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The explanatory factors of segments disclosure in non-financial entities listed in European markets

Los factores explicativos de la divulgación por segmentos en entidades no financieras cotizadas en los mercados europeos

Pedro Amado, Fábio Albuquerque* and Nuno Rodrigues

Instituto Politécnico de Lisboa, Portugal

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Abstract

Segment reporting (external) is a relevant tool for investors and other stakeholders, as the information is presented in a divisional way, enabling more accurate analysis to be made for decision making. However, reporting entities do not always assure the inherent potential of segment reporting. This research aims to identify the explanatory factors that may influence the level of segment disclosure. For this purpose, we have investigated the segment disclosures presented in accordance with the International Financial Reporting Standards (IFRS) 8 of the International Accounting Standards Board (IASB), as adopted by the European Union, based on consolidated reports and accounts (for the year 2015) of a sample of 91 entities from the Portuguese Stock Index (PSI-20), *Cotation Assistée en Continu* (CAC-40), *Deutscher Aktienindex* (DAX-30) and OMX Nordic 40 (OMX-N40). The findings indicate that size is directly related to both the number of operating segments disclosed and the level of disclosure required for each segment. Further, the latter seems to be also influenced by the existence of barriers to entry (directly) and the degree of internationalisation (inversely).

JEL classification: M40, M41, M49.

Keywords: Presentation, Disclosures, IFRS 8, Segment reporting, Operating segments.

* Corresponding author.
E-mail address: fhalbuquerque@iscal.ipl.pt (F. Albuquerque)
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Resumen

La información por segmentos (externa) es una herramienta relevante para los inversores y otras partes interesadas, una vez que la información se presenta en un punto divisional, que permite más precisión de análisis para la tomada de decisión. Sin embargo, las entidades que los reportan no siempre garantizan el inherente potencial de la información por segmentos. Esta investigación se basa en identificar los factores explicativos que pueden influir en el nivel de la divulgación de la información por segmentos. Para este propósito, hemos investigado la divulgación por segmentos presentada en conformidad con las *International Financial Reporting Standards* (IFRS) 8 del International Accounting Standards Board (IASB), tal cual, adoptada por la Unión Europea, basado en informes y cuentas consolidadas (para el año 2015) de una muestra de 91 entidades del *Portuguese Stock Index* (PSI 20), *Cotation Assistée en Continu* (CAC-40), *Deutscher Aktienindex* (DAX-30) y OMX Nordic 40 (OMX-N40). Los resultados indican que el tamaño es directamente relacionado con el número de segmentos presentados y el nivel de divulgación requerido para cada segmento. Además, el último parece que también está afectado por la existencia de barreras a la entrada (directamente) y el grado de internacionalización (inversamente).

Códigos JEL: M40, M41, M49.
Palabras Claves: Presentación, Informes, IFRS 8, Información por segmentos, Segmentos de explotación.

Introduction

Despite the potential of segment reporting, accounting regulations play an important role in the regulation / imposition of reporting by segments abroad, since in this way the entities more clearly identify the information by segments that, due to their relevance (usefulness), must disclose to the users of the financial statements (FS).

The International Financial Reporting Standards (IFRS) 8 Operating Segments, which replaced the International Accounting Standard (IAS) 14 with the same denomination, intrinsically contemplates a "management approach" that has been the subject of some criticism, since in the genesis not all entities substantially disclose the information by segment, namely on geographical areas.

This, in turn, results in the non-disclosure of all the information required by IFRS 8 by some entities. In this context, there may be explanatory factors regarding the difference in attitude among entities regarding the level of disclosure of information by segment. According to Véron (2007), IFRS 8 was involved in some controversy, comparing this standard with its background and other accounting regulations. At stake, the "management approach" used by IFRS 8 is not consensual, especially among the users of FS, who have some disadvantages.

In summary, with the introduction of IFRS 8, the entities started to disclose more segments, but less information items by segment (Aleksanyan and Danbolt, 2015, Bugeja, Czernkowski and Moran, 2015, Crawford, Extance, Helliar and Power, 2012, Franzen and Weißenberger, 2015, Kang and Gray, 2013, Leung and Verriest, 2015, Lucchese and Di Carlo, 2016, Nichols, Street and Cereola, 2012, Pardal, Morais and Curto, 2015). Geographic areas are also becoming more specific, but there seems to be less information released for each of these types of segments (Aleksanyan and Danbolt, 2015, Crawford *et al*., 2012, Franzen and Weißenberger, 2015, Leung and Verriest, 2015; Nichols *et al*., 2012).

