Mills ratio, named after John Mills, is a ratio commonly applied in regression analyses to take account of possible selection biases. Heckman (1976) proposed a 2-stage estimation procedure using the inverse Mills' ratio to overcome possible selection biases. In the first stage, a regression to observe a positive outcome of a particular selection is modeled with a probit model. The estimated parameters are then used to calculate the inverse Mills ratio, which is then included as an additional explanatory variable in the second stage OLS estimation.

¹⁵ Easton and Harris (1991) include earnings change (current earnings – previous earnings) as the dominant measure of unexpected earnings, assuming that earnings follow a random walk and previous earnings represent expected earnings. However, the evidence in Beaver and Morse (1978) suggests that earnings/price ratios are mean-reverting and thus the current earnings level may be a useful alternative measure of unexpected earnings. Brown et al. (1987) also demonstrate that multiple proxies for unexpected earnings may reduce the measurement bias in the regression estimates. Easton and Harris (1991) therefore include both earnings change and earnings level as measures of unexpected earnings, although earnings change is the dominant measure.

¹⁶ Brown and Warner (1980) find the market-adjusted rate of return, despite its simplicity, to perform reasonably well under a wide variety of conditions when compared with the more conventional market model used in Ball and Brown (1968) and other studies (e.g., Ball and Kothari, 1991).

different under EM and PC—total operating income (or revenue), total operating expenses and other income and expenses (net) from the income statements.

Following Easton et al. (1991), Amir et al. (1993) and Barth (1994), the regression equations below are used to evaluate the differential value relevance of EM versus PC key income statement components. The main variables of interest are the interaction variables $\Delta\text{INC} \times \text{METHOD}$, $\Delta\text{EXP} \times \text{METHOD}$ and $\Delta\text{OINC}/\text{EXP} \times \text{METHOD}$, which are constructed by interacting the EM versus PC variable of METHOD with the dominant measure of unexpected earnings – the earnings change component variables ΔINC , ΔEXP and $\Delta\text{OINC}/\text{EXP}$.

$$\begin{aligned} \text{AR} = & a_0 + a_1\text{METHOD} + a_2\text{INC} + a_3\text{EXP} + a_4\text{OINC}/\text{EXP} + a_5\Delta\text{INC} + a_6\Delta\text{EXP} \\ & + a_7\Delta\text{OINC}/\text{EXP} + a_8\Delta\text{INC} \times \text{METHOD} + a_9\Delta\text{EXP} \times \text{METHOD} + a_{10}\Delta\text{OINC}/\text{EXP} \\ & \times \text{METHOD} + a_{11}\text{SJCELIAB} + a_{12}\text{SJCENA} + a_{13}\text{SIMILAR} + a_{14}\text{GUAR} + a_{15}\text{SIZE} \\ & + a_{16}\text{GROW} + a_{17}\text{ROE} + a_{18}\text{MCHINA} + a_{19}\text{IND} + a_{20}\text{YR} + a_{21}\text{INVMR} \end{aligned} \quad (1)$$

The variables are defined as follows.

AR is the buy-and-hold¹⁷ abnormal return (adjusted for dividends and stock splits) for the 12 months beginning on the first day of the fifth month after the beginning of the accounting year, calculated using the market-adjusted return.

METHOD is a dummy variable that indicates whether EM or PC is used for JCE reporting during the accounting year; METHOD is set to one if PC is used during the accounting year, and zero otherwise.

INC is the company's total operating income (or revenue) in the accounting year, as available from the income statements, scaled by the market value of common equity on the first day of the fifth month after the beginning of the accounting year.

EXP is the company's total operating expenses in the accounting year, as available from the income statements, scaled by the market value of common equity on the first day of the fifth month after the beginning of the accounting year.

OINC/EXP is the company's other income and expenses (net) in the accounting year, as available from the income statements, scaled by the market value of common equity on the first day of the fifth month after the beginning of the accounting year.

ΔINC is the difference between INC in the current and previous accounting year, scaled by the market value of common equity on the first day of the fifth month after the beginning of the accounting year.

ΔEXP is the difference between EXP in the current and previous accounting year, scaled by the market value of common equity on the first day of the fifth month after the beginning of the accounting year.

$\Delta\text{OINC}/\text{EXP}$ is the difference between OINC/EXP in the current and previous accounting year, scaled by the market value of common equity on the first day of the fifth month after the beginning of the accounting year.

SJCELIAB is the venturer's share of the JCE's total liabilities relative to the venturer's own total liabilities at the end of the accounting year.

SJCENA is the venturer's share of the JCE's net assets relative to the venturer's net assets at the end of the accounting year.

¹⁷ While there is disagreement in the literature regarding the method for calculating long-run abnormal returns because of the inherent right-skewed non-normal distribution problem (Lyon et al., 1999), the choice of method is not as important for the measurement of short-run abnormal returns (Fama, 1998; Jakobsen and Voetmann, 2003). Because a horizon of 3–5 years is referred to in the literature as long-run, the 12-month abnormal returns in this study constitute short-run returns. Commonly used abnormal returns in event studies are buy-and-hold abnormal returns (BHAR) (monthly abnormal returns compounded) and cumulative abnormal returns (CAR) (monthly abnormal returns summed and averaged). Lyon et al. (1999) suggest BHAR as suitable for answering the question of whether sample firms earn abnormal returns over a particular period of time, while CAR is preferred where sample firms persistently earn abnormal monthly returns. Fewer data are collected for BHAR because the compounded monthly returns are simply the annual return; BHAR is therefore used in this study.

SIMILAR is a dummy variable to indicate whether the operations of the majority of the JCEs are similar to those of the venturer/venturer-group during the accounting year. SIMILAR is set to one if the operations are similar and zero otherwise.

GUAR is a dummy variable to indicate whether the venturer/venturer group provides a financial guarantee on the JCE debt. GUAR is set to one if a financial guarantee is provided and zero otherwise.

SIZE is the natural logarithm of the company's market capitalization at the end of the accounting year.

GROW is the ratio of the company's market-to-book value of equity at the end of the accounting year.

ROE is the ratio of the company's profit for the accounting year after preferred dividends divided by the equity at the beginning of the accounting year.

MCHINA is a dummy variable to indicate whether the company is mainland China-based during the accounting year. MCHINA is set to one if the company is a red chip or H-share company, and zero otherwise.

IND is a set of eight dummy variables IND1, IND2, IND3, IND4, IND5, IND6, IND7 and IND8 to indicate the company's industry in the accounting year, out of the nine industry sectors classified by the HKSE: conglomerates, consumer goods, energy, industrial goods, information technology, materials, properties and construction, services and telecommunications.

