

The Impact of the Adoption of IFRS 11 on the Comparability of Accounting Information^{1 2}

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Abstract:

This research analyses the impact of the IASB's decision to eliminate the proportionate consolidation as an alternative to accounting for interests in joint ventures, by issuing the IFRS 11, on the comparability of accounting information. We built a unique and quite comprehensive database hand collected from the Notes included in the financial statements of 2,059 firms with interests in joint ventures from 26 countries, regarding 2005 to 2016, resulting in a sample of 14,356 financial statements. To measure comparability, we used the metric that was proposed by Barth et al. (2012) and a matched sample design. Overall, our results suggest that the comparability of accounting information decreased after IFRS 11 adoption. After classifying the 26 countries into 7 clusters using a set of cultural and institutional variables, we found that while the comparability between firms from some clusters decreased, the adoption of IFRS 11 improved the comparability of firms from some other clusters. We also collected and analysed the financial information about interests in joint ventures disclosed by the venturers in the Notes, and our analyses provide insights that the increase in disclosure requirements proposed by IFRS 12 may not mitigate the consequences of the elimination of the proportionate consolidation.

Keywords: comparability, IFRS 11, proportionate consolidation, joint ventures.

1. Introduction

The purpose of this research is to evaluate the impact of the IASB's decision to eliminate the proportionate consolidation method as an alternative to accounting for

interests in joint ventures, with the issuance of IFRS 11 – Joint Arrangements, on the comparability of accounting information. In addition, this research also analyses the financial information about interests in joint ventures that are being disclosed by the venturers in the Notes, in order to provide insights about whether the increase in disclosure requirements proposed by IFRS 12 – Disclosure of Interests in Other Entities – would mitigate the consequences of the elimination of the proportionate consolidation.

Before IFRS 11 came into force, the previous international standard (IAS 31) allowed the choice between proportionate consolidation and equity method. After the adoption of IFRS 11 in 2013 (or 2014 in European countries) only the equity method is allowed. In the Basis for Conclusions on IFRS 11, the IASB explains that the existence of this accounting choice to account for interests in joint ventures was impairing the comparability of accounting information (IASB, 2011a, BC8). Therefore, taking into account this IASB's argument, this research aims to assess whether the comparability increased (or not) following the adoption of IFRS 11.

The IASB also argued in the Basis for Conclusions that all information that was previously provided in the financial statements that were prepared using the proportionate consolidation can now be obtained in the Notes. Jointly with IFRS 11, the IASB also issued the IFRS 12, improving the disclosure requirements for interests in joint ventures. As additional analysis, this research also evaluates the financial information about interests in joint ventures that are being provided in the Notes in order to determine whether, using this disclosed information, investors would be able to estimate the accounting amounts that would be reported by firms had their financial statements been prepared using the proportionate consolidation instead of the equity method.

The adoption of the equity method instead of the proportionate consolidation can result in significant differences in the accounting amounts reported by the joint venturer (Lourenço, Fernandes, & Curto, 2012; Sarquis & Santos, 2018). The switch from proportionate consolidation to the equity method does not usually affect the net income and the equity of joint venturers, but reduces the total amount of assets, liabilities, revenues, and expenses.

The IASB's decision to eliminate the proportionate consolidation was controversial, as seen by the number of comment letters that were sent during the public consultation period of the Exposure Draft 09 – Joint Arrangements. Of the 111 comment letters received by the IASB, 68 (i.e., 61%) clearly stated disagreement with the elimination of the proportionate consolidation (Sarquis & Santos, 2019).

There are arguments in favour of and against both the equity method and the proportionate consolidation. The main issue for this discussion is whether the joint venturers have rights to the assets and obligations to the liabilities of the joint venture that should be recognized as assets and liabilities in their own financial statements. On the one hand, one can argue that the proportionate consolidation is inconsistent with the Conceptual Framework, given that it may allow the recognition of assets that are not controlled by the venturer and the recognition of liabilities that are not present obligations of the venturer. On the other hand, one can argue that the proportionate consolidation better reflects the economic substance of interests in joint ventures, producing higher quality information, and also precludes the use of interests in joint ventures to keep off-balance sheet liabilities. One can also argue that even if the contractual agreement determines that joint venturers have rights only to the net assets of the joint ventures, in some situations joint venturers may still be co-responsible for

the joint ventures' operations and liabilities, which can ultimately affect their financial position³.

Although there are arguments favourable to and against both methods, in 2011 the IASB issued the IFRS 11, which came into force in 2013 (or after, as in European countries), requiring that all interests in joint ventures should be accounted for using the equity method. Despite that, the discussion about which would be the most appropriate method to measure interests in joint ventures is still timely and relevant, given that some firms continue to use the proportionate consolidation for managerial purposes (such as operating segments), even after the adoption of IFRS 11. There are, for example, firms in Brazil (Companhia Siderúrgica Nacional, Cosan, Bradesco, and Klabin), South Africa (African Rainbow Minerals), Canada (AKITA Drilling, Glacier Media, and GVIC Communications), and the United Kingdom (Hammerson, Rurelec, Tate & Lyle, Telford Homes, Intu Properties, and John Wood Group) reporting that they continue to evaluate the performance of their business on a proportionally consolidated basis.

In the Basis for Conclusions on IFRS 11, the IASB argues that one of the main problems with IAS 31 is that the accounting choice for interests in joint ventures was allowing that “some arrangements that gave the parties similar rights and obligations were accounted for differently and, conversely, arrangements that gave the parties different rights and obligations were accounted for similarly” (IASB, 2011a, BC8). Consequently, the IASB eliminated the option of using the proportionate consolidation, seeking to improve the comparability of accounting information.

³ An example of this argument is the environmental disaster that occurred in Brazil in 2015, with the rupture of the tailing dams of Samarco S.A. (a joint venture), given that the joint venturers (Vale S.A. and BHP Billiton) are being held jointly responsible for Samarco's operations and liabilities, even without prior legal obligation.

However, the comparability concept is based on the equivalent reflection of the economic substance of events (Simmons, 1967). It exists when users of accounting information are able to distinguish similarities and differences in the underlying economic substance of events of the same entity over time and between entities (Barth, 2013; Barth, Landsman, Lang, & Williams, 2012; Brochet, Jagolinzer, & Riedl, 2013; De Franco, Kothari, & Verdi; 2011; DeFond, Hu, Hung, & Li, 2011; Gordon & Gallery, 2012; Yip & Young, 2012). Therefore, comparability is achieved when similar (different) economic substances are treated using similar (different) accounting practices.

Comparability is not achieved by using the same accounting treatment for transactions with different economic substances and should not be confused with uniformity (Barth, 2013; Cole, Branson, & Breesch, 2012). While comparability means that like things should look alike and different things should look different, uniformity implies treating all things in the same way. Consequently, uniformity can impair comparability by making unlike things look alike (Barth, 2013; Gordon & Gallery, 2012).

Therefore, it is not certain that the elimination of proportionate consolidation has increased the comparability of accounting information. On the one hand, the elimination of the accounting choice for interests in joint ventures might have improved the comparability of accounting information, given that it prevents similar transactions from being treated using different accounting practices. But, on the other hand, it may have increased only uniformity, treating different things in the same way, at the expense of a decrease in the comparability of accounting information.

This research sheds light on this issue by measuring the comparability of accounting information between firms with interests in joint ventures from different

countries, before and after the adoption of IFRS 11, seeking to determine whether the elimination of the proportionate consolidation actually improved the comparability of accounting information. To achieve this purpose, we built a unique and quite comprehensive database hand collected from the Notes included in the financial statements of 2,059 firms with interests in joint ventures, from 26 countries, regarding 2005 to 2016, resulting in a sample of 14,356 financial statements.

Using the data that comprise the entire sample, we measured the comparability of accounting information (separately before and after the adoption of IFRS 11) between firms that used the proportionate consolidation prior to IFRS 11 and that had to switch to the equity method following the adoption (treatment firms) and their matched pairs from the control group (firms that were not affected by the IFRS 11 adoption, given that they already used the equity method). IFRS 11 adoption may have affected not only the comparability between firms from different countries but also between firms from the same country. Seeking to consider both within-country comparability and cross-country comparability, in this first analysis we allowed the treatment firm and the control firm to be from the same country or from different countries.

To measure comparability, we used the metric that was proposed by Barth et al. (2012), known as Accounting System Comparability, using stock price, stock return, and future cash flow as economic outcome and assets, liabilities, revenues, and expenses as accounting amounts. In summary, the results from this analysis indicate that the adoption of IFRS 11 increased the differences between the treatment and control firms and consequently decreased the comparability of accounting information between these firms.

Seeking to evaluate whether the results would be different when comparing firms from dissimilar countries and at the same time better isolate the effect of the IFRS

11 adoption from other confounding effects, we classified the 26 countries into 7 clusters according to similarities and differences in their environment. Subsequently we measured the comparability of accounting information (separately before and after the adoption of IFRS 11) between firms from different clusters and 10 comparisons of clusters were made. Different from the first analysis, in this second analysis we are exploring the effect of IFRS 11 adoption only on comparability between firms from different countries (cross-country comparability).

The results indicate that the adoption of IFRS 11 decreased the comparability of accounting information between some clusters, such as, for example, between Cluster 3 (Australia, Canada, Ireland, New Zealand, and United Kingdom) and Cluster 4 (Brazil, Chile, and Mexico). However, by contrast, it increased the comparability of accounting information between other clusters comparisons, such as, for example, between Cluster 2 (Germany, Belgium, Spain, France, Italy, and Poland) and Cluster 3 (Australia, Canada, Ireland, New Zealand, and United Kingdom). Therefore, the adoption of IFRS 11 has dissimilar effects on the comparability of accounting information of firms from different countries, and it seems that the results of the analysis of the entire sample (decrease of comparability) may be influenced by differences in the environment of each cluster and also the relative weight of each cluster in the entire sample.

The IASB also argues that the elimination of the proportionate consolidation should not result in informational loss for users, given that IFRS 12 improved the quality of the disclosure about interests in joint ventures (IASB, 2011a, BC45). However, firms may not always comply with disclosure requirements with the same rigour and precision as recognized values and, therefore, disclosure may not be an appropriate substitute for recognition (Ahmed, Kilic, & Lobo, 2006). There is also some research reporting evidence that investors do not evaluate in the same way disclosed

information versus recognized information (Aboody, 1996; Ahmed et al., 2006; Michels, 2017; Müller, Riedl & Sellhorn, 2015; Schipper, 2007; Yu, 2013).

Seeking to explore this issue, we analysed the Notes provided by the venturers that were impacted by the adoption of IFRS 11, given that they had to switch from proportionate consolidation to the equity method. Specifically, we hand collected the financial information about assets, liabilities, equity, revenues, expenses, and net income of their interests in joint ventures. Of the total of 513 firms that had to switch from proportionate consolidation to the equity method, only 283 firms disclosed the minimum financial information (about at least one of their joint ventures) required to restate their post IFRS 11 financial statements from the equity method to the proportionate consolidation (920 financial statements were restated, during the years between 2013 and 2016). This finding corroborates the argument that firms may not always comply with disclosure requirements and that the improvement in disclosure quality proposed by IFRS 12 may not compensate for the elimination of the proportionate consolidation.

These restatement data also provide an opportunity to better isolate the effect of the elimination of the accounting choice for interests in joint ventures on the comparability of accounting information from other confounding effects. Therefore, as robustness analysis, we measured the comparability (before and after the IFRS 11 adoption) between treatment and control firms using first the real data and then the restatement data for the treatment firms. However, due to restrictions on data availability, the results of this robustness analysis were mixed.

To the best of our knowledge, this research is the first attempt to empirically analyse the impact of the IASB's decision to eliminate an accounting choice, namely,

the proportionate consolidation method, on the comparability of accounting information. This study contributes to accounting research in several ways.

First, this study adds to the literature on the reporting methods for interests in joint ventures, namely the one providing support to the proportionate consolidation. Previous studies show empirically the incremental information content of financial statements prepared by using proportionate consolidation instead of the equity method (Bauman, 2007; Graham, King, & Morrill, 2003; Stoltzfus and Epps, 2005). Other studies provide empirical evidence on the value-relevance of additional information presented by venturers about their share of the joint ventures' assets and liabilities (Bauman, 2003; Kothavala, 2003; Lim, Yeo, & Liu, 2003; O'Hanlon & Taylor, 2007; Richardson et al., 2012; Soonawalla, 2006). Some studies also provide evidence that managers exercise their discretion to choose proportionate consolidation (instead of the equity method) based on their insights into the underlying economics of their firms, namely, on the relationship between the venturers and the joint ventures (Giner & Verón, 2012; Lourenço & Curto, 2010). There is also evidence that investors view the venturers' share of joint ventures' assets and liabilities similarly to the assets and liabilities of the venturer (Lourenço et al., 2012). Analyzing specifically the switch to IFRS 11, Gavana, Gottardo, and Moisello (2020) show empirically a reduction in the value relevance of co-venturers' total assets and liabilities for companies required to move from proportionate consolidation to the equity method and, by contrast, they do not find an increase in the value relevance of joint venture disaggregated data provided in the notes. We add to this literature by providing evidence that the elimination of the proportionate consolidation required by the IFRS 11 impairs the comparability of accounting information and that the increase in disclosure requirements proposed by

IFRS 12 may not mitigate the consequences of the elimination of the proportionate consolidation.

Second, there is a rich literature about comparability, especially after the worldwide adoption of IFRS Standards. Given that comparability is not something directly observable, some researchers have discussed the concept of comparability and how to measure this construct (Barth, 2013; De Franco et al., 2011; Gordon & Gallery, 2012; Krisement, 1997; Simmons, 1967; Van der Tas, 1988). More recently, this literature has focused on providing evidence about the effect of the worldwide adoption of IFRS Standards on the comparability of accounting information and the consequent benefits to users. Most of these papers suggest that the comparability of accounting information increased after the adoption of IFRS Standards (Barth et al., 2012; Brochet et al., 2013; DeFond et al., 2011; Liao, Sellhorn, & Skaife, 2012; Wang, 2014; Yip & Young, 2012). We add to this literature about comparability by making an interesting intersection with the accounting choice literature, which is also an important issue in the IFRS adoption environment. Most of the previous literature suggests that accounting choice provides incentives to managers to choose a specific accounting practice in an opportunistic way (Fields, Lys, & Vincent, 2001; Jaafar & McLeay, 2007; Silva, Martins, & Lemes, 2016; Watts, 1992), impairing the comparability. Our research adds by providing evidence that the elimination of accounting choices may result in greater uniformity, but does not necessarily improve comparability. In addition, despite the general increase in comparability following the worldwide adoption of IFRS Standards, documented by previous literature, our results contribute by providing evidence that the adoption of IFRS 11 – *Joint Arrangement* has not improved the comparability of accounting information in all countries that were analysed.