However, it is also questionable whether IFRS 8 only initially caused a greater impact when replacing the previous one, with a stagnation of its effects in later years. Lucchese and Di Carlo (2016), in particular, identified this effect.

IFRS also requires further information on products and services, geographical areas and key customers if they are not integrated into the reportable operating segments. This information is known 8 by related entity-wide disclosures (REWD) within the IFRS 8 (paragraphs 31 to 34 of IFRS 8). According to some studies, most entities choose, under IFRS 8, to disclose products and / or services as their operating segments, to the detriment of geographical areas or a mix or matrix thereof, with the segments of geographical areas being disseminated in related entity-wide disclosures (Altintaş, 2010; Franzen and Weißenberger, 2015; Kang and Gray, 2013; Nichols *et al*., 2012; Obradović and Karapavlović, 2016; Pardal and Morais, 2011). This situation potentially reduces the level of information on geographical areas, since the information (items) provided in the operational segments is usually higher than in the REWD, which may limit the information provided to the users of the financial statements.

In addition, Bugeja *et al*. (2015) and Franzen and Weißenberger (2015) have serious doubts as to the full compliance of the disclosure requirements of IFRS 8 by all entities. For instance, regarding the identification of the entity's chief operating decision maker, which was recently included as an obligatory requirement under IFRS 8, Franzen e Weißenberger (2015) e Nichols *et al*. (2012) have identified about 30% of this information only, while Crawford *et al*. (2012) and Kang and Gray (2013) above 60% and 80%, respectively. Also, the information on reconciliations is not fulfilled at a 100% level (Crawford *et al*., 2012; Lucchese & Di Carlo, 2016; Nichols *et al*., 2012).

Some explanatory factors can then contribute to the different levels of disclosure of information by segments observed in the entities. These elements may be related, in particular, to the characteristics of the entities, where agency and / or ownership costs play a parallel role in the explanation of the relations verified (Alfaraih and Alanezi, 2011, Bugeja *et al*., 2015, Herrmann and Thomas, 1996, Leung and Verriest, 2015, Lucchese and Di Carlo, 2016, Obradović and Karapavlović, 2016, Pardal, 2008, Pardal and Morais, 2011, Prater-Kinsey and Meek, 2004, Prencipe, 2004).

The objective of this paper is to identify explanatory factors that may influence the level of disclosure of information by segment (number of operating segments disclosed and level of compliance with IFRS 8), namely the size, the financial leverage (indebtedness), the profitability, the degree of internationalisation, the existence of barriers to entry and, finally, the main economic activity sector.

Theoretical framework

There are several studies, pre and post IFRS 8, which indicate the existence of explanatory factors that influence the level of disclosure of information by segment (number of segments reported and / or number of mandatory and / or voluntary information items per segment disclosed). Among several possible explanatory factors, these studies more accurately analyse a range of intrinsic characteristics to the entities, namely the size, profitability, growth, indebtedness, industry (sector), home country or nationality, degree of internationalisation, age and / or the reputation and others.

Among these explanatory factors that have a positive and significant relationship with the level of information disclosure by segment, the following stand out: size, the degree of internationalisation (for instance, by the presence in several capital markets or the weight of the foreign sales over the total sales), age and / or the reputation (including how many years they are listed in stock exchanges and / or the influence of the auditors, i.e., if a Big-4 accounting firm is represented by them), profitability, indebtedness, the level of capital dispersion and the barriers to entry (Alfaraih and Alanezi, 2011, Herrmann and Thomas, 1996, Leung and Verriest, 2015, Obradović and Karapavlović, 2016, Pardal *et al*., (2015); Prather-Kinsey and Meek, 2004; Prencipe, 2004).

Although minority ones, it is worth mentioning the identification of a negative and significant association - in opposition, therefore, to those mentioned above - in studies conducted by some researchers on the explanatory factors, such as the size, profitability, growth, level of capital dispersion, indebtedness and the level of presence in international exchanges (Lucchese and Di Carlo, 2016; Pardal, 2008; Pardal and Morais, 2011; Pardal *et al*., 2015).

Concerning the countries assessed for those researches, the findings indicate that entities domiciled in France, the United Kingdom and Switzerland, operating in the financial or capital goods sector and audited by a Big-4/5, tend to disclose more information by segment (Alfaraih and Alanezi, 2011; Herrmann and Thomas, 1996; Obradović and Karapavlović, 2016; Prather-Kinsey and Meek, 2004). As regards the Portuguese case, it should also be emphasized the findings from Pardal (2008), which indicated a positive association between size and both the number of segments and the required items to be reported. Oppositely, the findings showed a negative relationship between the profitability and the number of items disclosed.