YR is a set of three dummy variables, YR1, YR2 and YR3, to indicate the four accounting years ending 31 December 2005, 2006, 2007 and 2008.

INVMR is the inverse Mills ratio computed from a probit regression of the EM-PC choice model, which includes company characteristic variables that may influence the likelihood of a company adopting EM or PC for their JCE interests:

$$\begin{aligned} \text{METHOD} = & x_0 + x_1 \text{SJCELIAX} + x_2 \text{SJCENA} + x_3 \text{SIMILAR} + x_4 \text{GUAR} + x_5 \text{SIZE} + x_6 \text{GROW} \\ & + x_7 \text{ROE} + x_8 \text{MCHINA} + x_9 \text{IND} \end{aligned}$$

The focus of this study is on the sign and significance of the differential slope coefficients a_8 , a_9 and a_{10} of the interaction variables $\Delta \text{INC} \times \text{METHOD}$, $\Delta \text{EXP} \times \text{METHOD}$ and $\Delta \text{OINC/EXP} \times \text{METHOD}$. As the dummy variable METHOD is coded 1 when PC is used, support for the higher value relevance of PC over EM is provided if the resulting coefficients a_8 and a_{10} (assuming net other income) are both individually significant and positive and a_9 is significantly negative. Conversely, if a_8 and a_{10} (a_9) turn out to be significantly negative (positive), it will provide support for the higher relevance of EM over PC.

Prediction is more straightforward for the separate value relevance of EM and PC. The value relevance of EM (i.e., when $\text{METHOD} = 0$) is assessed by the individual coefficients a_5 , a_6 and a_7 of ΔINC , ΔEXP and $\Delta \text{OINC/EXP}$, respectively. The value relevance of PC is assessed by the individual sums of the coefficients a_5 and a_8 , a_6 and a_9 , and a_7 and a_{10} . The signs of a_5 , a_7 , the sum of a_5 and a_8 , and the sum of a_7 and a_{10} are each expected to be positive, as they are the coefficients of ΔINC and $\Delta \text{OINC/EXP}$ (assuming net other income). The signs of a_6 and the sum of a_6 and a_9 are expected to be negative as they are the coefficients of ΔEXP .

4.2. Firm value association

An alternative value relevance model expresses firm value as a function of the book values of the firm's asset and liability components (Barth, 1994). Following Barth (1994), and with the control variables and inverse Mills ratio added as in the return association, the following regressions evaluate the differential value relevance of the key summary accounting amounts of total assets and total liabilities available from the EM versus PC statements of financial position.

$$\begin{aligned} \text{MV} = & b_0 + b_1 \text{METHOD} + b_2 \text{ASSET} + b_3 \text{LIAB} + b_4 \text{ASSET} \times \text{METHOD} + b_5 \text{LIAB} \\ & \times \text{METHOD} + b_6 \text{SJCELIAB} + b_7 \text{SJCENA} + b_8 \text{SIMILAR} + b_9 \text{GUAR} + b_{10} \text{SIZE} \\ & + b_{11} \text{GROW} + b_{12} \text{ROE} + b_{13} \text{MCHINA} + b_{14} \text{IND} + b_{15} \text{YR} + b_{16} \text{INVMR} \end{aligned} \quad (2)$$

where MV is the market value of common equity on the last day of the fourth month after the end of the accounting year, scaled by the number of common shares outstanding (adjusted for dividends and stock splits) on the last day of the fourth month after the end of the accounting year.

ASSET is the company's total assets at the end of the accounting year, as available from the statements of financial position, scaled by the number of common shares outstanding (adjusted for dividends and stock splits) on the last day of the fourth month after the end of the accounting year.

LIAB is the company's total liabilities at the end of the accounting year, as available from the statements of financial position, scaled by the number of common shares outstanding (adjusted for dividends and stock splits) on the last day of the fourth month after the end of the accounting year.

As in regression Eq. (1), the differential value relevance of PC over EM for the statements of financial position is assessed in Eq. (2) by the differential slope coefficients b_4 and b_5 of the interaction variables $ASSET \times METHOD$ and $LIAB \times METHOD$. If PC is of higher relevance, b_4 will be significantly positive and b_5 significantly negative. Conversely, if EM is of higher relevance, b_4 will be significantly negative and b_5 significantly positive.

Similar to the coefficients of ΔINC , ΔEXP and $\Delta OINC/EXP$ in regression Eq. (1), the coefficients of ASSET are expected to be positive and those of LIAB are expected to be negative, irrespective of whether EM or PC is used. The coefficients of EM are indicated by b_2 and b_3 while those of PC are indicated by the sum of b_2 and b_4 and the sum of b_3 and b_5 .

5. Empirical results

Data for this study are collected from two sources. The financial statement data are hand-collected from the financial statements published on the website of the HKSE <http://www.hkex.com.hk>. The Morgan Stanley Capital International (MSCI) Equity Hong Kong Index is used as the proxy for equity market return in Hong Kong. The equity market data, including the MSCI Equity Hong Kong Index, are obtained from Datastream.

5.1. Sample characteristics and descriptive statistics

Companies are eligible for selection if, during the 2005 to 2008 sample period, they had interests in JCEs at the year end(s) and (1) they are listed on the HKSE, (2) their accounting year ended on 31 December 2005, 2006, 2007 and 2008, (3) they are not in the finance and utilities industries, (4) their share of JCE total assets is higher than their share of JCE total liabilities, i.e., their share of JCE net assets is a positive amount, (5) they report positive values for their shareholders' equity, and (6) they did not change their accounting year ends, company names or HKSE listing codes during 2004–2008.¹⁸

After also excluding the cases with missing data, 398 firm-year observations remain. Extreme observations with less than 3% interest in a JCE (i.e., $JCESIZE < 3\%$) are also excluded to mitigate undue influence from these observations, yielding a final sample of 342 firm-year observations.

Table 1 provides the sample make-up according to the categorical characteristics of companies, as a whole and separated into EM and PC venturers. The number of sample companies available increases from 2005 to 2008 (43 to 136), showing that joint ventures were becoming more popular as a form of business arrangement. Throughout the sample years, more companies applied EM than PC (66% of the firm-years applied EM, and 34% PC), largely because the local Hong Kong Statement of Standard Accounting Practice No. 21 "Accounting for Interests in Joint Ventures" (HKSA, 2001), which was in force before 2005, mandated EM. In 2005, even though the convergence with the IFRS opened up PC as an alternative method, the popularity of EM was maintained among the HKSE listers.