Third, this research also contributes to the literature on the diversity in accounting practices. Previous studies provide empirical evidence that significant differences in the accounting practices of firms from different countries can still be found even after the adoption of a single set of accounting standards, suggesting that ‘national versions’ of IFRS are emerging (Kvaal & Nobes, 2012; Lourenço, Sarquis, Branco, & Magro, 2018; Nobes, 2013). Seeking to avoid this diversity, the IASB has made major efforts to constrain accounting choices whenever possible. Our research analyses the accounting practices used by firms to report interests in joint ventures prior to IFRS 11 in a very comprehensive sample (2,059 firms from 26 countries and 14,356 financial statements) and provide evidence that differences in the accounting practices (equity method *versus* proportionate consolidation) also exist within each country, and not just between countries, and that eliminating one of the accounting choices may impair the international comparability of accounting information. We thus add to the literature on accounting diversity by providing insights that the accounting practices used by firms may be influenced not only by the cultural, historical, and institutional environment of each country, but also by the characteristics inherent to each firm.

This research may also contribute to the forthcoming Post-Implementation Review (PIR) of IFRS 11. We first provide evidence about the consequences of adopting IFRS 11 on the comparability of accounting information. In addition, we also provide important evidence of which was the prevailing accounting practice used by firms before the adoption of IFRS 11 in different countries, what the impacts of the elimination of the proportionate consolidation were on the accounting amounts reported by firms, and to what extent the financial information of interests in joint ventures are being disclosed by the venturers in the Notes. Thus, our results may provide interesting insights to the IASB.

The remainder of the paper is organized as follows. Section 2 presents the background. Sections 3 and 4 describe the research design and the empirical results, respectively. Section 5 presents the concluding remarks.

2. Background: comparability concept and accounting choice

Comparability is not something directly observable, and it is therefore difficult to know when two things are comparable and when they are not (Gordon & Gallery, 2012). Consequently, it is challenging to identify a single concept and the real meaning of comparability. However, the major issue of the concept of comparability is that it is based on the equivalent reflection of economic substance and not on the form (Simmons, 1967).

Despite that, there are some papers arguing that the comparability of accounting information exists when users of accounting information are able to distinguish similarities and differences in the economic substance of transactions of the same entity over time and between different entities (Barth, 2013; Barth et al., 2012; Brochet et al., 2013; De Franco et al., 2011; DeFond et al., 2011; Gordon & Gallery, 2012; Yip & Young, 2012). This definition is aligned with the IASB Conceptual Framework and suggests that comparability is achieved when similar (different) economic substances are treated using similar (different) accounting practices. Unlike uniformity, comparability will not be achieved by applying the same accounting treatment to events with different economic substances.

Gordon and Gallery (2012) and Yip and Young (2012) argue that comparability can be analyzed from at least two approaches. The first, called the *similarity facet* or *deep* comparability by the authors, suggests that comparability will be obtained when similar economic events are recognized using similar accounting practices. The second,

called the *difference facet* (or *intrinsic differences comparability*), suggests that firms should use different accounting treatments to recognize different economic events. If firms are forced to use the same accounting treatment even when the economic substance of transactions are different, it will result in surface comparability (uniformity) rather than genuine comparability. It is necessary to consider both approaches (similarity and difference facets) in order to obtain the genuine comparability.

The IASB Conceptual Framework discusses this issue by stating that ‘for information to be comparable, like things must look alike and different things must look different. Comparability of financial information is not enhanced by making unlike things look alike any more than it is enhanced by making like things look different’ (IASB, 2018, Item 2.26). Therefore, the requirement that all firms apply exactly the same accounting practice does not necessarily improve comparability.

Barth (2013) also highlights that the differentiation between comparability and uniformity is a source of confusion for many, and consequently these two terms are sometimes misused as synonyms. However, comparability is not uniformity (Barth, 2013; Cole et al., 2012). While comparability means that like things should look alike and different things should look different, uniformity implies treating all things in the same way. Therefore, uniformity can make unlike things look alike and, consequently, impair the comparability of accounting information (Barth, 2013; Gordon & Gallery, 2012).

One of the main arguments often used to encourage countries to adopt IFRS is the expected increase in comparability (DeFond et al., 2011; Gordon & Gallery, 2012). Despite this international effort to increase the comparability of accounting information with the worldwide adoption of a single set of accounting standards, there are some

studies that provide evidence that significant differences in accounting practices across countries can still be found (Kvaal & Nobes, 2012; Lourenço, Sarquis, Branco, & Magro, 2018, Nobes, 2013). Nobes (2013) suggests that as a consequence of the existence of accounting choices, the flexibility allowed in IFRS standards is one of the main explanations for the survival of these differences.

Based on the literature about the accounting choice theory (Fields, Lys, & Vincent, 2001; Jaafar & McLeay, 2007; Silva, Martins, & Lemes, 2016; Watts, 1992), one can argue that the existence of accounting choices in IFRS Standards is hampering the global accounting information comparability, given that it may result in similar transactions being recognized using different accounting practices and providing opportunities for earnings management. Given that accounting choices have economic consequences and that managers are rational, as long as IFRS contains options managers may choose a specific accounting practice in an opportunistic way, reducing the comparability of accounting information.

The IASB has taken considerable steps to constrain accounting choices (Nobes, 2013; Nobes & Parker, 2012), seeking to improve the comparability of accounting information. The strategy in reducing accounting choices is clearly stated in the Basis for Conclusions on IFRS 11 – *Joint Arrangements*, which mentions that the ‘Board’s policy is to exclude options in accounting treatment from accounting standards whenever possible. Such options can lead to similar transactions being accounted for in different ways and, therefore, can impair comparability’ (IASB, 2011a, BC8). The Preface to the IFRS Red Book also clearly states that the Board has reconsidered, and will continue to reconsider, those transactions and events for which IFRS allows a choice between different accounting treatments, with the goal of reducing the number of those choices.

However, as explained above, unlike uniformity, the comparability concept is based on the reflection of the economic substance of events and will be achieved not only when similar economic events are treated using similar accounting practices (the similarity facet) but also when different economic events are treated using different accounting practices (the difference facet). It is necessary to take both facets into account to assess comparability.

There is also a rich literature suggesting that accounting is strongly influenced by the environment (Gray, 1988; Hofstede, 1980; Leuz, 2010; Nobes, 1998; Nobes & Parker, 2012; Weffort, 2003). Given that IFRS Standards are developed to be applied in countries with different cultural and institutional environments, the existence of differences in accounting practices does not necessarily mean that firms are less comparable. On the contrary, as a consequence of differences in their cultural and institutional environment, firms should use the accounting practices that better reflect the underlying economic substance of the environment in which they operate, seeking to improve comparability.

Schipper (2003) mentions that if dissimilar arrangements are forced to be recognized using the same accounting treatment, which is a possible outcome when former options are eliminated, it may result only in uniformity. Under this perspective, the elimination of accounting choice may not necessarily improve comparability.

Therefore, it is unknown whether the elimination of proportionate consolidation has increased (or not) the comparability of accounting information. This research sheds light on this issue by analyzing the effect of the adoption of IFRS 11 and the elimination of the proportionate consolidation as an alternative to accounting for interests in joint ventures, by issuing the IFRS 11, of the comparability of accounting information.

3. Research design

3.1. Sample and data collection

From all countries available in the *Worldscope* database (119), we selected those in which publicly listed firms have been required to apply IFRS at least since 2012 (one year before IFRS 11) and in which there are at least 10 publicly listed firms with interests in joint ventures. As a matter of accessibility, we also include only those countries in which firms disclose their financial statements in any language derived from Latin alphabet.

To identify which firms have interests in joint ventures, we first collected in the *Worldscope* database the information about which firms had an investment account in the consolidated financial statements of 2016. This does not guarantee that these firms have interests in joint ventures, since the investment account presented in the consolidated financial statements could also include associate investments. However, this procedure allows us to eliminate those firms without an investment account, which certainly do not have interests in joint ventures. After this elimination, we found 5,618 firms.

Following this, we hand collected and analysed the financial statements of 2016 of each of these 5,618 firms in order to identify which actually had interests in joint ventures. After this process, we found 2,059 firms with interests in joint ventures from 26 countries. The period of analysis is from 2005 to 2016. For those countries that have adopted IFRS after 2005, the period of analysis is shorter.

One of the main variables used in this research is the reporting method used by firms to account for interests in joint ventures. Given that this information is not available in any database, we hand collected and analysed the notes to the financial statements of each of the 2,059 firms in each of the 12 years under analysis. These

financial statements were collected not only from the firms' websites, but also from the website of the stock exchange (or regulatory body) of each country. We have exhausted all possibilities to obtain the greatest number of publicly available financial statements as possible.

Excluding those financial statements that were not available and those without interests in joint ventures, our final sample is composed of 14,356 financial statements of 2,059 firms from 26 countries. Table 1 shows its distribution by country.

Table 1: Sample distribution by country

Country	Firms	Period	Financial Statements	Country	Firms	Period	Financial Statements
Australia	158	2005-2016	949	Mexico	34	2012-2016	146
Belgium	26	2005-2016	251	Netherlands	37	2005-2016	308
Brazil	94	2010-2016	570	New Zealand	26	2007-2016	161
Canada	124	2011-2016	578	Norway	48	2005-2016	440
Chile	41	2009-2016	276	Philippines	56	2005-2016	388
Denmark	15	2005-2016	145	Poland	43	2005-2016	265
Finland	32	2005-2016	259	South Africa	82	2005-2016	586
France	105	2005-2016	958	Spain	48	2005-2016	459
Germany	116	2005-2016	934	Sri Lanka	26	2012-2016	126
Hong Kong	338	2005-2016	2,392	Sweden	49	2005-2016	346
Ireland	14	2005-2016	126	Turkey	38	2005-2016	304
Italy	83	2005-2016	715	United Kingdom	246	2005-2016	1,915
Kuwait	12	2005-2016	78				
Malaysia	168	2012-2016	681	Total	2,059		14,356

In addition to the data about the reporting method used by firms, for those that were affected by the IFRS 11 adoption and that had to switch from proportionate consolidation to the equity method, we also collected from all their POST IFRS 11 financial statements the financial information about their joint ventures that is being disclosed in the Notes, specifically assets, liabilities, equity, revenues, expenses, and net income. All other variables needed to conduct this research were collected from Worldscope and Eikon databases.

3.2. Comparability metric

The comparability metric that was used is the *Accounting System Comparability* proposed by Barth et al. (2012). This metric is based on the assumption that firms will

report similar accounting amounts when they face similar economic outcomes and different accounting amounts when they face different economic outcomes. According to Barth et al. (2012, p.69), the accounting systems of two firms are comparable ‘when an economic outcome (e.g., stock price) estimated based on the mapping from accounting amounts (e.g., earnings) to that economic outcome of one system is the same as the estimated economic outcome based on the mapping of the other system’. Therefore, this metric is based on the relationship between economic outcomes and accounting amounts:

$$EconomicOutcomes_i = f_i(AccountingAmounts_i) \quad (1)$$

where f_i represents the accounting system of firm i .

Barth et al. (2012) used stock price, stock return, and future operating cash flow as economic outcomes and various combinations of net income and equity book value as accounting amounts. However, given that both proportionate consolidation and equity method, in general, result in the same net income and in the same equity, but are associated with different amounts of total assets, liabilities, revenues, and expenses, we made some adjustments in the models proposed by Barth et al. (2012). We used the same variables as economic outcomes, but as accounting amounts we segregate the net income into revenues and expenses and the equity book value into assets and liabilities.

The sample of firms used in this research (2,059) was divided into two subsets of firms: the treatment group (*PC firms*) and the control group (*EM firms*). The first is composed of firms that used the proportionate consolidation before the adoption of IFRS 11 and switched to the equity method after the adoption of this standard. Similarly, the control group is composed of firms that used the equity method both before and after the adoption of IFRS 11. We require firms to have data at least one year before and one year after the adoption of IFRS 11 in at least one of the three models

(stock price, stock return, or future cash flow). The comparison is made between *PC firms* and *EM firms*, aiming to evaluate whether the comparability between these two subsets of firms changed after the elimination of the proportionate consolidation required by IFRS 11.

The main steps used to construct the *Accounting System Comparability* metric are described below. The first step is to estimate the relationships between economic outcomes and accounting amounts separately for *PC firms* and *EM firms* (Equations (2) to (4)):

$$Price_{it} = \beta_0 + \beta_1 TA_{it} + \beta_2 LIAB_{it} + \beta_3 REV_{it} + \beta_4 EXP_{it} + \epsilon_{it} \quad (2)$$

$$Return_{it} = \beta_0 + \beta_1 \frac{REV_{it}}{Price_{i,t-1}} + \beta_2 \frac{\Delta REV_{it}}{Price_{i,t-1}} + \beta_3 \frac{EXP_{it}}{Price_{i,t-1}} + \beta_4 \frac{\Delta EXP_{it}}{Price_{i,t-1}} + \epsilon_{it} \quad (3)$$

$$CF_{i,t+1} = \beta_0 + \beta_1 \frac{REV_{it}}{TA_{i,t-1}} + \beta_2 \frac{EXP_{it}}{TA_{i,t-1}} + \beta_3 \frac{LIAB_{it}}{TA_{i,t-1}} + \epsilon_{it} \quad (4)$$

where *Price* is the stock price (in the price model, is the stock price six months after fiscal year end), *TA* is the total asset per share (except in the cash flow model), *LIAB* is the total liability per share (except in the cash flow model), *REV* is the total operating revenues plus the equity method result (if positive) per share (except in the cash flow model), *EXP* is the total expenses per share (except in the cash flow model), which is composed of cost of revenues, total operating expenses, and the equity method result (if negative), *Return* is the cumulative percentage change in stock price beginning nine months before fiscal year end and ending three months after fiscal year end, adjusted for dividends and stock splits, and *CF* is the operating cash flow scaled by lagged total assets.

Besides segregating the sample into a treatment group (*PC firms*) and a control group (*EM firms*), we also classified the observations in *PRE* and *POST* adoption periods, according to the year in which the firm from the treatment group changed from proportionate consolidation to the equity method. For firms in the control group, this

segregation between *PRE* and *POST* periods is based on the year in which their matched firm from the treatment group switched from proportionate consolidation to the equity method. Consequently, we estimate Equations (2), (3), and (4) separately for each of these four subgroups: (i) *PC firms* in the *PRE* period; (ii) *PC firms* in the *POST* period; (iii) *EM firms* in the *PRE* period and (iv) *EM firms* in the *POST* period. Also, Equations (2), (3), and (4) were estimated on a cross-sectional basis, including dummy variables for country groups and industry fixed effects.