In order to explain the findings from the various explanatory factors under assessment, some links by the literature have been established between them and two theories in particular: the agency cost (the incentives for reducing the agency costs) and the ownership structure theories. Mostly, those studies have found, as previously said, a positive association between those explanatory factors and the level of disclosure of information by segment are explained by them, as it is shown below, especially, but not exclusively, the size, the degree of internationalisation, the age and / or the reputation, the level of capital dispersion and the barriers to entry.

In fact, larger entities disclose more than small entities because they are usually more exposed to markets and are able to incur lower costs to produce and disseminate information by their more advanced systems (or are more likely to pay for these costs). As they are more complex, diversified and have more resources, are also able to defend themselves against actions of their competitors (ownership structure), and to avoid facing high costs of agency and politicians (unions, Government regulators and tax authorities) (Alfaraih and Alanezi, 2011, Herrmann and Thomas, 1996, Pardal *et al*., 2015, Prencipe, 2004).

At the same extent, companies listed in several capital markets tend to disclose more than listed entities exclusively in the local one, in order to reduce the agency costs to the maximum and meet the information needs of international investors and creditors, thereby capturing a higher level of foreign capital (Herrmann and Thomas, 1996).

Older entities tend to disclose more than the younger ones as they are less susceptible to competitive disadvantages and have greater experience, maturity, and knowledge of financial analysts' information needs, being better prepared, at a lower cost, for the collection, production and the dissemination of information (Alfaraih and Alanezi, 2011, Prencipe, 2004).

Entities audited by a Big-4/5 tend to disclose more than entities not audited by a Big-4/5 or audited by a local entity. Alfaraih and Alanezi (2011) and Prather-Kinsey and Meek (2004) argues that Big-4/5 are larger and have a great deal of experience, compared to other auditors, which exert a high level of quality of auditing, then pressuring their customers to improve and meet the disclosure requirements so as not to lose or gain even more reputation, and rely less on one or a few customers. On the contrary, smaller auditors are more sensitive to the demands of their clients because of the economic consequences of losing a customer.

Entities with a higher number of shareholders also tend to disclose more in order to reduce conflicts of interest between directors (shareholders) and agents (managers) and, consequently, agency costs, by reducing information asymmetries between the two parties (Alfaraih and Alanezi, 2011; Prencipe, 2004).

Despite they have not found significant results by sectors, Herrmann and Thomas (1996) emphasize that barriers to entry may have an influence on the level of information dissemination (by segments). In fact, Pardal *et al*. (2015) found in post-IFRS 8 period a significant positive association between barriers to entry and the level of disclosure of information by segment.

Regarding the profitability, indebtedness and growth, however, the literature identifies a plausible explanation for the results observed over different researches, both in positive and negative sense, the same being true for growth, despite the evidence for a negative relationship.

For Prencipe (2004), in particular, profitability and growth rate can have a double effect, positive or negative. Entities with high returns and / or high growth rates may choose to disclose less information so that they do not face high competitive disadvantage costs (ownership structure). Through the information disclosure by segment, such entities may be at a disadvantage against potential competitors seeking to take advantage of new business opportunities, more specifically in growing markets and profitable new markets. On the other hand, they may choose to disseminate more information to reduce the risk of not being selected by the market and to reduce agency costs (Pardal *et al*., 2015, Prencipe, 2004).

Alfaraih and Alanezi (2011) add that high-yielding entities disclosure in a higher level because managers need to prove their ability to maximize shareholder value by avoiding undervalued stocks and then assuring their position and receiving their rewards. In addition, when agency costs override the ownership costs, low-profitable entities may disclose less information to hide the reasons for poor performance or losses and to prevent adverse market reactions (Alfaraih and Alanezi, 2011; Pardal *et al*., 2015). In this context, some studies fail to obtain a significant relationship between these explanatory factors and the level of disclosure of information by segment.

The indebtedness may have a similar behaviour at some extent. It seems to be more consensual in these studies that entities with higher level of debt tend to proportionality disclose more to reduce agency costs in relation to financial creditors, seeking more funding and maintaining long-term trust (Alfaraih and Alanezi, 2011; Pardal and Morais, 2011; Prencipe, 2004).