Although not reported in Table 1, our sample includes six companies that changed from EM to PC in 2005 and five companies that changed from PC to EM in 2008. Checking against their annual report disclosures revealed that they made the change for convenience only. They were red chip or H-share companies (so-

¹⁸ We exclude 2004 because the earnings change variables ΔINC , ΔEXP and $\Delta OINC/EXP$ in the return regression model require data not only from the current year, but also from the previous year.

Table 1
Sample characteristics 342 firm-years.

	Equity method (number of companies)		Proportionate consolidation (number of companies)		Total (number of companies)	
<i>Year</i>						
2005	27	(63%)	16	(37%)	43	(12%)
2006	40	(61%)	25	(39%)	65	(19%)
2007	66	(67%)	32	(33%)	98	(29%)
2008	92	(68%)	44	(32%)	136	(40%)
	225	(66%)	117	(34%)	342	
<i>Industry sectors</i>						
Conglomerates	14	(70%)	6	(30%)	20	(6%)
Consumer goods	38	(64%)	21	(36%)	59	(17%)
Energy	19	(70%)	8	(30%)	27	(8%)
Industrial goods	11	(50%)	11	(50%)	22	(6%)
Information technology	1	(33%)	2	(67%)	3	(1%)
Materials	9	(60%)	6	(40%)	15	(4%)
Properties and construction	47	(75%)	16	(25%)	63	(19%)
Services	86	(66%)	45	(34%)	131	(38%)
Telecommunications	0	(0%)	2	(100%)	2	(1%)
	225	(66%)	117	(34%)	342	
<i>Whether mainland-China-based</i>						
Mainland-China-based	128	(67%)	63	(33%)	191	(56%)
Non-mainland-China-based	97	(64%)	54	(36%)	151	(44%)
	225	(66%)	117	(34%)	342	
<i>Whether financial guarantee provided to JCE debt</i>						
Financial guarantee provided	23	(55%)	19	(45%)	42	(12%)
Financial guarantee not provided	202	(67%)	98	(33%)	300	(88%)
	225	(66%)	117	(34%)	342	
<i>Operation similarity between venturer and its JCE(s)</i>						
Similar operations	166	(65%)	91	(35%)	257	(75%)
Dissimilar operations	59	(69%)	26	(31%)	85	(25%)
	225	(66%)	117	(34%)	342	

called mainland China-based companies in this study) that had chosen to change so that they could use the same JCE method for reporting in both Hong Kong and mainland China.¹⁹ As reported earlier, our results suggest that the HKSE listers continued to use EM in 2005 despite the availability of PC. However, this might not have been the case for the mainland China-based HKSE listers. As PC was mandated by the mainland China accounting standards in 2005 (MOFPRC, 2001), mainland China-based companies might have chosen to change to PC in 2005 to avoid keeping two sets of JCE accounts. For the same reason, when the mainland China accounting standards first mandated EM in 2008 (MOFPRC, 2006), mainland China-based HKSE listers might have decided to switch to EM. As a result, the 11 mainland China-based companies that changed methods in 2005 and 2008 clearly did so only for convenience. Unreported results confirm that their inclusion or exclusion has no effect on the results of this study.

The switch to EM of the five mainland China-based companies in 2008 contributed to the slightly increased popularity of EM over the sample years (63% in 2005 to 68% in 2008). The slight increase could also result from some companies believing (or being advised by their auditors) that it would be inevitable that the new standard would allow EM only. PC was therefore avoided by new joint ventures.

About 74% of the sample companies were from the services (38%), properties and construction (19%), and consumer goods (17%) industries. Other than the information technology and telecommunications industries, which had very few companies in the sample, and the properties and construction industry, which showed a

¹⁹ Refer to Notes 13 and 14 for the reporting requirements for red chip or H-share companies in mainland China.

higher application of EM (75% EM versus 25% PC), the popularity of EM versus PC was more or less the same across all of the other industries.

The proportion of mainland China-based companies in our sample was higher than among the HKSE listers (191 out of 343 (56%) versus 245 out of 1261 (19%) among the HKSE listers at 31 December 2008, as detailed in Notes 13 and 14). The relative predominance of mainland China-based companies in our sample is consistent with the likely predominance of mainland China JCEs held (as detailed in Note 5) by our sample companies. Most of the sample companies did not provide a financial guarantee for the JCE debt and had similar operations to their JCEs (88% and 75%). Their overall preference for EM over PC was similar to that

Table 2
Descriptive statistics 342 firm-years.

	N	Mean	SD	Max	Min
Control variables in OLS regressions					
<i>When equity method is used</i>					
Share of JCE liabilities over venturer's own total liabilities (%)	225	35.64	55.53	323.64	0.02
Share of JCE net assets over venturer's net assets (%)	225	13.92	13.45	75.76	3.12
Size (market capitalization at year end Dec 31) (HK\$m)	225	14,805	28,808	200,580	42
Growth (market-to-book value of equity)	225	1.44	1.24	6.60	0.17
Return on equity (%)	225	4.74	23.53	47.91	−89.62
<i>When proportionate consolidation is used</i>					
Share of JCE liabilities over venturer's own total liabilities (%)	117	46.58	117.04	719.66	0.00
Share of JCE net assets over venturer's net assets (%)	117	12.55	9.60	44.23	3.12
Size (market capitalization at year end Dec 31) (HK\$m)	117	9878	27,202	121,971	36
Growth (market-to-book value of equity)	117	1.32	0.96	4.25	0.17
Return on equity (%)	117	6.13	16.77	48.82	−44.06
Dependent variables in OLS regressions					
<i>When equity method is used</i>					
Abnormal return (%)	225	7.02	67.70	344.18	−89.15
Market value of common equity at Apr 30 (HK\$m)	225	15,033	25,567	139,968	84
<i>When proportionate consolidation is used</i>					
Abnormal return (%)	117	2.42	34.53	101.18	−96.33
Market value of common equity at Apr 30 (HK\$m)	117	9551	25,531	116,809	130
Key financial statement variables in ols regressions					
<i>When equity method is used</i>					
Total income (HK\$m)	225	34,139	187,749	1,582,449	30
Total expenses (HK\$m)	225	34,018	191,100	1,645,172	813
Other income and expenses (net) (HK\$m)	225	3836	24,068	229,760	−28,624
Total assets (HK\$m)	225	31,603	109,631	863,815	219
Total liabilities (HK\$m)	225	15,692	59,349	464,156	6
<i>When proportionate consolidation is used</i>					
Total income (HK\$m)	117	61,273	227,351	1,032,874	26
Total expenses (HK\$m)	117	60,115	222,463	1,010,491	23
Other income and expenses (net) (HK\$m)	117	4050	18,527	80,929	−14,862
Total assets (HK\$m)	117	44,907	134,006	608,199	381
Total liabilities (HK\$m)	117	24,845	72,067	321,730	33
Other financial statement data					
<i>When the equity method is used</i>					
Profit for the year (HK\$m)	225	3957	20,194	167,038	−28,730
Net assets (HK\$m)	225	15,910	50,755	399,659	113
Share of JCE profit (HK\$m)	225	138	366	2933	−1091
Share of JCE net assets (HK\$m)	225	1195	2035	13,785	15
<i>When proportionate consolidation is used</i>					
Profit for the year (HK\$m)	117	5208	23,387	103,311	−18,309
Net assets (HK\$m)	117	20,062	62,568	286,469	206
Share of JCE profit (JK\$m)	117	248	670	2749	−263
Share of JCE net assets (HK\$m)	117	1209	2669	12,294	14