The second step is to calculate the fitted economic outcome (stock price, stock return, and future cash flow), for each firm i in each year t , using the accounting amounts of firm i and the accounting system of its own sample subset (PC or EM):

$$\widehat{Price}_{it} = \hat{\beta}_0 + \hat{\beta}_1 TA_{it} + \hat{\beta}_2 LIAB_{it} + \hat{\beta}_3 REV_{it} + \hat{\beta}_4 EXP_{it} \quad (5)$$

$$\widehat{Return}_{it} = \hat{\beta}_0 + \hat{\beta}_1 \frac{REV_{it}}{Price_{i,t-1}} + \hat{\beta}_2 \frac{\Delta REV_{it}}{Price_{i,t-1}} + \hat{\beta}_3 \frac{EXP_{it}}{Price_{i,t-1}} + \hat{\beta}_4 \frac{\Delta EXP_{it}}{Price_{i,t-1}} \quad (6)$$

$$\widehat{CF}_{i,t+1} = \hat{\beta}_0 + \hat{\beta}_1 \frac{REV_{it}}{TA_{i,t-1}} + \hat{\beta}_2 \frac{EXP_{it}}{TA_{i,t-1}} + \hat{\beta}_3 \frac{LIAB_{it}}{TA_{i,t-1}} \quad (7)$$

The third step is similar to the second, but the fitted economic outcome is calculated using the accounting system (multiples) from the other subset of firms. Therefore, we estimate the fitted economic outcome for *PC firms* using the accounting system of *EM firms*. Similarly, the fitted economic outcome for *EM firms* is estimated using the accounting system of *PC firms*.

Fourth, for each firm i in each year t , we calculate the absolute value of the difference between the fitted economic outcome estimated in the last two steps. The price (return, cash flow) difference of the *PC firms* is the difference between the fitted price (return, cash flow) of the *PC firms* using their own accounting system and the fitted price (return, cash flow) of the *PC firms* using the accounting system of the *EM firms*, as in Equations (8), (9), and (10):

$$PriceDiff_{it}^{PC} = |\widehat{Price}_{it}^{PC,PC} - \widehat{Price}_{it}^{PC,EM}| \quad (8)$$

$$ReturnDiff_{it}^{PC} = |\widehat{Return}_{it}^{PC,PC} - \widehat{Return}_{it}^{PC,EM}| \quad (9)$$

$$CFDiff_{it}^{PC} = |\widehat{CF}_{it}^{PC,PC} - \widehat{CF}_{it}^{PC,EM}| \quad (10)$$

Similarly, the price (return, cash flow) difference of the *EM firms* is the difference between the fitted price (return, cash flow) of the *EM firms* using their own accounting system and the fitted price (return, cash flow) of the *EM firms* using the accounting system of the *PC firms*, as in Equations (11), (12), and (13):

$$PriceDiff_{it}^{EM} = |\widehat{Price}_{it}^{EM,EM} - \widehat{Price}_{it}^{EM,PC}| \quad (11)$$

$$ReturnDiff_{it}^{EM} = |\widehat{Return}_{it}^{EM,EM} - \widehat{Return}_{it}^{EM,PC}| \quad (12)$$

$$CFDiff_{it}^{EM} = |\widehat{CF}_{it}^{EM,EM} - \widehat{CF}_{it}^{EM,PC}| \quad (13)$$

The fifth step is to calculate, for each *PC firm* and matched *EM firm* pair, in each year of the period of analysis, the average difference in fitted stock price from Equations (8) and (11), the average difference in stock return from Equations (9) and (12), and also the average difference in cash flow from Equations (10) and (13):

$$ComparabilityPrice_{it} = \frac{(PriceDiff_{it}^{PC} + PriceDiff_{it}^{EM})}{2} \quad (14)$$

$$ComparabilityReturn_{it} = \frac{(ReturnDiff_{it}^{PC} + ReturnDiff_{it}^{EM})}{2} \quad (15)$$

$$ComparabilityCF_{it} = \frac{(ReturnCF_{it}^{PC} + ReturnCF_{it}^{EM})}{2} \quad (16)$$

The lower the average differences in Equations (14), (15), and (16), the higher is the degree of comparability between each *PC firm* and its matched *EM firm*.

Finally, the last step is to calculate the mean of the average differences obtained in the fifth step for each pair of *PC firm* and *EM firm* during the period before the adoption of IFRS 11 (*PRE period*) and also during the period after the elimination of the proportionate consolidation (*POST period*). If the mean of the average differences falls from the *PRE period* to the *POST period* it means that the elimination of the

accounting choice for the accounting treatment of interests in joint ventures has improved comparability and, therefore, the results will support the IASB's argument. However, an increase in the mean of the average differences from the *PRE period* to the *POST period* means that the comparability fell after the adoption of IFRS 11 and, consequently, it might suggest that the elimination of the accounting choice does not necessarily improve comparability.

3.3. Segregation by clusters

The analysis described in Section 3.2 is performed for the entire sample seen as a whole. However, seeking to evaluate whether the results would be different when comparing firms from dissimilar countries we classified the 26 countries from our sample into clusters, according to similarities and differences in their cultural and institutional environment. There is a rich literature suggesting that accounting is strongly influenced by the cultural and institutional environment of each country (Gray, 1988; Hofstede, 1980; Leuz, 2010; Nobes, 1998; Nobes & Parker, 2012; Weffort, 2003). We selected a set of 12 cultural and institutional variables based on the review of the literature:

- Religion: this variable was collected from the Association of Religion Data Archives (ARDA) and represents the percentage of the population of each country following a particular religion.
- Level of development: measured by the Human Development Index (HDI), collected from the Human Development Reports (United Nations Development Programme).
- Culture: the culture of each country was evaluated using the six cultural dimensions developed and maintained by Professor Hofstede (Hofstede, 1980, 2011; Hofstede, Hofstede, & Minkov, 2010): Power Distance, Uncertainty

Avoidance, Individualism, Masculinity, Long and Short-Term Orientation and Indulgence.

- Financing System: measured by the relation between two variables collected from the World Bank Database: (i) Domestic credit provided by financial sector (% of GDP) and (ii) Market capitalization of listed domestic firms (% of GDP). Indicators greater than 1 means that the country is financed more through financial institutions than through capital markets (i.e., bank-oriented). On the contrary, indicators smaller than 1 means that the capital market is more developed and that firms are more likely to raise funds in the capital market rather than through financial sector (i.e., market-oriented).
- Legal system:
 - Common Law: Australia, Canada, Ireland, New Zealand and United Kingdom;
 - Civil Law: Germany, Belgium, Brazil, Chile, Denmark, Spain, Finland, France, Netherlands, Italy, Mexico, Norway, Poland, Sweden and Turkey.
 - Mixed: South Africa, Philippines, Hong Kong, Kuwait, Malaysia, Nigeria and Sri Lanka.
- Ownership concentration: is the percentage share of the largest shareholder. The higher this percentage, the higher will be the ownership concentration. This variable was collected from the Worldscope database.
- Protection to non-controlling shareholders: measured by the Protecting Minority Investors index, from the Doing Business Database (the World Bank).
- Enforcement: measured by the six World Governance Indicators (Voice and Accountability, Political Stability and Absence of Violence, Government

Effectiveness, Regulatory Quality, Rule of Law, Control of Corruption), collected from the World Bank Database. Due to the high collection between these six variables (more than 0.8), we performed a cluster analysis and only one factor was extracted⁴.

- Political System: represents the degree of democracy, ranging from -10 (autocracy) to + 10 (democracy). Souce: Polity IV – Regime Authority Characteristics and Transitions Datasets.
- Tax: the influence of tax rules on accounting was measured by the magnitude of deffered tax recognized in the income statement in relation to the net income before tax. The lower the amount of deffered tax, the greater will be the similarity between tax rules and accounting standards and, therefore, the greater will be the likelihood that firms will choose certain accounting practices as a result of tax incentives.
- International Exposure: measured by the flow of Foreign Direct Investment (FDI) scaled by Gross Domestic Product (GDP). This variable was collected from the World Bank Database.
- Inflation: inflation level, measured by the consumer price index, collected from the World Bank Database.

Given that one of these 12 cultural and institutional variables is categorical (legal system), we performed the cluster analysis using the Gower Distance, which calculates the distance between individuals whose attribute has a mixed of categorical and numerical variables. Aiming to minimize the total within-cluster variance, we used the Ward cluster agglomeration method. Finally, since cluster analysis is a static

⁴ The extracted factor explains 89.9% of the total variance. The loadings of each variable: Voice and Accountability (0.873), Political Stability and Absence of Violence (0.893), Government Effectiveness (0.969), Regulatory Quality (0.967), Rule of Law (0.990) and Control of Corruption (0.989).

measure, for those variables that vary over time, we have averaged these variables over the period of 2005-2016.

After classifying the 26 countries into clusters, we analysed the accounting practice that prevailed in each cluster before the IFRS 11 adoption. Then we measured the comparability between several combinations of clusters that used different accounting practices. For example, considering that the equity method was the most commonly used accounting practice in Cluster *A* even before the IFRS 11 adoption and that Cluster *B* had both firms that used the proportionate consolidation and firms that opted for the equity method prior to IFRS 11 adoption. We measured the comparability between firms from Clusters *A* and *B* using two different subsets of firms:

2. First we measured the comparability of accounting information between firms from Cluster *B* that used the proportionate consolidation before the IFRS 11 adoption and that had to switch to the equity method (treatment) and firms from Cluster *A* that used the equity method before and after the adoption (control). So, treatment firm from Cluster *B* against control firm from Cluster *A*.
3. Second we measured the comparability of accounting information between firms from Cluster *B* that used the equity method prior to IFRS 11 (control) and the same firms from Cluster *A* that also used the equity method before the IFRS 11 adoption (control). So, control firm from Cluster *B* against control firm from Cluster *A*.

In the first model (treatment *versus* control), we expect that there is a difference in the comparability metric from the *PRE period* to the *POST* IFRS 11 adoption period. However, for the second model, given that we are comparing firms from both Clusters *A* and *B* that were not affected by IFRS 11 adoption, since all firms already used the

equity method prior to IFRS 11 (control *versus* control), we do not expect differences in the comparability metric.

The estimation of these two comparability models aims to consider the second model (control *versus* control) as benchmark to evaluate the behavior of the comparability metric observed in the first model (treatment *versus* control). If we find no difference in the comparability metric in the second model it means that the observed effect in the comparability metric from the first model is more likely to be attributable to the IFRS 11 adoption from other confounding effects. If we find a difference in the comparability metric in the second model, it is possibly due to other confounding effects instead of IFRS 11 adoption. Consequently, the effect that may be attributable to IFRS 11 adoption is the difference in the comparability metric between the first and second models. This research design is an attempt to better isolate the effect of IFRS 11 adoption from other confounding effects.

3.4. Propensity score matching (PSM)

The comparability metric is calculated for each pair of firms. To test our predictions, we used a matched sample design in which each firm from the treatment group will have one matched pair from the control group. As a matching procedure, we performed the Propensity Score Matching (PSM) using industry, assets, revenues, indebtedness indicator (liabilities/assets), the return on equity, and the market-to-book.

Given that the PSM is based on data from a single period and not panel data, we calculated the average of the variables during the years 2014, 2015 and 2016, i.e. during the years after the adoption of IFRS 11. The years of 2013 was not considered in PSM, since some firms postponed in one year the adoption of IFRS 11. Our matching procedure considers only the years after the adoption of IFRS 11 and the mandatory requirement of the equity method, seeking to prevent that our matching variables differ

systematically between treatment and control firms depending on how firms accounted for their interests in joint ventures prior to IFRS 11.

We first performed the PSM without replacement and using the ratio of one by one. However, some firms from the treatment group did not have data for the same period in which their matched firm from the control group had data. In order to avoid this data mismatch, we reran the PSM using the ratio of three by one and among these three control firms, we selected the best match to the treatment firm in terms of data availability. Given that the number of firms from the control group is not three times higher than the number of treatment firms, the replacement of control firms was necessary.

3.5. Disclosure about interests in joint ventures

When developing IFRS 11 and IFRS 10, the IASB decided to integrate the disclosure requirements about investments in subsidiaries, joint arrangements, associates, and unconsolidated structured entities into a single standard: IFRS 12 – Disclosure of Interests in Other Entities. Regarding the disclosure requirements about interests in joint ventures, beyond the description of the nature of the entity's relationship with its joint arrangements and the risks associated with these investments, IFRS 12 also requires summarized financial information about joint ventures that are material to the entity to be disclosed in the notes to the financial statements (IASB, 2011b, B12(b)).

The issuance of IFRS 12 is expected to improve the quality of the disclosure about interests in joint ventures. In the Basis for Conclusions on IFRS 11, the IASB argues that the disclosure requirements of IFRS 12, especially regarding the summary of the financial information of the joint ventures, results in a greater degree of details for assessing the effects of the activities that a firm carried out through joint ventures than did previous accounting standards (IASB, 2011a, BC45).

Seeking to analyse what financial information about interests in joint ventures that are being disclosed in the notes to the financial statements of the joint venturers, as additional analyses, we examined the notes to the financial statements of those firms that had to switch from proportionate consolidation to the equity method with the adoption of IFRS 11. Specifically, we hand collected the data about the joint ventures' assets, liabilities, equity, revenues, expenses, and net income, seeking to assess whether the disclosed information would allow investors to recompute the POST IFRS 11 financial statements from the equity method to the proportionate consolidation 'as if' these firms continued to use the proportionate consolidation even after IFRS 11 adoption.

These restatement data provide a unique opportunity to better isolate the effect of the adoption of IFRS 11 and the consequent elimination of the proportionate consolidation on the comparability of accounting information from other confounding effects. To do so, we first measured the comparability between firms that had to switch from proportionate consolidation to the equity method with the adoption of IFRS 11, using real data, and a matched sample of firms that used the equity method before and after the IFRS 11 adoption, also using the real data. Then, using exactly the same firms, we measured the comparability between (i) firms that used the proportionate consolidation before the IFRS 11 and that restated their post IFRS 11 financial statements from the equity method to the proportionate consolidation, 'as if' they had continued to use the proportionate consolidation even after the IFRS 11 adoption (*pro forma* data); and (ii) firms that used the equity method before and after the IFRS 11 adoption (real data).

Given that the only difference between these two comparisons is the manipulation of the POST IFRS 11 financial statements from the equity method to the

proportionate consolidation for those firms that used the proportionate consolidation before the IFRS 11, it is possible to argue that the difference in the comparability metric obtained in the first and second comparisons is most likely due to the accounting treatment used to measure interests in joint ventures instead of to other confounding effects.

3.6. Currency conversion and inflation rate

Our database includes financial statements presented in different currencies from different years. Seeking to prevent our results from being influenced by fluctuations in inflation rates and different exchange rates, our entire database was adjusted to be presented in the same currency (US dollars) from the same period (December 31, 2018).