However, Prencipe (2004) warns that this relationship may be insignificant, especially if many of the entities do not disclose information in a way that does not call into question the confidentiality agreements established with banks. Notably, in the study by Pardal and Morais (2011), no significant results were found for the indebtedness. However, Pardal *et al*. (2015) have obtained significant positive and negative results for indebtedness, and these have justified this situation with the cultural differences existing between the entities of different countries, especially in the way that entities report to the creditors.

On the other hand, the significantly negative results observed for size and the degree of internationalisation could be explained by the period under analysis (post-IFRS 8) and the sample used, respectively. According to Lucchese and Di Carlo (2016), the significantly negative relationship with size can be explained by the effect of management's greater discretion in disclosing information items required by IFRS 8 after its implementation. It should be noted, however, that post-IFRS 8 studies by Pardal and Morais (2011) and Pardal *et al*. (2015) are examples where the size was given as significantly positive.

Pardal and Morais (2011) stated that the significantly negative relationship with the level of presence in international capital markets can be explained by the low number of internationally quoted sample entities.

Regarding the level of capital dispersion, Lucchese and Di Carlo (2016) do not provide an explanation for the significantly negative findings found. However, as Prencipe (2004) points out, this relationship may arise from the fact that most of the listed Italian entities, type of sample used in both studies, are controlled by the family, and there is no separation between owners (shareholders) and managers in reality.

Finally, and regarding the sector (industry) as an explanatory factor, Alfaraih and Alanezi (2011) indicate that the positive association occurs in the context of entities from financial sector, since most of them have information systems that allow easily, with minimum costs, to collect and processing information. The findings from literature, however, have shown different conclusions in this field, as stated by Alanezi, Alfaraih and Alshamman (2016).

The authors above-mentioned have explained the findings from the two main theories related to the level of disclosure of information by segment: agency cost and ownership structure theories. Notwithstanding, those theories were not the focus on those researchers indeed.

Then, in order to conduct a comprehensive analysis on the impacts of those theories in this filed, some studies have investigated in a more detailed path whether or not the agency cost and / or the ownership structure theory influence the level of disclosure of information by segments. This was the case of Bugeja *et al*. (2015), Pardal *et al*. (2015) and Prencipe (2004).

The findings from Bugeja *et al*. (2015) indicate that entities with an increase in the number of post-IFRS 8 disclosed segments had a significantly higher proportion of deficit segments, and the exact opposite post-IAS 14 review occurred. According to Bugeja *et al*. (2015), the "risk and return" approach used by the revised IAS 14 for the identification of reportable segments, and removed in IFRS 8, could be the source of this difference. This approach allowed entities to avoid the identification of deficit segments as reportable, thus proving that agency costs were the main explanation for the non-disclosure of segments prior to the adoption of IFRS 8 (Bugeja *et al*., 2015).

Among other findings, Bugeja *et al*. (2015) also noted that the increase in the number of segments disclosed by an entity after the adoption of revised IAS 14 and IFRS 8 is positively related to the diversity of the industries in which it operates.

With regard to ownership structure theory, the post-revised IAS 14 and IFRS 8 results of Bugeja *et al*. (2015) provide minimal support for the validity of these costs as an explanation for non-disclosure of segments. However, post-IFRS 8 results indicate that entities with a higher percentage of profitable segments operating in more concentrated and smaller industries are more likely to reduce the disclosure of information items by segment, consistent with the ownership structure argument (Bugeja *et al*., 2015).

Accordingly, the findings of Pardal *et al*. (2015) generally suggest that EU listed non-financial entities with above-average performance in the industry (abnormal return) operating in more concentrated or labour-intensive sectors retained segment information for FS users, Both under IFRS 8 and the revised IAS 14. Therefore, Pardal *et al*. (2015) emphasize that IFRS 8 had a low or no effect on the reduction of non-disclosure of segment information due to ownership structure issues.

Finally, with a special focus on three explanatory factors which were considered proxies for the application of the ownership structure theory, Prencipe (2004) observes that they are effectively influential in the segment reporting level, discouraging entities to provide this information to the market. As a basis for this conclusion were the results found for two of the three explanatory factors assessed: positive and significant relationship between the level of information disclosure by segments, on one hand, and the correspondence between segments and the legally identifiable subsets of the entities and the age / number of years an entity is listed, on the other hand. For growth rate (the third one), no statistical significance was obtained, although had been found a negative relation with the level of information disclosure by segment.