Table 3

Pearson correlations (except industry and year dummy variables and interaction variables) 342 firm-years.

Return association regression (1)

	AR	METHOD	INC	EXP	OINC/ EXP	ΔINC	ΔEXP	ΔOINC/ EXP	SJCELIAB	SJCENA	SIMILAR	GUAR	SIZE	GROW	ROE	MCHINA
METHOD	−0.08															
INC	−0.14***	0.14***														
EXP	−0.14***	0.13***	0.99***													
OINC/ EXP	0.08	0.12***	0.06	0.12**												
ΔINC	0.03	0.10*	0.06	0.05	0.12**											
ΔEXP	0.01	0.08	0.16***	0.15***	0.13**	0.98***										
ΔOINC/ EXP	0.16***	0.07	−0.10*	−0.10*	0.54***	0.09*	0.09*									
SJCELIAB	0.09	0.06	−0.16***	−0.16***	−0.01	−0.11**	−0.12**	0.00								
SJCENA	0.05	−0.05	−0.15***	−0.14***	0.07	−0.07	−0.08	0.03	0.35***							
SIMILAR	−0.04	0.04	0.11	0.09*	−0.09*	−0.08	−0.08	−0.06	0.09	0.08						
GUAR	0.04	0.09	0.05	0.05	0.10*	0.13**	0.12**	0.13**	−0.11**	−0.11*	−0.11**					
SIZE	0.12**	−0.18***	−0.17***	−0.17***	0.16**	0.25***	0.20***	0.08	−0.15***	−0.15***	−0.07	0.23***				
GROW	0.09*	−0.05	−0.16***	−0.15***	0.10*	0.11**	0.08**	0.19***	0.13**	−0.03	−0.03	0.08	0.57***			
ROE	0.30***	0.03	−0.14**	−0.16**	0.36***	0.12**	0.08**	0.63***	−0.01	−0.02	−0.03	0.08	0.24***	0.20***		
MCHINA	0.15***	−0.03	0.12**	0.12**	0.16***	0.12**	0.12**	0.12**	−0.04	−0.15***	−0.14***	0.15***	0.38***	0.15***	0.16***	
INVMR	−0.10*	0.89***	0.06	0.06	0.16***	0.15***	0.12***	−0.01	−0.01	0.03	−0.01	−0.05	0.06	0.02	−0.01	0.01

Firm value association regression (2)

	MV	METHOD	ASSET	LIAB	SJCELIAB	SJCENA	SIMILAR	GUAR	SIZE	GROW	ROE	MCHINA
METHOD	−0.24***											
ASSET	0.41***	−0.18***										
LIAB	0.16***	−0.10**	0.85***									
SJCELIAB	−0.06	0.06	−0.16***	−0.18***								
SJCENA	0.00	−0.05	−0.07	−0.08	0.35***							
SIMILAR	−0.10*	0.04	0.07	0.03	0.09	0.08						
GUAR	0.05	0.09	0.19***	0.17***	−0.11**	−0.11*	−0.11**					
SIZE	0.44***	−0.18***	0.35***	0.32***	−0.15***	−0.15***	−0.07	0.23***				
GROW	0.40***	−0.05	0.11**	0.16***	0.13**	−0.03	−0.03	0.08	0.57***			
ROE	0.19***	0.03	0.12**	0.03	−0.01	−0.02	−0.03	0.09	0.24***	0.20***		
MCHINA	0.04	−0.03	0.21***	0.26***	−0.04	−0.15***	−0.14***	0.15***	0.38***	0.15***	0.16***	
INVMR	−0.16***	0.89***	−0.06	0.01	−0.01	0.03	−0.01	−0.05	0.06	0.02	−0.01	0.01

AR = buy-and-hold abnormal return (adjusted for dividends and stock splits) for the 12 months beginning on the first day of the fifth month after the beginning of the accounting year, calculated using market-adjusted return.

METHOD = dummy variable to indicate whether EM or PC is used for JCE reporting during the accounting year, METHOD is set to one if PC is used during the accounting year, and zero otherwise.

INC = company's total operating income (or revenue) in the accounting year, as available from the income statements, scaled by the market value of common equity on the first day of the fifth month after the beginning of the accounting year.

EXP = company's total operating expenses in the accounting year, as available from the income statements, scaled by the market value of common equity on the first day of the fifth month after the beginning of the accounting year.

OINC/EXP = company's other income and expenses (net) in the accounting year, as available from the income statements, scaled by the market value of common equity on the first day of the fifth month after the beginning of the accounting year.

INC = difference between INC in the accounting year and INC in the prior accounting year, scaled by the market value of common equity on the first day of the fifth month after the beginning of the accounting year.

EXP = difference between EXP in the accounting year and EXP in the prior accounting year, scaled by the market value of common equity on the first day of the fifth month after the beginning of the accounting year.

OINC/EXP = difference between OINC/EXP in the accounting year and OINC/EXP in the previous accounting year, scaled by the market value of common equity on the first day of the fifth month after the beginning of the accounting year.

SJCELIAB = venturer's share of the JCEs' total liabilities relative to the venturer's own total liabilities at the end of the accounting year.

SJCENA = venturer's share of the JCEs' net assets relative to the venturer's net assets at the end of the accounting year.

SIMILAR = dummy variable to indicate whether the operations of the majority of the JCEs are similar to those of the venturer/venturer-group during the accounting year. SIMILAR is set to one if the operations are similar and zero otherwise.

GUAR = dummy variable to indicate whether the venturer/venturer group provides a financial guarantee for the JCE debt. GUAR is set to one if a financial guarantee is provided and zero otherwise.

SIZE = natural logarithm of the company's market capitalization at the end of the accounting year.