Inflation represents the loss of purchasing power of the currency and given that we are using historical data (2005-2016), it is necessary to recognize the accumulate inflation rate during this period in order to ensure that the accounting amounts of 2005 are comparable to the accounting amounts of 2016. According to Konchitchki (2011), nominal financial statements violate the assumption of the monetary unit even during periods of low inflation. His study shows that even with lower levels of inflation (United States in the 1970s and 1980s), its unrecognized effects on the longer -horizon perspective have economic consequences. Consequently, it is logic to conclude that price-level adjustments are even more relevant for some developing countries. Of the 26 countries in our sample, we have some countries with inflation rates that can be considered as quite high. For example, the accumulate inflation rate for the period between 2005 and 2018 was 234.4% in Turkey, 153.9% in Sri Lanka, 118.8% in South Africa and 116.8% in Brazil.

Similarly, exchange movements over the years may also influence our results. Therefore, it is necessary to deal with the variations in the exchange rate, given that our

sample is composed by firms from countries with different currencies. Also, for some of these countries the exchange rate from the local currency to the US dollar increased significantly over the years. For example, the local currency of Turkey is the Turkish Lira and the exchange rate for US dollar went from 1.35 on December 31, 2005 to 5.29 on December 31, 2018. The exchange rate from Rand (local currency of South Africa) to US dollar also increased from 6.33 to 14.4 during the same period.

In order to deal with different currencies and different inflation rates, the first step was to update all financial information until December 31, 2018, using the respective general price index of each country. Thus, assets and liabilities accounts from 2005 to 2016 were all translated into purchasing power currency from December 31, 2018. Income statements accounts were also translated to December 31, 2018, but using the average index of the respective years. Once all amounts were in December 31, 2018 purchasing power currency, they were converted from the local currency to US dollars using year-end exchange rate (December 31, 2018).

4. Results

4.1. Descriptive analysis of accounting practices

Seeking to provide insights about the transition from IAS 31 to IFRS 11, Table 2 shows the number of firms that chose proportionate consolidation and also the number of firms that used the equity method, segregating by country and by year (2005-2016).

Table 2: Accounting treatment used to measure interests in joint venture by country and year

Country	Choice	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
Australia	Propor. Consol.	0	0	1	2	4	4	7	7	2	0	0	0	27
	Equity Method	28	36	45	52	58	60	69	78	97	124	138	137	922
	Total	28	36	46	54	62	64	76	85	99	124	138	137	949
Belgium	Propor. Consol.	10	10	10	10	11	11	11	11	5	0	0	0	89
	Equity Method	8	8	8	7	8	8	11	11	19	24	25	25	162
	Total	18	18	18	17	19	19	22	22	24	24	25	25	251
Brazil	Propor. Consol.	-	-	-	-	-	72	73	73	3	1	1	0	223
	Equity Method	-	-	-	-	-	2	5	11	74	84	84	87	347
	Total	-	-	-	-	-	74	78	84	77	85	85	87	570
Canada	Propor. Consol.	-	-	-	-	-	-	42	42	0	0	0	0	84
	Equity Method	-	-	-	-	-	-	37	38	92	98	113	116	494
	Total	-	-	-	-	-	-	79	80	92	98	113	116	578
Chile	Propor. Consol.	-	-	-	-	10	10	9	10	2	1	0	0	42
	Equity Method	-	-	-	-	20	20	22	24	34	34	40	40	234
	Total	-	-	-	-	30	30	31	34	36	35	40	40	276
Denmark	Propor. Consol.	10	10	9	9	10	10	11	10	7	2	0	0	88
	Equity Method	1	1	1	1	1	1	1	2	6	12	15	15	57
	Total	11	11	10	10	11	11	12	12	13	14	15	15	145
Finland	Propor. Consol.	8	8	8	8	8	8	7	8	5	0	0	0	68
	Equity Method	5	5	7	7	9	9	16	18	22	29	32	32	191
	Total	13	13	15	15	17	17	23	26	27	29	32	32	259
France	Propor. Consol.	41	49	63	66	67	67	67	67	56	2	0	0	545
	Equity Method	6	6	7	7	10	12	17	17	32	93	103	103	413
	Total	47	55	70	73	77	79	84	84	88	95	103	103	958
Germany	Propor. Consol.	22	23	27	28	25	25	26	25	16	3	0	0	220
	Equity Method	22	22	35	38	47	51	59	60	73	89	109	109	714
	Total	44	45	62	66	72	76	85	85	89	92	109	109	934
Hong Kong	Propor. Consol.	8	15	18	15	12	17	18	16	7	0	0	0	126
	Equity Method	86	112	131	141	150	171	180	203	238	270	283	301	2,266
	Total	94	127	149	156	162	188	198	219	245	270	283	301	2,392
Ireland	Propor. Consol.	2	3	3	3	3	3	3	3	2	0	0	0	25
	Equity Method	4	6	6	6	6	6	8	9	11	14	13	12	101
	Total	6	9	9	9	9	9	11	12	13	14	13	12	126

Country	Choice	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
Italy	Propor. Consol.	18	23	24	25	27	29	27	29	25	0	0	0	227
	Equity Method	12	18	22	25	29	34	38	39	44	72	74	81	488
	Total	30	41	46	50	56	63	65	68	69	72	74	81	715
Kuwait	Propor. Consol.	0	0	1	1	1	1	1	1	0	0	0	0	6
	Equity Method	1	2	2	2	3	4	6	8	9	11	12	12	72
	Total	1	2	3	3	4	5	7	9	9	11	12	12	78
Malaysia	Propor. Consol.	-	-	-	-	-	-	-	10	3	0	0	0	13
	Equity Method	-	-	-	-	-	-	-	98	121	136	155	158	668
	Total	-	158	161	161	165	166	681						
Mexico	Propor. Consol.	-	-	-	-	-	-	-	16	2	0	0	0	18
	Equity Method	-	-	-	-	-	-	-	8	24	30	32	34	128
	Total	-	32	32	32	33	34	146						
New Zealand	Propor. Consol.	-	-	1	3	3	3	3	3	3	0	0	0	19
	Equity Method	-	-	4	8	9	11	12	14	15	21	23	25	142
	Total	-	-	9	20	20	21	22	22	23	24	26	26	161
Norway	Propor. Consol.	9	13	16	16	15	14	16	15	12	0	0	0	126
	Equity Method	10	13	14	17	21	23	25	26	29	44	45	47	314
	Total	19	26	30	33	36	37	41	41	41	44	45	47	440
Philippines	Propor. Consol.	6	6	8	8	8	8	7	7	1	1	1	1	62
	Equity Method	14	15	14	14	17	19	25	26	41	44	48	49	326
	Total	20	21	22	22	25	27	32	33	42	45	49	50	388
Poland	Propor. Consol.	3	5	7	8	11	13	14	13	9	0	0	0	83
	Equity Method	3	4	4	6	7	9	13	13	18	32	35	38	182
	Total	6	9	11	14	18	22	27	26	27	32	35	38	265
South Africa	Propor. Consol.	23	23	24	24	25	26	22	22	1	0	0	0	190
	Equity Method	11	10	16	19	19	20	26	26	53	57	68	71	396
	Total	34	33	40	43	44	46	48	48	54	57	68	71	586
Spain	Propor. Consol.	22	23	23	25	28	28	29	29	18	0	0	0	225
	Equity Method	6	6	8	6	9	11	13	13	25	44	46	47	234
	Total	28	29	31	31	37	39	42	42	43	44	46	47	459
Sri Lanka	Propor. Consol.	-	-	-	-	-	-	-	18	19	17	0	0	54
	Equity Method	-	-	-	-	-	-	-	5	7	9	26	25	72
	Total	-	26	26	26	26	25	126						

Country	Choice	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
Sweden	Propor. Consol.	8	9	11	10	10	10	10	11	8	0	0	0	87
	Equity Method	8	8	11	13	14	15	14	13	26	42	49	46	259
	Total	16	17	22	23	24	25	24	24	34	42	49	46	346
Turkey	Propor. Consol.	12	12	12	12	14	15	18	18	1	0	0	0	114
	Equity Method	3	3	5	5	9	9	12	13	31	31	34	35	190
	Total	15	15	17	17	23	24	30	31	32	31	34	35	304
United Kingdom	Propor. Consol.	15	26	30	35	35	36	38	35	26	12	0	0	288
	Equity Method	49	89	100	116	119	126	133	140	154	179	205	217	1.627
	Total	64	115	130	151	154	162	171	175	180	191	205	217	1915
Total	Propor. Consol.	230	273	311	320	339	423	472	513	242	39	2	1	3.165
	Equity Method	281	369	447	500	575	631	753	926	1.315	1.655	1.841	1.898	11.191
	Total	511	642	758	820	914	1054	1225	1439	1557	1694	1843	1899	14.356

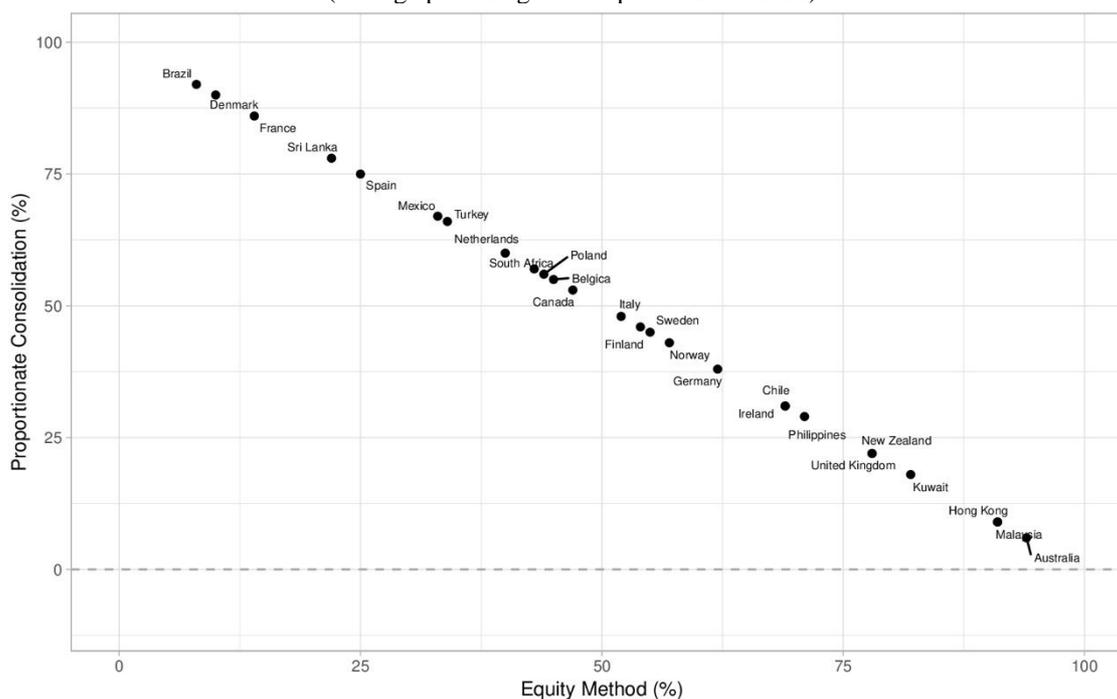
The number of financial statements increased significantly over the years, going from 511 in 2005 to 1,899 in 2016. This increase can be partially explained by the fact that firms do not keep their financial statements publicly available for long periods.

During the first years, the number of firms that used the proportionate consolidation is similar to the number of firms that opted for the equity method. This number began to fall drastically only in 2013, with the adoption of IFRS 11 and the mandatory requirement of the equity method in some countries. After the IFRS 11 adoption by countries of the European Union in 2014, almost all firms in our sample use the equity method. However, there are still a few exceptions.

Even after the effective date of IFRS 11 there is a firm (RFM Corporation), from the Philippines, that continues to use the proportionate consolidation to measure their interests in joint ventures. As explained in their own financial statements, in 2012 the firm requested from the Securities and Exchange Commission of the Philippines authorization not to adopt IFRS 11 based on the peculiarities of the arrangement and also the material impact of the reported accounting amounts. The request was approved by the Philippines Securities and Exchange Commission.

Figure 1 relates the percentage of firms in each country that used the proportionate consolidation with the percentage of firms that opted for the equity method. This figure was prepared using the average percentage of the period from 2005 to 2012, since only during these years was the accounting choice between the proportionate consolidation and the equity method allowed.

Figure 1: Accounting treatment used to measure interests in joint ventures by country (average percentage of the period 2005-2012)



Of the 26 countries analysed, none used only the proportionate consolidation or exclusively the equity method. Therefore, in all countries included in our sample, there were both firms that used the proportionate consolidation and firms that opted for the equity method.

However, there is a set of countries in which the proportionate consolidation prevailed in more than 75% of the firms. This set of countries is composed of Brazil (92%), Denmark (90%), France (86%), and Sri Lanka (78%). It is possible to argue that the consequences of the adoption of IFRS 11 in these countries were more pronounced. On the other hand, in countries such as Australia, Hong Kong, Malaysia, Kuwait, New Zealand, and United Kingdom the equity method is the accounting practice most often used by firms (in more than 75% of firms, before the IFRS 11 adoption). There are also some countries, such as Canada and Italy, in which the proportion between the proportionate consolidation and the equity method is fairly equal.

In order to understand the reasons why some firms in our sample used the proportionate consolidation instead of the equity method prior to IFRS 11 adoption, we performed an analysis of the determinants of the choice for proportionate consolidation using data from 2005 to 2012 (e.g., before the adoption of IFRS 11). Table 3 shows the results obtained by estimating a logit model, in which our dependent variable assumes 1 for companies that opted for proportionate consolidation and 0 otherwise (equity method).

Table 3 – Logistic regression results

	Estimate	Std. Error		
Intercept	-1.0946000	0.1342600	0.0000000	***
Leverage	-0.0000402	0.0000236	0.0877809	*
Size	0.0951570	0.0131440	0.0000000	***
Return on Assets	0.0248360	0.0055634	0.0000080	***
BIG 4	-0.6590000	0.0841840	0.0000000	***
Financing System	0.1980300	0.0161720	0.0000000	***
SIC - Finance, Insurance and Real Estate	-0.3521500	0.1012900	0.0005077	***
SIC - Manufacturing	0.0896800	0.0959450	0.3499418	
SIC - Others	0.0760170	0.1088900	0.4851038	
SIC - Services	0.0011386	0.1159600	0.9921656	
SIC - Transp., Commun., Electric, Gas and Sanitary Services	0.1757900	0.1024100	0.0860694	*

Note:

*p<0.1; **p<0.05; ***p<0.01

Log-Likelihood: -4229.058

Leverage: Total debt divided by market capitalization.

Size: Total assets (logarithm).

Return on Assets: EBIT/((total assets_t +total assets_{t-1})/2).

BIG 4: audit firm is a Big Four (PwC, KPMG, Ernst&Young and Deloitte).

Financing System: measured by the relation between two variables collected from the World Bank Database: (i) Domestic credit provided by financial sector (% of GDP) and (ii) Market capitalization of listed domestic firms (% of GDP).