The next chapter presents the hypotheses and methodological lines related to the study proposed in this article.

Hypothesis and Methodology

This paper investigates the explanatory factors associated with the level of segment disclosure, including the level of compliance with the disclosures required by IFRS 8 for each operating segment.

The explanatory factors selected for this research are related to the companies' specific characteristics and, simultaneously, to the theories of agency costs and ownership structure, which include the size, the financial leverage (indebtedness), the profitability, the degree of internationalisation, the existence of barriers to entry and, finally, the main economic activity sector. Other explanatory factors could have been considered indeed, given the literature review previously presented. However, some practical constraints were identified as they were not included in this research, such as the absence of the information for some companies (for instance, the information on the level of capital dispersion or on the number shareholders), or the nature of data, which does not allow their inclusion for statistical purposes (for instance, more than 90% of the listed companies assessed in this research have been audited by one of the Big-4 and, on the other hand, less than 10% of companies have been listed in different markets other than the local one; finally, the growth rate where a not significant number of years has been used might be not explained by an economic viewpoint).

Thus, and considering the literature review associated with this subject, the explanatory factors included in this research may influence the trend of the entities to disclose more (or less) information by segments. Consequently, the operational hypotheses that will be presented in this point are formulated from the following general hypothesis (H):

H 1: There is a statistically significant association amongst certain explanatory factors and the disclosure of information by segments.

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Alfaraih and Alanezi (2011), Herrmann and Thomas (1996), Pardal *et al*. (2015) and Prencipe (2004) argue that larger entities are more complex, have more experience, resources at their disposal, including state-of-the-art information systems, resistance capabilities against competitors (lower ownership costs) and more accountability regarding the shareholders, in order to avoid conflicts with them (agency costs). Such aspects may lead entities to disclose more information by segment. With the exception of Lucchese and Di Carlo (2016), Leung and Verriest (2015), Lucchese and Di Carlo (2016), Obradović and Karapavlović (2016), Pardal (2008), Pardal and Morais (2011), Prather-Kinsey and Meek (2004) have found a positive relation, which is on the basis of H 1.1.

According to Alfaraih and Alanezi (2011), Pardal and Morais (2011) and Prencipe (2004), entities with higher indebtedness tend to disclose more information in order to solidify the relationship between debtor and creditor (reducing agency costs). In this context, Alfaraih and Alanezi (2011), Pardal *et al*. (2015) and Prencipe (2004) observed statistically significant and positive relationships. Notwithstanding, the second one also verified, on the contrary, a significantly negative relation, being this finding by cultural reasons, considering that entities from several countries frequently have transactions which contain confidentiality agreements with financial creditors. Based on these non-consensual findings, H 1.2 was defined.

As regards profitability, Alfaraih and Alanezi (2011), Pardal *et al*. (2015) and Prencipe (2004) state that in this context these may respond with a different level of disclosure of information. More specifically, if the priority is not to be at a competitive disadvantage (ownership costs), then high-profitable entities may disclose less information. On the contrary, if entities with higher or lower profitability levels give priority to the image to be transmitted to the market and to the owners of capital (agency costs), then these can disclose more or less information, respectively. If the results obtained by Alfaraih and Alanezi (2011) and Pardal *et al*. (2015) were statistically significant with a positive relationship for profitability, Lucchese and Di Carlo (2016) and Pardal and Morais (2011) found on the contrary a significantly negative relation. Then, both types of relation are on the basis of proposed H 1.3 again.

In relation to internationalization, Street and Gray (2002), Prather-Kinsey and Meek (2004) argue that firms that operate internationally report more segment information, particularly by geographic segments (Street and Nichols, 2002). This additional disclosure is associated with the need to comply with mandatory disclosure requirements established by foreign financial markets' regulators (Hope, 2003). However, Pardal (2008) only found association between this variable and the increment in the number of segments disclosed. This positive association supported H 1.4.

The obstacles to the entry of new players into an industry represents other relevant factor in manager's decision of defining reportable segments and items disclosed in each one. In this sense, once in industries where that require low barriers (of economic nature, mainly), is expected that towards the trade-off between informing the capital market about the value of firm and the costs of aiding a rival, they do not opt for a full-disclosure approach. (Harris, 1998 and Pardal *et al*., 2015). Despite this, and measuring those barriers by capital intensity as proposed in this research, and in line with Leuz (2004), Pardal *et al*. (2015), the above-mentioned association has not been verified. According to the former authors, for instance, "when entry barriers are higher, firms have likely less motivation to withhold segment data and positive association to disclosure should be expected". Thus, there is a higher propensity by these firms to disclose more information by segments. Given this, H 1.5 was formulated.