GROW = ratio of the company's market-to-book value of equity at the end of the accounting year.

ROE = ratio of the company's profit for the accounting year after preferred dividends divided by the equity at the beginning of the accounting year.

MCHINA = dummy variable to indicate whether the company is mainland China-based during the accounting year. MCHINA is set to one if the company is a red chip or H-share company, and zero otherwise.

INVMR = inverse Mills ratio computed from a probit regression for EM-PC choice model which includes company characteristic variables that may influence the likelihood of a company adopting EM or PC for their JCE interests:

METHOD = $x_0 + x_1 \text{SJCELIAB} + x_2 \text{SJCENA} + x_3 \text{SIMILAR} + x_4 \text{GUAR} + x_5 \text{SIZE} + x_6 \text{GROW} + x_7 \text{ROE} + x_8 \text{MCHINA} + x_9 \text{IND}$.

MV = market value of common equity on the last day of the fourth month after the end of the accounting year, scaled by the number of common shares outstanding (adjusted for dividends and stock splits) on the last day of the fourth month after the end of the accounting year.

ASSET = company's total assets at the end of the accounting year, as available from the statements of financial position, scaled by the number of common shares outstanding (adjusted for dividends and stock splits) on the last day of the fourth month after the end of the accounting year.

LIAB = company's total liabilities at the end of the accounting year, as available from the statements of financial position, scaled by the number of common shares outstanding (adjusted for dividends and stock splits) on the last day of the fourth month after the end of the accounting year.

* Significant at 10%.

** Significant at 5%.

*** Significant at 1%.

in the entire sample (64–69% EM versus 31–36% PC), except when a financial guarantee was provided for the JCE debt; in these cases, the proportion applying PC was higher (55% EM versus 45% PC), which would be favorable to investors. When a financial guarantee was provided for the JCE debt, investors would probably prefer to have some information about the company's share of the JCE's individual assets and liabilities, and PC would easily make this information available to them.

Table 2 contains the descriptive statistics for the 342 firm-years in our sample, separated into EM and PC companies. On average, the companies that applied EM in our sample had a higher market capitalization but smaller financial statement numbers (market capitalization HK\$14,805 m–15,033 m, total assets/liabilities HK\$31,603 m/15,692 m and total income/expenses HK\$34,139/34,018) than those that applied PC (HK\$9551 m–9878 m, HK\$44,907 m/24,845 m, and HK\$61,273 m/60,115 m, respectively). They also, on average, had slightly higher growth and lower return on equity and offered their investors slightly higher abnormal returns (market-to-book value of equity 1.44, return of equity 4.74% and abnormal return 7.02%) than PC companies (1.32, 6.13%, and 2.42%, respectively). The scale of JCE interests held in our sample was, however, more or less similar on average, irrespective of whether the company applied EM or PC, as indicated by the share of JCE net assets over total net assets of 13.92% for EM versus 12.55% for PC; share of JCE liabilities over venturer's own total liabilities of 35.64% for EM versus 46.58% for PC; dollar amount for share of JCE profit of HK\$138 m for EM versus HK\$248 for PC; and dollar amount for share of JCE net assets of HK\$1195 for EM versus HK\$1209 for PC.

5.2. Correlation analysis

Table 3 reports the zero-order Pearson product moment correlations between the regression variables except the industry and year dummies and the interaction variables.

Among the regression variables, MV, INC, EXP, OINC/EXP, Δ INC, Δ EXP, Δ OINC/EXP, ASSET and LIAB are scaled variables. Their correlations with the other variables, especially the unscaled ones, are difficult to interpret. The discussion in this section therefore focuses more on the unscaled variables. The scaled variables MV, INC, EXP, OINC/EXP, Δ INC, Δ EXP, Δ OINC/EXP, ASSET and LIAB are included in the correlation analysis mainly to detect multicollinearity.

On the whole, the correlations reported in Table 3 are relatively low, although many are significant. The only exceptions are between INC and EXP ($r = 0.99$), Δ INC and Δ EXP ($r = 0.98$), ASSET and LIAB ($r = 0.85$) and METHOD and INVMR (0.89). These high correlations are understandable because they reflect the inclusion of variables that tend to change together or with another common firm characteristic (INC and EXP; Δ INC and Δ EXP; and ASSET and LIAB tend to change together as firm size changes) or are alternative measures of a certain firm characteristic (METHOD measures the actual JCE method used while INVMR is a statistically generated variable measuring the probability of a JCE method being selected based on firm characteristics that may influence the selection). In this study, tolerance and variance inflation factors are also assessed as part of the regression analysis to detect multicollinearity (Gujarati, 2008).

The correlations with AR are largely consistent with those with MV. Both AR and MV are negatively correlated with SIMILAR, suggesting that companies with JCEs with similar operations offer a lower AR and have a lower MV. Both AR and MR are, however, positively correlated with GUAR, SIZE, GROW, ROE and MACHINE, suggesting that companies that provide a guarantee for the JCE debt are larger and have higher growth and ROE, and companies that are mainland China-based offer higher abnormal returns and have a higher market price (measured as the market value of common equity scaled by the number of common shares outstanding). As expected, AR is positively correlated with Δ INC while MR is positively correlated with ASSET (measured as total assets scaled by the number of common shares outstanding).

The correlations of METHOD with the other variables (other than the scaled variables INC, EXP, OINC/EXP, Δ INC, Δ EXP, Δ OINC/EXP, ASSET and LIAB) are consistent with the earlier results from the descriptive statistics. For example, the significant negative correlation with SIZE (measured by natural logarithm of market capitalization) reflects that the EM companies have higher market capitalization.

5.3. Regression analysis

Table 4 reports the results from the return association and the firm value association models. The results from both models provide consistent evidence that EM has higher value relevance than PC for JCE reporting. The key summary income statement and statement of financial position amounts available from EM statements show higher associations with share prices than those from PC statements. This lends support to the elimination of PC.

Between the two models, a higher overall association, indicated by higher R^2 values and lower standard errors of residuals, is found with the firm value model. This is consistent with the typical findings in other studies that include both associations (e.g., Amir et al., 1993; Barth, 1994; Barth and Clinch, 1998; Aboody et al., 1999).

5.3.1. Return association

The results from the return association regression provide strong and consistent evidence that PC is of differentially lower relevance to investors than EM.

The signs and significance of the coefficients a_8 , a_9 and a_{10} of the interaction variables $\Delta\text{INC} \times \text{METHOD}$ ($t = -2.26$, $p = 0.024$), $\Delta\text{EXP} \times \text{METHOD}$ ($t = 2.22$, $p = 0.028$) and $\Delta\text{OINC/EXP} \times \text{METHOD}$ ($t = -1.87$, $p = 0.062$) from estimating Eq. (1) indicate that the key summary amounts from the PC income statement are of significantly lower value relevance than those from the EM income statements.