As can be seen in Table 3, firms from countries that are more bank-oriented, i.e., countries in which firms are more likely to raise funds through financial institutions rather than in the capital market, were more likely to use the proportionate consolidation prior to IFRS 11 than firms from countries more market-oriented. This can be explained by the fact that financial institutions tend to demand more conservative financial statements to provide funds to firms than investors from the capital market.

Similarly, the estimated coefficients for “Size” and “Return on Assets” are also positive and statistically significant, suggesting that size (measured by the total assets) and the profitability (return on assets) had a positive impact on the decision to report interests in joint ventures by proportionate consolidation prior to IFRS 11.

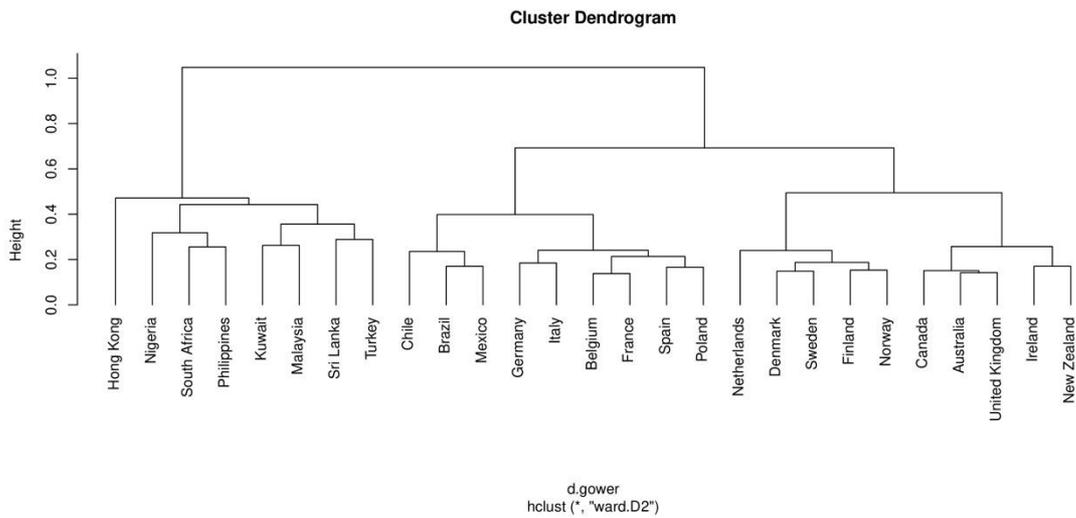
Contrary, firms that were audited by a Big Four (PwC, KPMG, Ernst&Young and Deloitte) were more likely to use the equity method prior to IFRS 11 instead of the proportionate consolidation method. In addition, given that the estimated coefficient for “Leverage” is also negative, it means that more leveraged firms were less likely to use proportionate consolidation to measure their joint venture investments before the adoption of IFRS 11. This is in line with the argument that more leveraged firms could use the equity method to keep off-balance sheet liabilities. However, the estimated coefficient for “Leverage” is only marginally significant ($p < 0.1$). Finally, it is also important to note that firms from some industries were more likely to use the proportionate consolidation prior to IFRS 11 adoption than firms from other industries.

4.2. Cluster analysis

Figure 2 presents the dendrogram⁵ obtained in the cluster analysis and shows how countries are grouped based on similarities and differences in their cultural and institutional environment (religion, level of development, culture, financing system, legal system, ownership concentration, protection to non-controlling shareholders, enforcement, political system, tax, international exposure, and inflation).

⁵ *The Cophenetic Correlation Coefficient (CCC)* was 0.7542631, suggesting that the cluster analysis dendrogram presented appropriate adjustment. The CCC represents the correlation between original and cophenetic distances and, therefore, the higher the coefficient (closer to 1) the greater is the adequacy of cluster analysis.

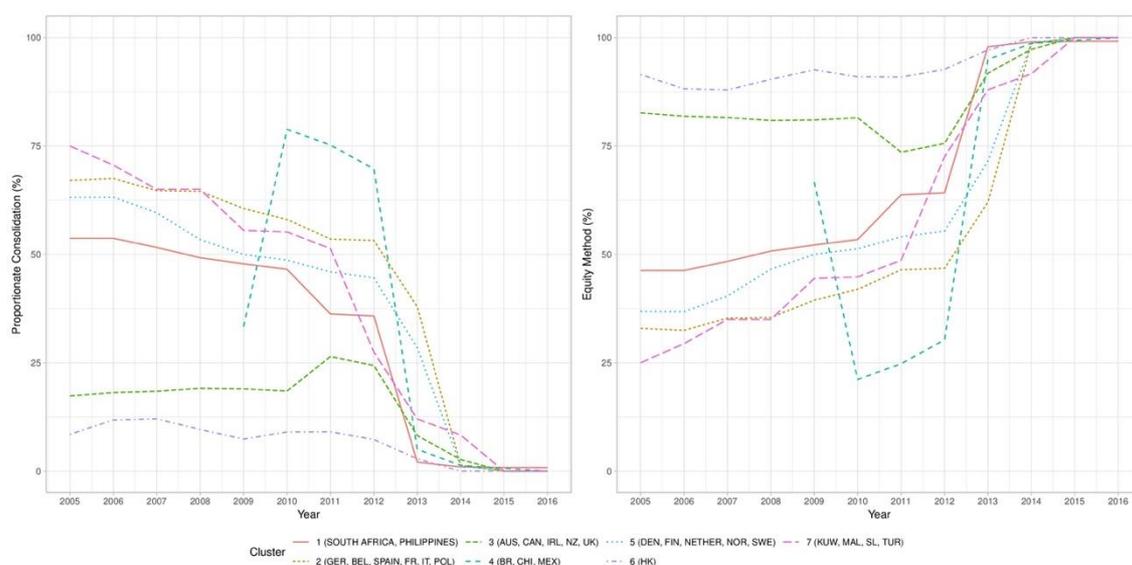
Figure 2: Dendrogram– Cluster Analysis



Based on Figure 2, it is possible to identify seven groups: Cluster 1 (South Africa, Philippines, and Nigeria); Cluster 2 (Germany, Belgium, Spain, France, Italy, and Poland); Cluster 3 (Australia, Canada, Ireland, New Zealand, and United Kingdom); Cluster 4 (Brazil, Chile, and Mexico); Cluster 5 (Denmark, Finland, Netherlands, Norway, and Sweden); Cluster 6 (Hong Kong); Cluster 7 (Kuwait, Malaysia, Sri Lanka, and Turkey).

Aiming to relate the accounting practices used to measure interest in joint ventures with the dendrogram obtained in cluster analysis, Figure 3 shows what the most frequently used accounting practice was in each of the seven clusters.

Figure 3: Accounting practice by cluster



The cluster with the highest proportion of firms using the proportionate consolidation is the cluster composed of Latin American countries (Cluster 4). However, this high proportion was strongly influenced by the inclusion of Brazil in 2010. Proportionate consolidation was also often used by firms from Cluster 2 (Germany, Belgium, Spain, France, Italy, and Poland) and Cluster 5 (Denmark, Finland, Netherlands, Norway, and Sweden). On the contrary, the equity method was the accounting practice most often used by firms from Cluster 6 (Hong Kong) and Cluster 3 (Australia, Canada, Ireland, New Zealand, and United Kingdom) before the adoption of IFRS 11.

4.3. Measuring comparability

The first section below (4.3.1) presents the results from the full model, including all firms from all countries together. Aiming to evaluate whether the results would be different between different countries, we segregated our sample into clusters and the results are described in Section 4.3.2. Finally, Section 4.4.3 shows the results from the

comparability metric using the data obtained from the restatement of post IFRS 11 financial.

4.3.1. Full model

Of the 2,059 firms in our sample, we identified 513 as belonging to the treatment group, that is, firms that switched from proportionate consolidation to equity method when adopting IFRS 11. After the matching procedure our final sample is composed of 1,026 firms. Table 4 shows the distribution of our matched sample by country.

Table 4: Sample distribution – Full model

Countries	Number of Firms			Number of observations				Total
				Treatment		Control		
	Treatment	Control	Total	PRE	POST	PRE	POST	
Australia	4	41	45	34	13	215	159	421
Belgium	12	10	22	87	45	59	42	233
Brazil	67	2	69	195	268	4	8	475
Canada	34	9	43	68	132	21	32	253
Chile	9	11	20	33	36	36	41	146
Denmark	9	0	9	74	29	0	0	103
Finland	11	6	17	64	50	40	18	172
France	71	11	82	468	261	72	42	843
Germany	32	38	70	222	127	246	161	756
Hong Kong	24	120	144	139	120	672	456	1,387
Ireland	3	8	11	18	10	32	26	86
Italy	30	35	65	224	106	190	143	663
Kuwait	1	2	3	6	4	6	7	23
Malaysia	9	16	25	13	32	33	47	125
Mexico	16	1	17	17	63	2	3	85
Netherlands	16	15	31	104	70	70	58	302
New Zealand	3	7	10	19	9	35	22	85
Norway	19	12	31	122	76	63	46	307
Philippines	7	23	30	50	32	139	94	315
Poland	13	5	18	81	42	22	19	164
South Africa	24	13	37	158	108	82	42	390
Spain	26	1	27	192	94	4	4	294
Sri Lanka	16	0	16	45	33	0	0	78
Sweden	11	7	18	76	36	37	35	184
Turkey	18	4	22	113	77	15	14	219
UK	28	116	144	207	85	734	439	1,465
Total	513	513	1,026	2,829	1,958	2,829	1,958	9,574

Table 5 reports the descriptive statistics of all variables used in the three comparability models, for the treatment group – PC firms (513) and their matched pair from the control group – EM firms (513), before and after the adoption of IFRS 11.

Table 5: Descriptive statistics before and after the adoption of IFRS 11 – Full model

Variables	<i>CONTROL – PRE</i>				<i>CONTROL – POS</i>				Dif.
	Mean	SD	Max	Min	Mean	SD	Max	Min	
PRICE	199.895	423.418	1648.612	0.082	152.628	330.169	1272.117	0.094	-47.27
TA	22.484	38.408	144.382	0.108	26.002	48.806	190.489	0.177	3.52
LIAB	15.898	29.296	112.314	0.043	19.027	37.866	143.618	0.057	3.13
REV	14.732	26.063	100.417	0.040	14.059	25.136	98.438	0.038	-0.67
EXP	22.568	41.652	158.667	0.037	21.075	38.617	147.705	0.040	-1.49
RETURN	-0.008	0.371	0.647	-0.797	0.002	0.270	0.517	-0.548	0.01
REV/P	1.255	1.705	5.911	0.004	1.164	1.493	5.269	0.004	-0.09
EXP/P	2.030	2.965	10.413	0.002	1.890	2.612	9.352	0.003	-0.14
Δ REV/P	0.007	0.253	0.583	-0.653	-0.026	0.218	0.410	-0.599	-0.03
Δ EXP/P	0.001	0.464	1.017	-1.299	-0.059	0.414	0.719	-1.209	-0.06
CF/TA	0.063	0.066	0.208	-0.052	0.056	0.057	0.175	-0.041	-0.01
REV/TA	0.823	0.645	2.342	0.055	0.695	0.553	1.899	0.051	-0.13
EXP/TA	1.295	1.174	4.181	0.027	1.108	0.990	3.449	0.031	-0.19
LIAB/TA	0.642	0.238	1.076	0.176	0.642	0.228	1.046	0.182	0.00
Variables	<i>TREATMENT – PRE</i>				<i>TREATMENT – POS</i>				Dif.
	Mean	SD	Max	Min	Mean	SD	Max	Min	
PRICE	104.971	246.372	985.048	0.194	73.626	191.326	817.123	0.158	-31.35
TA	50.373	76.960	294.077	0.324	38.570	56.555	214.386	0.282	-11.80
LIAB	34.782	55.993	214.705	0.088	26.397	42.043	160.133	0.097	-8.38
REV	34.281	55.738	218.394	0.093	22.642	34.369	126.154	0.073	-11.64
EXP	54.077	94.505	377.526	0.068	35.775	57.841	218.281	0.039	-18.30
RETURN	0.010	0.374	0.673	-0.786	0.005	0.294	0.501	-0.647	0.00
REV/P	1.702	1.852	6.868	0.006	1.579	1.687	6.179	0.005	-0.12
EXP/P	2.647	3.183	11.935	0.006	2.511	2.925	10.837	0.005	-0.14
Δ REV/P	0.020	0.294	0.669	-0.724	-0.102	0.361	0.396	-1.244	-0.12
Δ EXP/P	0.043	0.531	1.285	-1.308	-0.187	0.656	0.731	-2.279	-0.23
CF/TA	0.072	0.065	0.213	-0.047	0.061	0.058	0.172	-0.051	-0.01
REV/TA	0.820	0.574	2.152	0.081	0.662	0.479	1.741	0.068	-0.16
EXP/TA	1.241	0.991	3.668	0.058	1.027	0.833	2.980	0.048	-0.21
LIAB/TA	0.664	0.218	1.124	0.274	0.619	0.208	1.005	0.220	-0.04

PRICE is stock price six months after fiscal year-end; *TA* is total assets per share; *LIAB* is total liabilities per share; *BE* is equity book value per share; *REV* is total operating revenues plus the equity method result (if positive) per share; *EXP* is total expenses per share, which is composed of cost of revenues, total operating expenses, and the equity method result (if negative); *NI* is net income before extraordinary items per share; *RETURN* is the cumulative percentage change in stock price beginning nine months before and ending three months after fiscal year-end; *REV/P* is total revenues per share scaled by beginning of year stock price; *EXP/P* is total expenses per share scaled by beginning of year stock price; *NI/P* is net income before extraordinary items per share scaled by beginning of year stock price; Δ denotes the annual change; *CF* is future operating cash flow; *REV/TA* is total revenues scaled by lagged total assets; *EXP/TA* is total expenses scaled by lagged total assets; *NI/TA* is net income before extraordinary items scaled by lagged total assets; *LIAB/TA* is total liabilities scaled by lagged total assets.

As expected, the accounting amounts of the treatment group (PC firms) fell from the PRE period to the POST IFRS 11 adoption period. For example, the mean total liabilities per share (*LIAB*) of the treatment group (PC firms) fell from 34.782 to only 26.397 after the IFRS 11 adoption. This is quite a significant reduction, which can be partially explained by the elimination of the proportionate consolidation.

Table 6 reports the differences from the PRE period to the POST IFRS 11 adoption period, for each of the three comparability metrics (stock price, stock return,

and future operation cash flow). Specifically, Table 6 shows the results about whether comparability between firms that used the proportionate consolidation before the IFRS 11 adoption and firms that used the equity method increased or decreased after those firms that used the proportionate consolidation adopted IFRS 11 and changed their accounting practice used to measure interests in joint ventures to the equity method. It is important to observe that a decrease (increase) in the differences between these two groups of firms implies an increase (decrease) in comparability after the IFRS 11 adoption.