Finally, with regard to the sector of activity, the literature is not consensual. Prather-Kinsey and Meek (2004) found evidence of a higher compliance with the requirements of IAS 14 to some sectors of activity. In contrast, argue that the reputation and the credibility of a particular sector of activity may lead companies increment their disclosure practices (Wallace, Naser and Mora, 1994). Thus, H 1.6 was defined based on the uncertainty of its signal.

Table 1 summarizes the relationships proposed in the previous operational hypotheses, also identifying the studies mentioned in the literature review and contributing to its formulation.

Table 1
Summary of the predictable association (H 1.1-H 1.6) and identified studies

H	Explanatory factors	Predictable Association	Researches
H 1.1	Size	+	Alfaraih and Alanezi (2011), Herrmann and Thomas (1996), Leung and Verriest (2015), Lucchese and Di Carlo (2016), Obradović and Karapavlović (2016), Pardal (2008), Pardal and Morais (2011), Pardal *et al*. (2015), Prather-Kinsey and Meek (2004), Prencipe (2004)
H 1.2	Indebtedness	?	Alfaraih and Alanezi (2011), Leung and Verriest (2015), Pardal and Morais (2011), Pardal *et al*. (2015), Prencipe (2004)
H 1.3	Profitability	?	Alfaraih and Alanezi (2011), Leung and Verriest (2015), Lucchese and Di Carlo (2016), Pardal and Morais (2011), Pardal *et al*. (2015), Prencipe (2004)
H 1.4	Internationalisation	+	Hope (2003), Pardal (2008), Prather-Kinsey and Meek (2004), Street and Gray (2002), Street and Nichols (2002),
H 1.5	Barriers to entry	+	Harris (1998), Leuz (2004), Pardal *et al*. (2015)
H 1.6	Sector	?	Prather-Kinsey and Meek (2004), Wallace, Naser and Mora (1994)

Source: Own elaboration

The applicability of IFRS 8 covers in particular the separate / individual FS of an entity listed on a regulated market and the consolidated FS of a parent entity in a group listed on a regulated market. It should be noted that if an entity intends to disclose information by segment, even if it is not required to do so, it should disclose segment information under this IFRS to be considered as such (paragraph 3 of IFRS 8). However, IFRS 8 emphasizes that segment reporting is required only in the consolidated FS, in case the financial report of the parent entity includes separate and consolidated FS (paragraphs 2 and 4 of IFRS 8).

Therefore, listed companies and their disclosures on segments in the annual consolidated annexes were the target for the investigation proposed, following the most of the studies revealed in the literature review. In particular, listed companies comprising the stock indexes Portuguese Stock Index (PSI-20), *Cotation Assistée en Continu* (CAC-40), *Deutscher Aktienindex* (DAX-30) and OMX Nordic 40 (OMX-N40) were identified, as of December 31, 2016 (18, 40, 30 and 39 entities, respectively).

The PSI-20 and CAC-40 indices are respectively part of the Portuguese and French stock exchanges (Euronext Lisbon and Euronext Paris), forming with the Amsterdam and Brussels

stock exchanges the European stock exchange (Euronext) and The New York Stock Exchange (NYSE), the pan-European exchange NYSE Euronext. The DAX-30 is an index that represents the 30 largest and most liquid German entities and is, like its constituents, in the Frankfurt stock exchange (Börse Frankfurt or Frankfurt Stock Exchange). On the other hand, the OMX-N40 integrates the National Association of Securities Dealers Automated Quotations (NASDAQ), more precisely the NASDAQ Nordic, which belongs to the NASDAQ OMX Group. In this index are the 40 largest and the most traded shares on the Nordic stock exchanges (Copenhagen from Denmark, Helsinki from Finland and Stockholm form Sweden, currently).

The stock indexes selected for this research represent entities from different countries, each with its own cultures. Based on Gray (1988), for instance, those countries are representative of different levels of accounting values for conservatism and secrecy in the scope of the accounting subculture. When incorporating such entities in the sample, we intend to enrich this research by analysing possible similarities and differences between the entities of the different countries, where each culture may have a preponderance in the way they report financial information (by segments) to the outside. Therefore, in the course of this research, when referring to the entities of a given country, the entities that are part of the stock indexes (markets) of these respective countries, and vice versa, are being indicated.