The lower value relevance of PC statements can also be observed in the change from a significant result for the EM income statements to a non-significant result for the PC income statements when they are assessed separately. The coefficients a_5 , a_6 and a_7 of the respective variables ΔINC , ΔEXP , and $\Delta\text{OINC/EXP}$ in Eq. (1) represent the value relevance of the EM income statements alone (i.e., when $\text{METHOD} = 0$). They are found to be significant and their signs are as expected (a_5 : $t = 4.44$, $p = 0.000$; a_6 : $t = -4.24$, $p = 0.000$; and a_7 : $t = 1.91$, $p = 0.057$). However, when the PC income statements are assessed separately by running Eq. (1) again but with METHOD set to 0 when PC is used, no significant results are observed (ΔINC : $t = -0.14$, $p = 0.892$; ΔEXP : $t = 0.20$, $p = 0.841$; and $\Delta\text{OINC/EXP}$: $t = -0.22$, $p = 0.829$).

5.3.2. Firm value association

The results from the firm value association regression are consistent with those from the return association regression: both are in favor of EM.

The signs and significance of the coefficients b_4 and b_5 of the interaction variables $\text{ASSET} \times \text{METHOD}$ ($t = -2.15$, $p = 0.032$) and $\text{LIAB} \times \text{METHOD}$ ($t = 1.86$, $p = 0.064$) from estimating Eq. (2) indicate that the key summary amounts from the PC statements of financial position are of significantly lower value relevance than those from the EM statements.

As with the income statements, evidence of the lower value relevance of PC can also be observed from the loss of significance for the PC statements of financial position. From Eq. (2), the coefficients b_2 of ASSET and b_3 of LIAB , which summarize the value relevance of the EM statements of financial position, are significant and their signs are as expected (b_2 : $t = 14.10$, $p = 0.000$; b_3 : $t = -10.99$, $p = 0.000$). However, no significant results are observed when the PC statements of financial position are assessed separately (ASSET : $t = 1.46$, $p = 0.144$; LIAB : $t = -1.15$, $p = 0.25$).

5.4. Multicollinearity and heteroscedasticity

Measures of tolerance and the variance inflation factor (VIF) suggest that the independent variables in the regression analysis (i.e., INC and EXP , ΔINC and ΔEXP , ASSET and LIAB , and METHOD and INVMR) are subject to multicollinearity, with VIFs of 577.93, 622.76, 102.59, 99.59, 61.51 and 57.54, respectively, all exceeding the commonly applied rule of thumb of $\text{VIF} = 10$ (Hair et al., 2009). In an attempt to mitigate multicollinearity, we re-run the regressions with (1) INC , EXP and OINC/EXP combined into one variable EARN (representing profit for the year), because INC and EXP (together with OINC/EXP) are not our main variables of interest and they are included in the return model to reduce the measurement error (Brown et al., 1987; Easton et al., 1991); (2) ΔEXP and $\Delta\text{OINC/EXP}$ combined into one variable $\Delta\text{EXPnetOINC/EXP}$ rep-

Table 4
Regression results.

	Return association Eq. (1) AR		Firm value association Eq. (2) MV	
	<i>a</i>	<i>t</i>	<i>b</i>	<i>t</i>
Intercept	158.35	1.33	−29.01	−1.58
METHOD	−11.71	−0.27	1.55	0.23
INC	−74.93***	−5.45		
EXP	74.42***	5.38		
OINC/EXP	−27.35***	−4.66		
ΔINC	75.24***	4.40		
ΔEXP	−74.04***	−4.24		
ΔOINC/EXP	14.07*	1.91		
ΔINC × METHOD	−80.16*	−2.26		
ΔEXP × METHOD	81.57**	2.22		
ΔOINC/EXP × METHOD	−15.99***	−1.87		
ASSET			0.88***	14.10
LIAB			−1.16***	−10.99
ASSET × METHOD			−0.55**	−2.15
LIAB × METHOD			0.77**	1.86
SJCELIAB	0.03	0.73	−0.02**	−2.33
SJCENA	0.11	0.34	0.06	1.22
SIMILAR	3.87	0.54	−3.56***	−2.97
GUAR	−10.02	−0.64	−2.84	−1.13
SIZE	−5.23	−1.01	1.64**	2.04
GROW	4.27	1.10	4.26***	6.90
ROE	1.15***	5.24	0.02	0.75
MCHINA	15.86**	2.19	−4.68***	−4.22
IND dummies	<i>Included but not reported</i>			
YR dummies	<i>Included but not reported</i>			
INVMR	−1.52	−0.06	−1.59	−0.41
F	6.56***		20.73***	
Adj R ²	0.33		0.59	
N	342		342	

AR = buy-and-hold abnormal return (adjusted for dividends and stock splits) for the 12 months beginning on the first day of the fifth month after the beginning of the accounting year, calculated using market-adjusted return.

MV = market value of common equity on the last day of the fourth month after the end of the accounting year, scaled by the number of common shares outstanding (adjusted for dividends and stock splits) on the last day of the fourth month after the end of the accounting year.

METHOD = dummy variable to indicate whether EM or PC is used for JCE reporting during the accounting year. METHOD is set to one if PC is used during the accounting year, and zero otherwise.

INC = company's total operating income (or revenue) in the accounting year, as available from the income statements, scaled by the market value of common equity on the first day of the fifth month after the beginning of the accounting year.

EXP = company's total operating expenses in the accounting year, as available from the income statements, scaled by the market value of common equity on the first day of the fifth month after the beginning of the accounting year.

OINC/EXP = company's other income and expenses (net) in the accounting year, as available from the income statements, scaled by the market value of common equity on the first day of the fifth month after the beginning of the accounting year.

ΔINC = difference between INC in the accounting year and INC in the prior accounting year, scaled by the market value of common equity on the first day of the fifth month after the beginning of the accounting year.

ΔEXP = difference between EXP in the accounting year and EXP in the prior accounting year, scaled by the market value of common equity on the first day of the fifth month after the beginning of the accounting year.

ΔOINC/EXP = difference between OINC/EXP in the accounting year and OINC/EXP in the prior accounting year, scaled by the market value of common equity on the first day of the fifth month after the beginning of the accounting year.

ASSET = company's total assets at the end of the accounting year, as available from the statements of financial position, scaled by the number of common shares outstanding (adjusted for dividends and stock splits) on the last day of the fourth month after the end of the accounting year.