Table 6: Comparability metrics – Full model

Full Model	Price		Return		Cash Flow	
	Mean	Median	Mean	Median	Mean	Median
PRE - IFRS 11	2.405	2.409	0.024	0.023	0.007	0.006
POST - IFRS 11	2.733	2.733	0.118	0.118	0.009	0.009
Difference (POST - PRE)	0.328	0.324	0.094	0.095	0.002	0.002
<i>p-value</i>	0.000	0.000	0.000	0.000	0.000	0.000

The findings for price, return, and cash flow models indicate that the differences from the PRE period to the POST IFRS 11 adoption period have increased. For example, the increase in the mean differences was 0.328 for the price model, 0.094 for the return model, and 0.002 for the cash flow model. In summary, this result means a decrease in the comparability of accounting information after the adoption of IFRS 11 and the elimination of the option of using the proportionate consolidation.

It is important to note that despite the overall decrease in comparability, when we consider the behavior of each PC firm and their matched pair from the EM firms instead of the mean of all pairs of firms, the findings are somewhat mixed, especially for the cash flow model. Table 7 shows the number of firms in which the results indicate a decrease in comparability as well as the number of firms in which comparability increased after the adoption of IFRS 11, in each of the three comparability metrics.

Table 7: Comparability metrics by pairs of firms – Full model

Full Model	Price		Return		Cash Flow	
	Mean	Median	Mean	Median	Mean	Median
Decrease in comparability	415	417	448	448	356	362
Increase in comparability	49	47	0	0	153	147
Not available	49	49	65	65	4	4
Total pairs	513	513	513	513	513	513

4.3.2. Segregation by clusters

Figure 3 shows that the 26 countries were classified into seven clusters and that there are two clusters in which almost all firms used the equity method before the adoption of IFRS 11, namely: Cluster 3 (Australia, Canada, Ireland, New Zealand, and United Kingdom) and Cluster 6 (Hong Kong). Therefore, these two clusters were used as controls.

In Clusters 1 (South Africa and Philippines), 2 (Germany, Belgium, Spain, France, Italy, and Poland), 4 (Brazil, Chile, and Mexico), 5 (Denmark, Finland, Netherlands, Norway, and Sweden), and 7 (Kuwait, Malaysia, Sri Lanka, and Turkey) there are firms using the proportionate consolidation before the IFRS 11 adoption and firms that already opted for the equity method. Therefore, the comparisons were made, for example, between Cluster 1 (treatment) and Cluster 3 (control) and also between Cluster 1 (treatment) and cluster 6 (control). A total of 10 such comparisons were analyzed.

For each of these 10 combinations of clusters, two comparability models were estimated. The first is intended to estimate comparability between, for example, firms from Cluster 1 that had to switch from proportionate consolidation to the equity method when adopting IFRS 11 and firms from Cluster 3 that already used the equity method prior to IFRS 11. The second model aims to measure comparability between firms from the same Cluster 1, but using only firms that used the equity method before IFRS 11 and firms from the same Cluster 3 that were also not affected by IFRS 11.

The results that may be attributable to IFRS 11 adoption is the difference between the effects observed in the first model (proportionate consolidation \times equity method) and the second model used as benchmark (equity method \times equity method). This research design better isolates the effect of IFRS 11 adoption from other confounding effects.

Due to space constraints, it is not possible to describe the results in detail for each cluster comparison. Thus, Section 4.3.2.1 presents a summary of the results obtained in each of the 10 comparisons of clusters that were analysed. To illustrate how the results were analysed, Section 4.3.2.2 presents the detailed results for only the comparison between Clusters 2 and 3.

4.3.2.1. Summary of the results of each cluster comparison

Table 8 presents only a summary of the results and the conclusions obtained in each of the 10 comparisons of clusters that were analysed.

Table 8: Summary of the results from each cluster comparison

Comparisons	Model	Effect on Comparability	Significance	Pairs (%)	Conclusion
C1 x C3	Price	Increase	Yes	100%	Mixed
	Return	Increase	Not	64%	
	Cash Flow	Decrease	Yes	71%	
C1 x C6	Price	Increase	Yes	81%	Increase
	Return	Decrease	Not	52%	
	Cash Flow	Increase	Yes	100%	
C2 x C3	Price	Increase	Yes	69%	Increase
	Return	Increase	Yes	91%	
	Cash Flow	Increase	Yes	100%	
C2 x C6	Price	Increase	Yes	67%	Increase
	Return	Decrease	Yes	62%	
	Cash Flow	Increase	Yes	100%	
C4 x C3	Price	Decrease	Yes	81%	Decrease
	Return	Decrease	Yes	77%	
	Cash Flow	Increase	Yes	63%	
C4 x C6	Price	Increase	Yes	85%	Decrease
	Return	Decrease	Yes	100%	
	Cash Flow	Decrease	Yes	86%	
C5 x C3	Price	Decrease	Yes	81%	Decrease
	Return	Decrease	Yes	100%	
	Cash Flow	Increase	Yes	64%	
C5 x C6	Price	Increase	Not	42%	Mixed
	Return	Decrease	Yes	83%	
	Cash Flow	Increase	Yes	100%	

C7 x C3	Price	Increase	Yes	91%	Increase
	Return	Increase	Yes	94%	
	Cash Flow	Decrease	Yes	100%	
C7 x C6	Price	Increase	Yes	86%	Decrease
	Return	Decrease	Yes	93%	
	Cash Flow	Decrease	Yes	100%	

The effects of IFRS 11 adoption on the comparability of accounting information seem to depend not only on which metric was used to measure comparability (price, return, or cash flow models), but also on which clusters are being compared. Table 8 shows that the decrease in comparability reported by the full model, using all firms together, was not observed in all clusters of countries in our sample.

Specifically, of the 10 cluster comparisons that were analysed, the results indicate that the adoption of IFRS 11 increased the comparability of accounting information in four cluster comparisons (Cluster 1 x Cluster 6; Cluster 2 x Cluster 3; Cluster 2 x Cluster 6; and Cluster 7 x Cluster 3), but for another four cluster comparisons the results suggest that the comparability of accounting information decreased after the adoption of IFRS 11 and the elimination of the proportionate consolidation (Cluster 4 x Cluster 3; Cluster 4 x Cluster 6; Cluster 5 x Cluster 3; and Cluster 7 x Cluster 6). For the comparisons between Clusters 1 and 3 and between Clusters 5 and 6 the results seem to be strongly sensitive to the comparability metric that was used.

It is possible that the results reported in the full model (decrease in comparability) may be at least partially influenced by the results observed in specific clusters, such as Cluster 4 (Brazil, Chile, and Mexico), Cluster 5 (Denmark, Finland, Netherlands, Norway, and Sweden), and Cluster 7 (Kuwait, Malaysia, Sri Lanka, and Turkey), possibly due to specificity in their environment.

4.3.2.2. Comparison between Cluster 2 x Cluster 3

For the comparison between Cluster 2 (treatment) and Cluster 3 (control), of the total number of firms from Cluster 2 with available data, we found 184 firms that were using the proportionate consolidation and that had to switch to the equity method when IFRS 11 was adopted and 129 firms that were not affected by IFRS 11 as that they already used the equity method prior to the adoption.

After the matching procedure (PSM), the sample used in the comparison between Cluster 2 (PC) and Cluster 3 (EM) is composed of 368 firms, 184 being from the treatment group (C2 (PC)) and their matched pairs from the control group (C3 (EM)). As shown in Table 9, of the total of 3,984 firm-year observations, 2,634 are from the PRE period and 1,350 from the POST IFRS 11 adoption period.

Table 9: Sample distribution – C2 (PC) x C3 (EM)

Countries	Number of firms		Number of observations				TOTAL
			C2 (PC)		C3 (EM)		
	C2 (PC)	C3 (EM)	PRE	POST	PRE	POST	
Australia	0	26	0	0	187	109	296
Belgium	12	0	92	45	0	0	137
Canada	0	6	0	0	20	16	36
France	71	0	513	261	0	0	774
Germany	32	0	216	127	0	0	343
Ireland	0	7	0	0	46	22	68
Italy	30	0	221	106	0	0	327
New Zealand	0	10	0	0	48	39	87
Poland	13	0	88	42	0	0	130
Spain	26	0	187	94	0	0	281
United Kingdom	0	135	0	0	1,016	489	1,505
Total	184	184	1317	675	1317	675	3,984

Similarly, Table 10 presents the distribution of the sample used to measure the comparability between firms from Cluster 2 (EM) and from Cluster 3 (EM). This sample is composed of 258 firms (129 matched pairs) and 2,538 firm-year observations.

Table 10: Sample distribution – C2 (EM) x C3 (EM)

Countries	Number of firms		Number of observations		
	C2 (EM)	C3 (EM)	C2 (EM)	C3 (EM)	TOTAL
Australia	0	18	0	179	179
Belgium	10	0	101	0	101
Canada	0	22	0	132	132
France	13	0	131	0	131
Germany	52	0	516	0	516
Ireland	0	1	0	9	9
Italy	32	0	318	0	318
New Zealand	0	6	0	52	52
Poland	15	0	137	0	137
Spain	7	0	66	0	66
United Kingdom	0	82	0	897	897
Total	129	129	1,269	1,269	2,538

The results from the three comparability metrics (price, return, and cash flow) used to measure the comparability between firms from C2 (PC) and firms from C3 (EM) are reported in Table 11. As these comparability metrics are based on the differences between these two samples of firms, an increase (decrease) in the differences from the PRE period to the POST IFRS 11 adoption period means a decrease (increase) in comparability after the elimination of the proportionate consolidation.

Table 11: Comparability metrics – C2 (PC) x C3 (EM)

C2 (PC) x C3 (EM)	Price		Return		Cash Flow	
	Mean	Median	Mean	Median	Mean	Median
PRE - IFRS 11	2,104	2,105	0,118	0,113	0,029	0,029
POST - IFRS 11	1,873	1,864	0,056	0,053	0,004	0,004
Difference (POST- PRE)	-0,231	-0,242	-0,062	-0,060	-0,025	-0,025
<i>p-value</i>	0,000	0,000	0,000	0,000	0,000	0,000

The results of all three comparability metrics (price, return, and cash flow) indicate that the adoption of IFRS 11 and the elimination of the accounting choice that existed for the measurement of interests in joint ventures reduced the differences between C2 (PC) and C3 (EM) and, therefore, increased the comparability of accounting information between firms from clusters 2 and 3.

Also, Figures 4, 5, and 6 show the evolution of the comparability metrics estimated using the price, return, and cash flow model, respectively, for both comparisons between C2 (PC) and C3 (EM) and for the comparison used as benchmark (C2 (EM) and C3 (EM)). Given that the behaviour of the comparability metric for the comparison between C2 (EM) and C3 (EM) varies little over time, it is possible to argue that the decrease in differences and, therefore, increase in comparability reported in the left graph (comparison between C2 (PC) and C3 (EM)) may be due to the adoption of IFRS 11 and the elimination of the proportionate consolidation instead of to other confounding effects.

Figure 4: Comparison between C2 (PC) x C3 (EM) and between C2 (EM) x C3 (EM) – price model

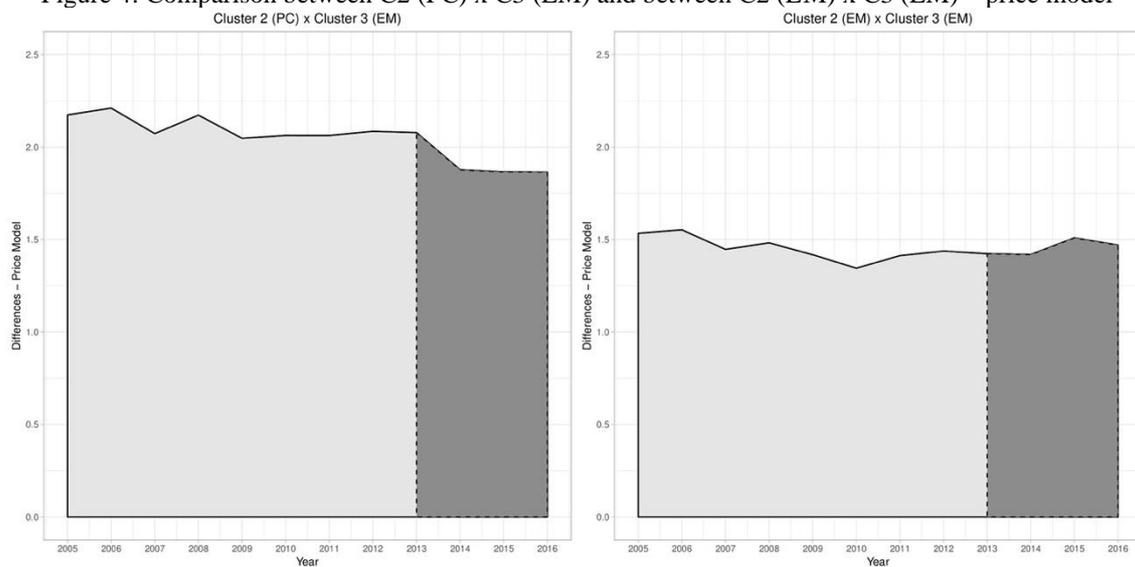


Figure 5: Comparison between C2 (PC) x C3 (EM) and between C2 (EM) x C3 (EM) – return model