For reasons of comparability of information, entities from the financial sector, entities that prepare their financial statements adopting a set of accounting and financial reporting standards other than IAS / IFRS (for example, US GAAP of the FASB), entities for which its final fiscal year is not December, in order to increase the comparability of data, and, finally, entities listed in more than one index, avoiding the repetition of the treatment of the same data, were excluded. Thus, a final sample was composed of 91 listed non-financial entities, 13 PSI-20 entities, 31 CAC-40 entities, 19 DAX-30 entities and 28 OMX-N40 entities. The entire process to reach the final sample is detailed in Table 2.

Table 2
Final sample

Number	Entities
127	18 from PSI-20, 40 from CAC-40, 30 from DAX-30 and 39 from OMX-N40: 31 Dec 2016
(-) 6	Entities from PSI-20 of financial sector
(-) 6	Entities from CAC-40 of financial sector
(-) 2	Entities from CAC-40 with FS of a different economic period
(-) 6	Entities from DAX-30 of financial sector
(-) 3	Entities from DAX-30 with FS of a different economic period
(-) 2	Entities from DAX-30 with FS based on a set of accounting / financial reporting standards, other than IAS/IFRS
(-) 7	Entities from OMX-N40 of financial sector
(-) 2	Entities from OMX-N40 with FS of a different economic period
(-) 2	Entities from OMX-N40 based on a set of accounting / financial reporting standards, other than IAS/ IFRS
(-) 1	Nokia Oyj (Corporation), which is presented in both CAC-40 and OMX-N40
91	13 from PSI-20, 31 from CAC-40, 19 from DAX-30 and 28 from OMX-N40

Source: Own elaboration

In order to obtain the necessary data for the investigation, it was gathered the information from the consolidated FS, more specifically from the notes, for the annual period 2015, prepared in the course of the entities' accounts and published on the website of these entities.

In the notes to the consolidated FS, the collection and analysis of data focused essentially on the specific section of the segment reporting, in the section on accounting principles / policies for segment reporting (where general operating segment information was sometimes included), and in other notes when referring to the segment reporting section. However, it should be noted that an entity may disclose in other notes on income, expenses, assets, liabilities or other information in a segmented manner, such as goodwill (as discussed in the paper by Gonçalves, 2015), assets held for sale or discontinued operations, among others.

The following section presents the main dependent and independent variables that were defined for the study on the determinants of segment disclosure.

Inspired by the work of Pardal (2008) and Pardal and Morais (2011), the dependent variables were chosen because they are representative of the level of disclosure of information by segments of the entities and the level of fulfilment of these to the disclosure requirements of IFRS 8:

- NOS_1 Number of operating segments disclosed by entity in the year 2015;
- CI_i Compliance index (level of disclosure of the information required by IFRS 8 for each operating segment) of entity in the year 2015.

The compliance index is composed of the elements listed in Table 3, namely: general information; information on profit or loss, assets and liabilities, that is, information items that must be disclosed under IFRS 8 for each operating segment; and reconciliations (paragraphs 22, 23, 24 and 28 of IFRS 8).

For each entity, the index is calculated from a ratio that includes, in the numerator, the number of elements disclosed by the entity and, in the denominator, the number "15", which corresponds to the total number of elements that can be disclosed. Exceptionally, if an entity discloses net financial results (net interest income), the compliance index is calculated with the denominator equal to the number "14".

In addition, the compliance rate is not adjusted if an entity does not disclose a particular element that compiles it because it is not regularly presented (in a segmented manner) or because it is only managed and assessed at the level of the group as a whole.

In order to ensure greater comparability of the data collected, taking into account the difficulty of objectively distinguishing such elements, element 2.9 integrates information on "material items of income and expenditure" and "non-cash material items, depreciation and amortization". Included in this information item are impairments, provisions and their respective reversals, as well as the examples referred to in paragraph 98 of IAS 1 Presentation of Financial Statements. Typically, entities denominate such income and expense as non-recurring.