LIAB = company's total liabilities at the end of the accounting year, as available from the statements of financial position, scaled by the number of common shares outstanding (adjusted for dividends and stock splits) on the last day of the fourth month after the end of the accounting year.

SJCELIAB = venturer's share of the JCEs' total liabilities relative to the venturer's own total liabilities at the end of the accounting year.

SJCENA = venturer's share of the JCEs' net assets relative to the venturer's net assets at the end of the accounting year.

SIMILAR = dummy variable to indicate whether the operations of the majority of the JCEs are similar to those of the venturer/venturer-group during the accounting year. SIMILAR is set to one if the operations are similar and zero otherwise.

GUAR = dummy variable to indicate whether the venturer/venturer group provides a financial guarantee for the JCE debt. GUAR is set to one if financial guarantee is provided and zero otherwise.

SIZE = natural logarithm of the company's market capitalization at the end of the accounting year.

GROW = ratio of the company's market-to-book value of equity at the end of the accounting year.

ROE = ratio of the company's profit for the accounting year after preferred dividends divided by the equity at the beginning of the accounting year.

MCHINA = dummy variable to indicate whether the company is mainland China-based during the accounting year. MCHINA is set to one if the company is a red chip or H-share company, and zero otherwise.

IND = set of eight dummy variables IND1, IND2, IND3, IND4, IND5, IND6, IND7 and IND8 to indicate the company's industry in the accounting year, out of the nine industry sectors as classified by the HKSE – conglomerates, consumer goods, energy, industrial goods, information technology, materials, properties and construction, services and telecommunications.

YR = set of three dummy variables, YR1, YR2 and YR3, to indicate four accounting years – year ended 31 December 2005, 2006, 2007 and 2008.

INVMR = inverse Mills ratio computed from a probit regression of the EM-PC choice model, which includes company characteristic variables that may influence the likelihood of a company adopting EM or PC for their JCE interests:

METHOD = $x_0 + x_1\text{SJCELIAB} + x_2\text{SJCENA} + x_3\text{SIMILAR} + x_4\text{GUAR} + x_5\text{SIZE} + x_6\text{GROW} + x_7\text{ROE} + x_8\text{MCHINA} + x_9\text{IND}$.

* Significant at 10%.

** Significant at 5%.

*** Significant at 1%.

resenting total operating expenses net of other income and expenses, because $\Delta\text{OINC}/\text{EXP}$ is not expected to change with firm size as much as ΔEXP and ΔINC do; and (3) LIAB dropped from the firm value regression and INVMR dropped from both the return and firm value regressions because they replicate, to some extent, the variables ASSET and METHOD, respectively, which are already included in the regressions. The new VIFs from the re-runs show that the multicollinearity problem is largely eliminated by these changes. The new VIFs of EARN, ΔINC , $\Delta\text{EXPnetOINC}/\text{EXP}$, and METHOD for the return model are reduced to 2.22, 11.29, 11.60 and 1.36 respectively; and the new VIFs of ASSET and METHOD for the firm value model are reduced to 1.41 and 2.08, respectively. The new results with the changes made to the variables are similar and continue to show that EM is of higher relevance, although the significance is generally weaker (for $\Delta\text{INC} \times \text{METHOD}$: $t = -1.65$, $p = 0.10$; $\Delta\text{EXPnetOINC}/\text{EXP} \times \text{METHOD}$: $t = 0.18$, $p = 0.08$; $\text{ASSET} \times \text{METHOD}$: $t = -2.16$, $p = 0.03$). We therefore make no adjustment for multicollinearity because the inclusion of INC and EXP, ΔINC and ΔEXP , ASSET and LIAB, and METHOD and INVMR, and the consistent results we obtain from them, increase the credibility of our results.

As heteroscedasticity often occurs in cross-sectional and time-series datasets, we check for it using White's procedure (White, 1980). Unreported t -scores based on White's (1980) heteroscedasticity-consistent standard errors are slightly lower for most of the independent variables than those reported in Table 4, which are based on OLS t -scores. All parameters remain significant, suggesting that heteroscedasticity is not a problem in this data set.

5.5. Sensitivity analysis

Morgan Stanley Capital International Equity Hong Kong is used as the proxy for equity market return in Hong Kong in the calculation of market-adjusted rates of return for the return association regression. We conduct a sensitivity analysis using the Hong Kong Hang Seng Composite Index as the proxy. Except for the adjusted R^2 , which is lowered by 1.47%, the results for the return association are almost the same as those obtained with the Morgan Stanley Capital International Equity Hong Kong proxy. The Hong Kong Hang Seng Composite Index covers 90% of the market capitalization of the shares listed on the Main Board of the HKSE and there are currently 200 constituent shares in this index.

We also examine whether our results are different if we drop the criterion for including only those observations with JCE net assets of $\geq 3\%$. We rerun both the return and firm value association regressions, first using larger samples of 380 and 366 observations with lower cutoffs of $\geq 1\%$ and $\geq 2\%$, and then using smaller samples of 272 and 227 observations with higher cutoffs of $\geq 5\%$ and $\geq 7\%$. The results do not vary signifi-

Table 5
Natural experiment results.

	Return association Eq. (1) AR		Firm value association Eq. (2) MV	
	<i>a</i>	<i>t</i>	<i>b</i>	<i>t</i>
Intercept	0.36 [*]	1.91	−86.77 ^{***}	−23.25
D2008	−0.15 ^{***}	11.72	0.67	−1.39
INC	−21.07 ^{***}	3.12		
EXP	83.74 ^{***}	10.61		
OINC/EXP	−26.31 ^{***}	−6.62		
ΔINC	64.86 ^{***}	7.15		
ΔEXP	−92.30 ^{***}	8.79		
ΔOINC/EXP	8.89 ^{***}	9.83		
ΔINC × D2008	−61.14 ^{***}	−2.79		
ΔEXP × D2008	93.69 ^{***}	7.43		
ΔOINC/EXP × D2008	−6.66 ^{***}	−7.26		
ASSET			0.31 ^{***}	4.33
LIAB			−0.92 ^{***}	−8.19
ASSET × D2008			−0.23 ^{***}	−7.28
LIAB × D2008			0.78 ^{***}	6.09
SIZE	6.51	−1.01	1.21 ^{**}	24.76
GROW	−3.61 ^{***}	1.10	4.80 ^{***}	15.31
ROE	1.05 ^{***}	5.24	0.28 ^{***}	10.82
INDUSTRY dummies	Included but not reported			
Adj R ²	0.10		0.79	
N	97,449		97,449	

Note: D2008 = A dummy variable equals one if the fiscal year is before 2008, and zero otherwise.

cantly, and continue to suggest that EM statements are of significantly higher relevance. The only exception to this finding is that when the cutoff is lowered to $\geq 1\%$, the coefficients of the interaction variables in the firm association regression are no longer significant (b_4 of ASSET × METHOD: $t = -1.32$, $p = 0.19$; and b_5 of LIAB × METHOD: $t = 0.83$, $p = 0.41$). In practice, however, it is uncommon for companies to have such small JCEs: only 18 companies (i.e., 4.52%) of the 398 companies in our sample have JCEs with relative net assets $\geq 1\%$.