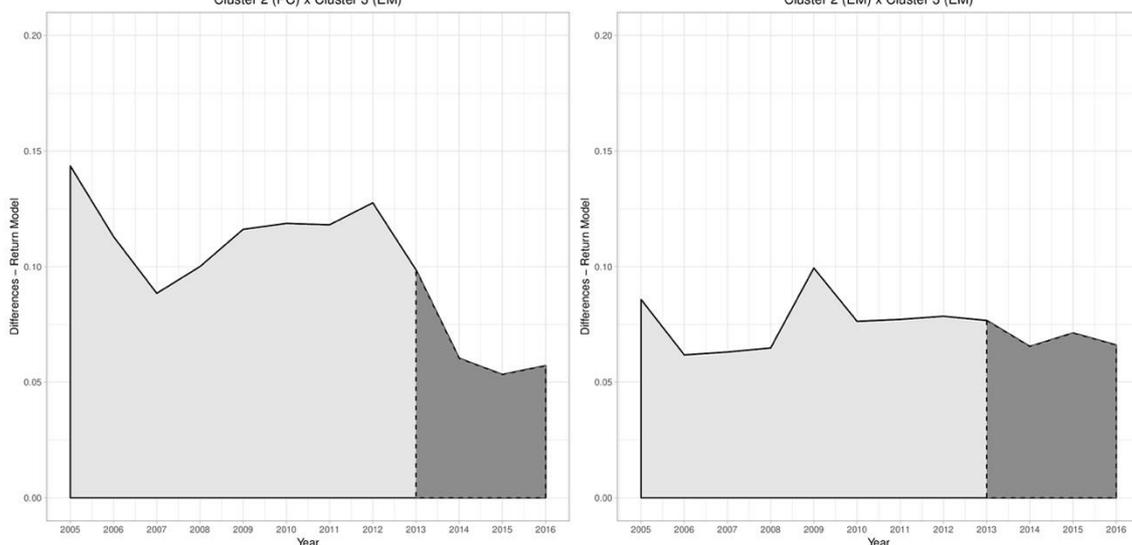
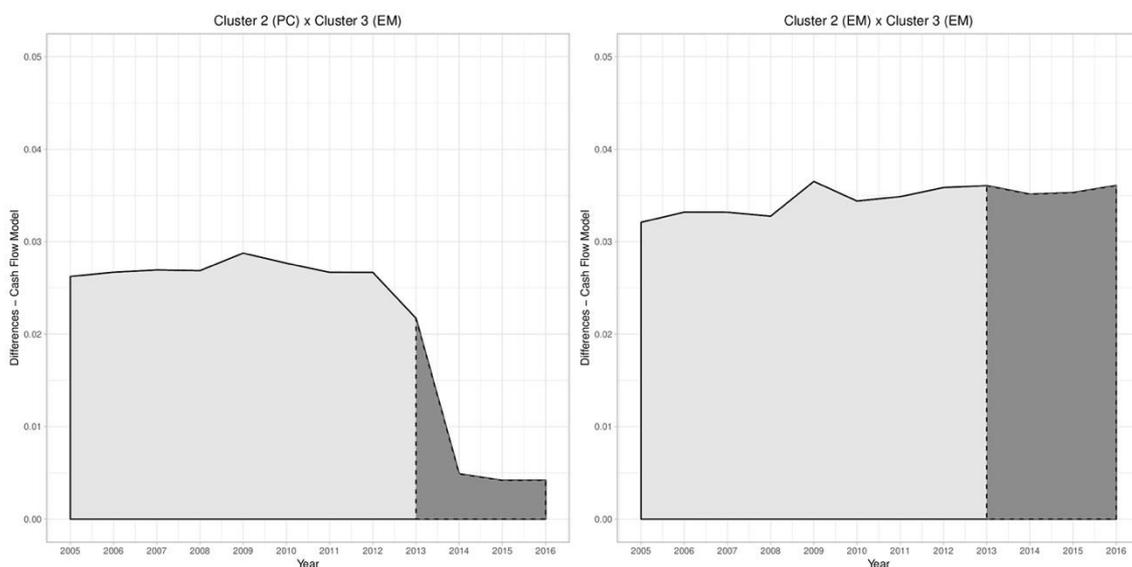


Figure 6: Comparison between C2 (PC) x C3 (EM) and between C2 (EM) x C3 (EM) – cash flow model



It is important to note that this increase in comparability was observed in all pairs of firms for the comparability metric estimated using the cash flow model only. For the price (return) model, Table 12 shows that there was an increase in comparability for 105 (137) pairs of firms and a decrease in comparability for the other 48 (14) pairs of firms.

Table 12: Comparability metrics by pairs of firms – C2 (PC) x C3 (EM)

C2 (PC) x C3 (EM)	Price		Return		Cash Flow	
	Mean	Median	Mean	Median	Mean	Median
Decrease in comparability	48	50	14	19	0	0
Increase in comparability	105	103	137	132	184	184
Not available	31	31	33	33	0	0
Total pairs	184	184	184	184	184	184

4.4. Disclosure of financial information about interests in joint ventures

This research also aims to analyse the financial information about interests in joint ventures that is being provided in the notes, in order to evaluate whether this information would allow investors to estimate the accounting amounts that would be reported by firms had their financial statements been prepared under the proportionate consolidation instead of the equity method. The purpose is to provide insights about whether the increase in disclosure requirements proposed by IFRS 12 would mitigate the consequences of the elimination of the proportionate consolidation.

To do so, we hand collected from the notes to the financial statements of those firms that used the proportionate consolidation prior to IFRS 11 (513 firms) the financial information about assets, liabilities, equity, revenues, expenses, and net income of their interests in joint ventures and restated their POST IFRS 11 financial statements from the equity method to the proportionate consolidation, as these firms continued to use proportionate consolidation even after the adoption of IFRS 11.

Section 4.4.1 presents a summary of the financial information about interests in joint ventures that is being presented in notes. After the restatement of the POST IFRS 11 financial statements, Section 4.4.2 shows the differences observed in the accounting amounts originally reported by firms (equity method) and their restated accounting amounts using the proportionate consolidation. Finally, as robustness analyses and in an attempt to better isolate the effect of IFRS 11 adoption from other confounding effects, we again estimated the comparability metrics using both the real data and the restatement data. These results are presented in Section 4.4.3.

4.4.1. Summarized financial information collected from the notes

Table 13 shows the number of firms that used the proportionate consolidation prior to IFRS 11 and that had to switch to the equity method after the adoption (513 firms) that

disclosed the financial information of at least one of their interests in joint ventures in each year of the post IFRS 11 adoption period, segregating by country.

Table 13: Number of treatment firms disclosing in the notes to the financial information of joint ventures

Country	Accounting Amount	2011	2012	2013	2014	2015	2016	2016%
Australia	Assets	NA	NA	0	3	1	1	25%
	Liabilities	NA	NA	0	3	1	1	25%
	Equity	NA	NA	0	4	3	3	75%
	Revenues	NA	NA	0	3	1	1	25%
	Expenses	NA	NA	0	3	1	1	25%
	Net income	NA	NA	0	4	3	3	75%
	Treatment firms - post IFRS 11 period	NA	NA	1	4	4	4	-
Belgium	Assets	1	1	3	9	9	9	75%
	Liabilities	1	1	3	9	9	9	75%
	Equity	1	1	3	9	9	9	75%
	Revenues	1	1	2	8	8	8	67%
	Expenses	1	1	2	8	8	8	67%
	Net income	1	1	3	9	8	9	75%
	Treatment firms - post IFRS 11 period	1	1	7	12	12	12	-
Brazil	Assets	1	2	42	43	46	45	67%
	Liabilities	1	2	42	43	46	45	67%
	Equity	1	3	48	51	52	51	76%
	Revenues	0	0	32	34	37	36	54%
	Expenses	0	0	32	34	37	36	54%
	Net income	1	3	46	49	50	50	75%
	Treatment firms - post IFRS 11 period	2	4	64	66	66	67	-
Canada	Assets	NA	NA	22	18	19	19	56%
	Liabilities	NA	NA	22	18	19	19	56%
	Equity	NA	NA	27	21	22	22	65%
	Revenues	NA	NA	20	16	16	16	47%
	Expenses	NA	NA	20	16	16	16	47%
	Net income	NA	NA	27	23	22	22	65%
	Treatment firms - post IFRS 11 period	NA	NA	34	34	34	34	-
Chile	Assets	0	1	5	5	5	6	67%
	Liabilities	0	1	5	5	5	6	67%
	Equity	0	1	5	5	5	6	67%
	Revenues	0	1	5	5	5	5	56%
	Expenses	0	1	5	5	5	5	56%
	Net income	0	1	5	5	5	6	67%
	Treatment firms - post IFRS 11 period	1	1	8	8	9	9	-
Denmark	Assets	NA	0	1	3	4	4	44%
	Liabilities	NA	0	1	3	4	4	44%
	Equity	NA	0	1	4	5	5	56%
	Revenues	NA	0	1	3	4	4	44%
	Expenses	NA	0	1	3	4	4	44%
	Net income	NA	0	1	4	5	5	56%
	Treatment firms - post IFRS 11 period	NA	1	3	7	9	9	-
Finland	Assets	2	2	6	5	5	5	45%
	Liabilities	2	2	6	5	5	5	45%
	Equity	2	2	6	6	6	5	45%
	Revenues	2	2	5	5	5	5	45%
	Expenses	2	2	5	4	4	5	45%
	Net income	2	2	5	5	5	5	45%
	Treatment firms - post IFRS 11 period	3	3	6	11	11	11	-

France	Assets	1	1	10	23	25	26	37%
	Liabilities	1	1	9	23	25	26	37%
	Equity	2	2	13	39	42	41	58%
	Revenues	1	2	11	27	31	29	41%
	Expenses	1	2	11	25	30	28	39%
	Net income	2	2	15	39	42	41	58%
	Treatment firms - post IFRS 11 period	9	9	20	69	71	71	-
Germany	Assets	2	3	5	13	20	22	69%
	Liabilities	2	3	5	13	20	22	69%
	Equity	2	3	10	21	26	26	81%
	Revenues	2	3	5	13	20	22	69%
	Expenses	2	3	5	13	20	22	69%
	Net income	2	3	10	20	25	26	81%
	Treatment firms - post IFRS 11 period	5	7	14	27	32	32	-
Hong Kong	Assets	5	5	12	16	14	15	63%
	Liabilities	5	5	12	16	14	15	63%
	Equity	5	5	15	20	17	19	79%
	Revenues	5	5	11	16	14	15	63%
	Expenses	5	5	11	16	14	15	63%
	Net income	5	5	15	22	19	20	83%
	Treatment firms - post IFRS 11 period	7	10	19	24	24	24	-
Ireland	Assets	NA	NA	1	1	1	1	33%
	Liabilities	NA	NA	1	1	1	1	33%
	Equity	NA	NA	1	2	1	1	33%
	Revenues	NA	NA	0	0	1	1	33%
	Expenses	NA	NA	0	0	1	1	33%
	Net income	NA	NA	0	1	1	1	33%
	Treatment firms - post IFRS 11 period	NA	NA	1	3	3	3	-
Italy	Assets	3	3	4	19	20	19	63%
	Liabilities	3	3	4	19	20	19	63%
	Equity	3	3	4	21	22	22	73%
	Revenues	3	3	4	17	18	17	57%
	Expenses	3	3	4	15	15	14	47%
	Net income	3	3	4	18	18	17	57%
	Treatment firms - post IFRS 11 period	3	3	7	30	30	30	-
Kuwait	Assets	NA	NA	1	0	0	0	0%
	Liabilities	NA	NA	1	0	0	0	0%
	Equity	NA	NA	1	0	0	0	0%
	Revenues	NA	NA	0	0	0	0	0%
	Expenses	NA	NA	0	0	0	0	0%
	Net income	NA	NA	1	0	0	0	0%
	Treatment firms - post IFRS 11 period	NA	NA	1	1	1	1	-
Malaysia	Assets	NA	NA	3	8	8	7	78%
	Liabilities	NA	NA	3	8	8	7	78%
	Equity	NA	NA	4	9	9	8	89%
	Revenues	NA	NA	2	8	7	6	67%
	Expenses	NA	NA	2	8	7	6	67%
	Net income	NA	NA	3	9	9	8	89%
	Treatment firms - post IFRS 11 period	NA	NA	5	9	9	9	-
Mexico	Assets	NA	NA	9	9	9	9	56%
	Liabilities	NA	NA	9	9	9	9	56%
	Equity	NA	NA	11	11	11	11	69%
	Revenues	NA	NA	7	8	8	7	44%
	Expenses	NA	NA	7	8	8	7	44%
	Net income	NA	NA	11	11	11	11	69%
	Treatment firms - post IFRS 11 period	NA	NA	15	16	16	16	-

Netherlands	Assets	2	2	4	7	7	7	44%
	Liabilities	2	2	4	7	7	7	44%
	Equity	2	2	6	11	11	10	63%
	Revenues	2	1	4	6	7	7	44%
	Expenses	2	1	4	5	6	5	31%
	Net income	3	3	7	11	11	9	56%
	Treatment firms - post IFRS 11 period	3	3	9	16	16	16	-
New Zealand	Assets	NA	NA	NA	3	3	2	67%
	Liabilities	NA	NA	NA	3	3	2	67%
	Equity	NA	NA	NA	3	3	2	67%
	Revenues	NA	NA	NA	3	3	2	67%
	Expenses	NA	NA	NA	3	3	2	67%
	Net income	NA	NA	NA	3	3	2	67%
	Treatment firms - post IFRS 11 period	NA	NA	NA	3	3	3	-
Norway	Assets	2	3	3	13	12	12	63%
	Liabilities	2	3	3	13	12	12	63%
	Equity	2	3	3	14	13	13	68%
	Revenues	2	3	4	13	12	12	63%
	Expenses	2	3	4	12	12	12	63%
	Net income	2	3	4	13	13	13	68%
	Treatment firms - post IFRS 11 period	3	4	7	19	19	19	-
Philippines	Assets	1	1	6	5	5	6	86%
	Liabilities	1	1	6	5	5	6	86%
	Equity	1	1	6	5	5	6	86%
	Revenues	1	1	6	5	5	6	86%
	Expenses	1	1	6	5	5	6	86%
	Net income	1	1	6	5	5	6	86%
	Treatment firms - post IFRS 11 period	1	1	7	7	7	7	-
Poland	Assets	NA	NA	2	6	6	6	46%
	Liabilities	NA	NA	2	6	6	6	46%
	Equity	NA	NA	2	6	6	6	46%
	Revenues	NA	NA	2	6	6	7	54%
	Expenses	NA	NA	2	5	6	7	54%
	Net income	NA	NA	3	5	6	7	54%
	Treatment firms - post IFRS 11 period	NA	NA	3	13	13	13	-
South Africa	Assets	1	2	8	16	15	15	63%
	Liabilities	1	2	8	16	15	15	63%
	Equity	1	2	9	21	20	20	83%
	Revenues	1	2	8	15	14	14	58%
	Expenses	1	2	8	14	13	14	58%
	Net income	1	2	9	19	18	19	79%
	Treatment firms - post IFRS 11 period	4	5	15	24	24	24	-
Spain	Assets	0	0	1	15	17	17	65%
	Liabilities	0	0	1	15	17	17	65%
	Equity	0	0	1	15	17	17	65%
	Revenues	0	0	1	15	17	16	62%
	Expenses	0	0	1	15	17	16	62%
	Net income	0	0	1	15	17	17	65%
	Treatment firms - post IFRS 11 period	2	2	7	26	26	26	-
Sri Lanka	Assets	NA	NA	NA	0	12	11	69%
	Liabilities	NA	NA	NA	0	12	11	69%
	Equity	NA	NA	NA	0	15	14	88%
	Revenues	NA	NA	NA	0	11	11	69%
	Expenses	NA	NA	NA	0	11	11	69%
	Net income	NA	NA	NA	0	14	14	88%
	Treatment firms - post IFRS 11 period	NA	NA	NA	1	16	16	-

Sweden	Assets	NA	NA	2	3	4	4	36%
	Liabilities	NA	NA	2	2	3	3	27%
	Equity	NA	NA	3	5	6	5	45%
	Revenues	NA	NA	0	0	0	0	0%
	Expenses	NA	NA	0	0	0	0	0%
	Net income	NA	NA	2	4	6	5	45%
	Treatment firms - post IFRS 11 period	NA	NA	3	11	11	11	-
Turkey	Assets	0	1	10	12	12	12	67%
	Liabilities	0	1	10	12	12	12	67%
	Equity	1	1	11	12	12	12	67%
	Revenues	0	0	9	10	10	10	56%
	Expenses	0	0	9	10	10	10	56%
	Net income	1	1	11	12	12	12	67%
	Treatment firms - post IFRS 11 period	1	1	17	18	18	18	-
United Kingdom	Assets	0	1	4	14	18	17	61%
	Liabilities	0	1	4	14	18	17	61%
	Equity	0	1	5	16	22	21	75%
	Revenues	0	1	4	12	16	15	54%
	Expenses	0	1	4	12	15	13	46%
	Net income	0	1	5	15	20	18	64%
	Treatment firms - post IFRS 11 period	1	3	7	18	28	28	-
TOTAL	Assets	21	28	164	269	297	297	58%
	Liabilities	21	28	163	268	296	296	58%
	Equity	23	30	195	331	360	355	69%
	Revenues	20	25	143	248	276	272	53%
	Expenses	20	25	143	239	268	264	51%
	Net income	24	31	194	321	348	346	67%
	Treatment firms - post IFRS 11 period	46	58	280	477	512	513	-

Of the total of 513 firms that were impacted by IFRS 11 adoption and had to switch from the proportionate consolidation to the equity method, in 2016 only 297 (58%) disclosed in the notes to their financial statements the information about the assets of their joint ventures, 296 (58%) about the liabilities, 355 (69%) about the equity, 272 (53%) about revenues, 264 (51%) about expenses, and 346 (67%) about the net income.