5.6. Additional test

To address the potential endogeneity concern, such as omitted variable issues, we use the replacement of EM over PC in mainland China as a research setting to conduct a difference-in-differences analysis. In mainland China, companies used PC following the “Interim Standards on Consolidated Financial Statements” before 2008. In 2008, because of the convergence to International Accounting Standards, PC was eliminated and EM was mandated from then on. This provides an appealing research setting for conducting a quasi-natural experiment to test whether PC or EM leads to more informative accounting information. We compare the value relevance before and after the replacement of PC by EM. Specifically, to test our research questions, we regress the following difference-in-difference models:

$$\begin{aligned} \text{AR} = & a_0 + a_1\text{D2008} + a_2\text{INC} + a_3\text{EXP} + a_4\text{OINC/EXP} + a_5\Delta\text{INC} + a_6\Delta\text{EXP} + a_7\Delta\text{OINC/EXP} \\ & + a_8\Delta\text{INC} \times \text{D2008} + a_9\Delta\text{EXP} \times \text{D2008} + a_{10}\Delta\text{OINC/EXP} \times \text{D2008} + \text{Controls} \end{aligned} \quad (3)$$

$$\text{MV} = b_0 + b_1\text{D2008} + b_2\text{ASSET} + b_3\text{LIAB} + b_4\text{ASSET} \times \text{D2008} + b_5\text{LIAB} \times \text{D2008} + \text{Controls} \quad (4)$$

D2008 is a dummy variable that equals one if fiscal year is before 2008, and zero otherwise. As Table 5 shows, the coefficients on $\Delta\text{INC} \times \text{D2008}$, $\Delta\text{INC} \times \text{D2008}$ and $\Delta\text{INC} \times \text{D2008}$ are significantly negative, positive and negative, respectively. This is consistent with the findings in Table 4. Moreover, the coefficients on ASSET × D2008 and ASSET × D2008 are significantly negative and positive, respectively, again consistent with those reported in Table 4. Overall, the results reported in Table 5 are generally consistent with those reported in Table 4, which strengthens our research findings in Table 4.

6. Conclusions

Part of the debate concerning the proposed removal of PC from IAS 31 (1990) by ED 9 (2007) is based on the view that PC offers a more detailed understanding when a portion of the operations, assets and liabilities of a JCE is horizontally aggregated with the operations, assets and liabilities of the venturer. The results of this study, however, show no evidence that investors benefit from PC financial statements. On the contrary, the higher value relevance of the EM statements found in this study suggests that the vertical aggregation of information into one number does not result in a loss of information to investors. The results show higher returns and firm value associations with the key summary accounting amounts when the statements are prepared using EM. As suggested by [Milburn and Chant, 1999](#), it could be that PC's horizontal aggregation confuses rather than helps investors to understand the venturer's operations. The results therefore support the preference for EM. However, the empirical results should be interpreted carefully because the definitions of "joint venture" under IAS 31 and ED 9 are not exactly the same. Under IAS 31, the definition is based more on the legal form of the joint arrangement, whereas under ED 9 it is mainly driven by the economic substance of the joint arrangement.

The results of this study also have implications for companies around the world that prepare their financial statements using IFRS.

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Appendix A

Exhibit 1. Illustration of alternative accounting methods for JCE reporting

Illustrative financial statements, disclosures and selected financial ratios

			Panel A: Equity method	Panel B: Proportionate consolidation	
				Panel B1: Combined format	Panel B2: Separate format
<i>(Assuming venture company/group has 40% interest in the JCE)</i>					
	Venture company/group	JCEs			
	\$	\$	\$	\$	\$
Income	1000	250	1000	1100	1000
Share of income of JCE					100
Interest expense	(500)	(70)	(500)	(528)	(500)
Share of interest expense of JCE					(28)
Other income/expense (net)	(200)	(80)	(200)	(232)	(200)
Share of other income/expense (net) of JCE					(32)
			300		
Share of profit of JCE			40		
Profit for the year	\$ 300	\$ 100	\$ 340	\$ 340	\$ 340

	\$	\$	\$	\$	\$
Plant	2200	1900	2200	2960	2200
Share of plant of JCE					760
Interest in JCE	600		640		
Total non-current assets	\$ 2800	\$ 1900	\$ 2840	\$ 2960	\$ 2960
Cash	450	250	450	550	450
Share of cash of JCE					100
Inventory	650	450	750	830	650
Share of inventory of JCE					180
Total current assets	\$ 1100	\$ 700	\$ 1100	\$ 1380	\$ 1380
Total assets	\$ 3900	\$ 2600	\$ 3940	\$ 4340	\$ 4340
Share capital	1100	1500	1100	1100	1100
Retained earnings	900	100	940	940	940
Total equity	\$ 2000	\$ 1600	\$ 2040	2040	2040
Bonds payable	1200	600	1200	1440	1200
Share of bonds payable of JCE					240
Total non-current liabilities	1200	600	1200	1440	1440
Accounts payable	700	400	700	860	700
Share of accounts payable of JCE					160
Total current liabilities	700	400	700	860	860
Total liabilities	\$ 1900	\$ 1000	\$ 1900	\$ 2300	\$ 2300
Total equity and liabilities	\$ 3900	\$ 2600	\$ 3940	\$ 4340	\$ 4340
Supplementary disclosure in notes to accounts			\$	\$	\$
Share of non-current assets of JCE			760	760	–
Share of current assets of JCE			280	280	–
Share of non-current liabilities of JCE			240	240	–
Share of current liabilities of JCE			160	160	–
Share of net assets of JCE (optional)			640	640	
Share of sales of JCE			100	100	–
Share of expenses of JCE			60	60	–
Share of results of JCE (optional)			40	40	
Panel C: Selected financial ratios					
Profit margin			34%	31%	31%
Interest coverage			1.7	1.6	1.6
Return on assets			9%	8%	8%
Return on equity			17%	17%	17%
Leverage (debt over equity)			0.9	1.1	1.1

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