These numbers indicate that firms may not always comply with disclosure requirements. Therefore, requiring a higher level of disclosure in the notes to the financial statements about joint ventures' assets, liabilities, revenues, and expenses may not mitigate the consequences of the elimination of the proportionate consolidation. Also, the level of disclosure in the notes does not appear to have improved over time. In

2013, 58% of firms from the treatment group disclosed the information about the liabilities of their joint ventures. This percentage remains the same in 2016.

Although IFRS 12 requires the disclosure of a summary of financial information about interests in joint ventures, which includes assets, liabilities, equity, revenues, expenses, and net income, some firms have disclosed only the information about equity and net income of their joint ventures. This makes it impossible for users to simulate what the accounting amounts reported under proportionate consolidation would be.

One of the main difficulties we faced during the collection of these data is that after IFRS 11 adoption both joint venture and associate investments are measured using the equity method and, consequently, we found firms that disclose the financial information about these two investments together. The information disclosed is about ‘investments measured by the equity method’ or ‘unconsolidated investments’, making it difficult to obtain the data, as we cannot even differentiate joint venture from associate investments, let alone collect the financial information about joint ventures only.

The second problem is that we found firms that disclosed the financial information about only one (or a few) of their joint ventures, since IFRS 12 requires detailed disclosure only for material joint ventures. Similarly, some firms disclose financial information only about their direct interests in joint ventures and not about their indirect investments. Due to these limitations, the number of firms in which it was possible to restate POST IFRS 11 financial statements was smaller.

4.4.2. Impacts on the accounting amounts reported by firms

After data collection we restated post IFRS 11 financial statements of firms from the treatment group, from the equity method to the proportionate consolidation ‘as if’ these firms had continued to use proportionate consolidation even after the IFRS 11 adoption.

It is important to note that we estimated what the accounting amounts reported by firms would be if they continued to use proportionate consolidation only for the financial statements in which we were able to collect the data about all financial information (assets, liabilities, revenues, and expenses) from at least one joint venture.

Table 14 presents the number of financial statements in which we were able to recompute the proportionate consolidation using the financial information of joint ventures collected from the notes, as well as the differences (%) observed between the accounting amounts originally reported by the equity method and the accounting amounts that were restated by the proportionate consolidation.

Table 14: Differences (%) – restatement of post IFRS 11 financial statements (PC x EM)

Difference (%)	Financial Statements	Assets	Liabilities	Revenues	Expenses
Australia	5	2.4%	4.7%	2.6%	2.8%
Belgium	28	8.3%	13.6%	10.4%	11.0%
Brazil	139	10.1%	15.4%	18.3%	19.2%
Canada	66	2.1%	4.3%	4.0%	3.9%
Chile	18	1.4%	2.0%	2.1%	2.1%
Denmark	12	3.9%	9.0%	1.9%	2.0%
Finland	20	1.6%	2.5%	1.5%	1.6%
France	77	1.7%	2.1%	3.5%	3.6%
Germany	64	2.1%	3.4%	4.0%	4.1%
Hong Kong	63	6.7%	11.6%	14.0%	15.1%
Italy	54	2.9%	3.7%	4.6%	4.7%
Malaysia	23	11.1%	20.5%	27.4%	31.1%
Mexico	30	108.3%	204.0%	75.2%	83.1%
Netherlands	23	0.4%	0.4%	2.3%	2.4%
New Zealand	8	2.2%	4.8%	11.2%	16.8%
Norway	44	1.7%	2.0%	17.1%	17.8%
Philippines	23	2.9%	3.8%	5.1%	5.3%
Poland	19	0.8%	1.4%	1.6%	1.6%
South Africa	49	1.7%	3.9%	8.8%	9.8%
Spain	49	5.5%	7.9%	8.0%	8.5%
Sri Lanka	22	112.3%	273.6%	421.4%	467.4%
Turkey	39	23.2%	27.9%	30.9%	33.2%
United Kingdom	45	1.6%	3.0%	3.3%	3.5%

The percentages presented in Table 14 tend to underestimate the effects of the difference between proportionate consolidation and equity method. As explained above, firms quite often disclose full financial information of only one (or a few) joint venture(s) and for other joint ventures disclose only the equity and/or net income or

even no information at all. If such firms had disclosed all financial information about their interests in joint ventures, it would be expected that the differences would be much greater than the percentages shown in Table 14.

Even underestimating the effects of proportionate consolidation, for some countries the average impact was quite significant, such as Sri Lanka, Mexico, Turkey, Malaysia, and Brazil. For example, the liabilities reported by firms from Mexico would be 204% higher if these firms continued to use the proportionate consolidation instead of the equity method. Similarly, in Turkey and Malaysia this percentage would be 27.9% and 20.5%, respectively. This is still quite a significant number and evidently has the potential to influence the analysis and, consequently, the decision making process.

4.4.3. Comparability analysis

For this comparability analysis, we maintained only those firms that disclosed the financial information of their joint ventures in at least two years after the adoption of IFRS 11. Thus, we identified a total of 285 firms from the treatment group that met this requirement. After the matching procedure (PSM), our final sample is composed of 570 firms (285 firms from the treatment group and their matched pairs from the control group). Table 15 shows the distribution of our matched sample by country.

Table 15: Sample distribution – restatement model

Countries	Number of Firms			Number of observations				Total
				Treatment		Control		
	Treatment	Control	Total	PRE	POST	PRE	POST	
Australia	2	23	25	17	6	102	94	219
Belgium	8	4	12	59	29	24	14	126
Brazil	38	3	41	118	146	10	10	284
Canada	21	5	26	41	81	13	16	151
Chile	5	4	9	19	18	19	13	69
Denmark	4	1	5	34	14	10	2	60
Finland	5	8	13	24	29	56	30	139
France	31	1	32	202	110	9	3	324
Germany	22	31	53	157	80	187	111	535
Hong Kong	15	76	91	84	73	438	278	873
Ireland	0	3	3	0	0	14	13	27
Italy	17	16	33	128	65	80	71	344
Kuwait	0	3	3	0	0	15	14	29
Malaysia	8	7	15	11	28	14	21	74
Mexico	8	1	9	8	32	3	2	45
Netherlands	7	5	12	51	30	32	28	141
New Zealand	3	11	14	18	9	51	38	116
Norway	13	11	24	77	52	62	43	234
Philippines	6	10	16	41	28	69	34	172
Poland	6	2	8	48	20	11	12	91
South Africa	13	9	22	84	66	71	30	251
Spain	16	2	18	126	56	16	7	205
Sri Lanka	11	0	11	31	23	0	0	54
Sweden	0	7	7	0	0	39	24	63
Turkey	9	7	16	61	35	54	28	178
United Kingdom	17	35	52	133	53	173	147	506
Total	285	285	570	1,572	1,083	1,572	1,083	5,310

While firms from Brazil, France, Germany, and Canada account for almost 40% of the treatment group, Hong Kong and United Kingdom are the countries with the greatest number of firms from the control group. Our matched sample for this particular analysis is composed of 5,310 firm-year observations, with 3,144 firm-year observations from the PRE period and 2,166 firm-year observations from the post IFRS 11 adoption period.

Based on this sample of 570 firms, we prepared two databases:

- (1) Real Data: this database is based on the real data, i.e., firms from the treatment group that had to switch from the proportionate consolidation to the equity method when adopting IFRS 11 and firms from the control group that were not affected by IFRS 11 adoption, as they already used the equity method.

(2) Restated Data: the same database from [1], but for those firms from the treatment group for which we manipulated the accounting amounts in order to restate post IFRS 11 from the equity method to the proportionate consolidation, ‘as if’ these firms continued to use the proportionate consolidation even after IFRS 11 adoption.

Using these two databases, Table 16 reports the results for each of the two comparability metrics used in this analysis (price and return models), and shows the comparison between treatment firms and control firms using the real data (Panel A) and using the data from the restatement of post IFRS 11 financial statements of treatment firms (Panel B). Given that the comparability metric is based on the differences between these two groups of firms, a decrease (increase) in the differences implies an increase (decrease) in comparability after IFRS 11 adoption.

Table 16: Comparability metrics – real data x restatement data

PANEL A - REAL DATA				
Restatement Model - Real	Price		Return	
	Mean	Median	Mean	Median
PRE - IFRS 11	1,186	1,185	0,057	0,057
POST - IFRS 11	1,574	1,567	0,040	0,040
Difference (POST - PRE)	0,389	0,381	-0,017	-0,018
<i>p-value</i>	<i>0,000</i>	<i>0,000</i>	<i>0,000</i>	<i>0,000</i>
PANEL B - RESTATEMENT DATA				
Restatement Model - Restated	Price		Return	
	Mean	Median	Mean	Median
PRE - IFRS 11	1,186	1,185	0,057	0,057
POST - IFRS 11	1,563	1,555	0,045	0,044
Difference (POST - PRE)	0,377	0,370	-0,012	-0,013
<i>p-value</i>	<i>0,000</i>	<i>0,000</i>	<i>0,000</i>	<i>0,000</i>

Regarding the price model, the results obtained using the real data (Panel A) show that the mean differences between treatment and control firms increased from 1.186 to 1.574 after IFRS 11 adoption, meaning that the adoption of IFRS 11 and the elimination of the proportionate consolidation reduced the comparability of accounting information. However, if treatment firms had not adopted IFRS 11 and, therefore, continued to use proportionate consolidation (restatement data - Panel B), the

differences between treatment and control firms would also have increased from the PRE period to the POST IFRS 11 adoption period, but this increase would be slightly less (from 1.186 to 1.563) than the increase observed using the real data.

These results indicate that under the price model, the degree of comparability between treatment and control firms would be greater if firms from the treatment group could continue to use the proportionate consolidation to measure their interests in joint ventures during the POST IFRS 11 adoption period.

The results from the return model are different from the results obtained using the price model. Specifically, the findings from the return model estimated using the real data (Panel A) suggest that the mean of the differences between treatment and control firms fell after IFRS 11 adoption, which means that the comparability of accounting information increased after the elimination of the proportionate consolidation.

Comparing the results from Panel A and B, the findings from the return model indicate that the differences between treatment and control firms would be slightly greater (and, consequently, the comparability would be less) if firms from the treatment group had not adopted IFRS 11 and, therefore, continued to use proportionate consolidation during the POST period (restatement data - Panel B). However, for the return model this difference between the results observed in the restatement data and those reported by the real data is not that significant.

As mentioned above, this analysis using the restatement data has some limitations that may influence our results. The first is that the estimation of the proportionate consolidation is very conservative, given that firms usually disclose the financial information about only one (or a few) of their interests in joint ventures and our simulation considered only those joint ventures whose financial information have

been fully disclosed. Therefore, the difference between the real data and the restatement data would be higher if all the financial information of all joint ventures had been disclosed and taken into account in our simulation. The second limitation is that we cannot manipulate the stock price and stock returns, but it would be expected that these two variables would be different if joint venturers had originally disclosed their financial information using the proportionate consolidation instead of the equity method.

5. Concluding remarks

This research evaluates the impact of the adoption of IFRS 11 and the elimination of the proportionate consolidation as an alternative to accounting for interests in joint ventures, on the comparability of accounting information. Additionally, it analyses whether the increase in disclosure requirements proposed by IFRS 12 would mitigate the consequences of the elimination of the proportionate consolidation, through the analysis of the financial information about interests in joint ventures that are being disclosed in the Notes.

We built a unique and quite comprehensive database with information about interests in joint ventures from several countries. Specifically, we hand collected and analysed the financial statements of 2,059 firms with interests in joint ventures from 26 countries, for the years of 2005-2016, resulting in a sample of 14,356 financial statements. We measure the comparability of accounting information by using the metric that was proposed by Barth et al. (2012), known as Accounting System Comparability, considering the stock price, stock return, and future cash flow as economic outcome and assets, liabilities, revenues, and expenses as accounting amounts.

The results indicated that the adoption of IFRS 11, broadly speaking, decreased the comparability of accounting information. However, after classifying the 26 countries of our sample into seven clusters, based on similarities and differences in their cultural and institutional environment, we found that the general decrease in comparability after the adoption of IFRS 11 may be at least partially explained by the results observed in specific clusters, such as Cluster 4 (Brazil, Chile and Mexico), Cluster 5 (Denmark, Finland, Netherlands, Norway, and Sweden), and Cluster 7 (Kuwait, Malaysia, Sri Lanka, and Turkey).

To the best of our knowledge this research is the first attempt to empirically analyse the impact of the adoption of IFRS 11 and the elimination of accounting choices on the comparability of accounting information. Our results provide important contributions to earlier literature about the reporting method of interests in joint ventures, the comparability of accounting information and accounting diversity, and also has important implications for the IASB, given that the proportionate consolidation was eliminated seeking to improve comparability, and our results show that this expected effect was not observed in all countries.

Our analysis also provides some evidence that the improvement in disclosure requirements proposed by IFRS 12 may not mitigate the consequences of the elimination of the proportionate consolidation, given that firms do not always comply with these disclosure requirements. This finding may also provide important insights to the IASB, given that in the Basis for Conclusions on IFRS 11 the IASB argued that all information that was previously provided by financial statements that were prepared using the proportionate consolidation can now be obtained in the Notes and, therefore, the elimination of the proportionate consolidation should not result in informational loss for users. However, our analyses provide evidence that does not corroborate this IASB

claim. Consequently, this research may be relevant not only for the Post Implementation Review (PIR) of IFRS 11, but also for the IASB Disclosure Initiative project.

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