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Table 3
Details of the compliance index

Item	Description
1	General information (paragraph 22 of IFRS 8)
2	Information on profit or loss, assets and liabilities (paragraphs 23 and 24 of IFRS 8)
2.1	Measure of profit or loss
2.2	Total assets
2.3	Total liabilities
2.4	Revenue from external customers
2.5	Revenues from transactions with other operating segments of the same entity
2.6	Interest revenue
2.7	Interest expenses
2.8	Depreciations and amortisations
2.9	Material items of income and expenses disclosed in accordance with paragraph 97 of IAS 1 Presentation of Financial Statements (as revised in 2007) + Non-cash material items other than depreciation and amortization
2.10	The entity's interest in the profits or losses of associates and joint ventures accounted for under the equity method
2.11	Expenses or income from income tax
2.12	The amount of investment in associates and joint ventures accounted for under the equity method
2.13	The amounts of additions to non-current assets, except for financial instruments, deferred tax assets, net defined benefit assets (see IAS 19 Employee Benefits) and rights under insurance contracts
3	Reconciliations (paragraph 28 of IFRS 8)

Since IFRS 8 does not explicitly define what it understands as material items of income and expense, it was considered, in addition to the examples in IAS 1, income or expenses that exceed the level of materiality defined in this study (5%). Thus, any income or expense reported in operating segments was considered material if it is consolidated value was higher than 5% of an entity's total income or expenses, respectively. In this context, "cost of goods sold and materials consumed", "supplies and external services", "staff expenses", among other income and expenses, may have been considered as material items.

The independent variables represent explanatory factors that are presumed to influence the level of disclosure of information by segments of the entities under the application of IFRS 8. Table 4 discriminates the independent variables considered in this investigation, following the previously presented literature review.

Table 4
Explanatory factors (independent variables)

Explanatory factors (independent variables	H	Measure	Researches
Size ($SIZE_i SIZE_i$)	H 1.1	Logarithm of total turnover (total sales and services rendered) of the entity in the year 2015	Herrmann and Thomas (1996), Pardal (2008), Pardal and Morais (2011), Prather-Kinsey and Meek (2004), Prencipe (2004)
Indebtedness ($IND_i IND_i$)	H 1.2	Total liabilities over total assets of the entity in the year 2015	Leung and Verriest (2015), Pardal and Morais (2011), Pardal *et al.* (2015), Prencipe (2004)
Profitability ($PROF_i$ $PROF_i$)	H 1.3	Return on Assets (ROA): Operating result (income before imputed gains / losses of associates, joint ventures and / or other investments, income and financial expenses and income tax expense or income) over total assets of the entity in the year 2015	Leung and Verriest (2015), Lucchese and Di Carlo (2016), Pardal and Morais (2011), Pardal *et al.* (2015), Prencipe (2004)
Internationalisation ($INTi$ $INTi$)	H 1.4	Foreign sales over total sales of the entity in the year 2015	Hope (2003), Pardal (2008), Prather-Kinsey and Meek (2004), Street and Gray (2002), Street and Nichols (2002),
Barriers to entry ($BTEi$ $BTEi$)	H 1.5	Property, plant and equipment over total assets of the entity in the year 2015	Harris (1998), Leuz (2004), Pardal *et al.* (2015)
Sector ($SEC_i SEC_i$)	H 1.6	Dummy variable: "0" if the entity' main economic sector in the year 2015 is industry (includes manufacturing, energy, basic materials, consumer cyclical and utilities) and "1" otherwise.	Prather-Kinsey and Meek (2004), Wallace, Naser and Mora (1994)

Two models of multiple linear regression, expressed in the two Equations below (1.1 and 1.2), were established, which structure and summarize the dependent and independent variables used in the analysis of the hypotheses formulated on the explanatory factors of the disclosure of information by segment:

analysis of the explanatory factors associated with the number of operating segments disclosed:

$$NOS_i = \alpha_i + \beta_1 SIZE_i + \beta_2 IND_i + \beta_3 PROF_i + +\beta_4 INT_i + \beta_5 BTE_i + \beta_6 SEC_i + \varepsilon_i$$

analysis of the explanatory factors associated with the level of disclosure of information required by IFRS 8 for each operating segment (compliance index):

$$IC_i = \alpha_i + \beta_1 SIZE_i + \beta_2 IND_i + \beta_3 PROF_i + +\beta_4 INT_i + \beta_5 BTE_i + \beta_6 SEC_i + \varepsilon_i$$

For the defined hypotheses it is important to emphasize the approaches used in the treatment of the information collected in order to give them an adequate response.

Such as Bugeja *et al*. (2015), Franzen and Weissenberger (2015), Leung and Verriest (2015), Pardal and Morais (2011) and Pardal *et al*. (2015), segments considered to be fictitious, that is, that do not fit the definition of a reportable operating segment (paragraphs 5-19 of IFRS 8, especially 6 and 16), are excluded from the count of the number of operating segments disclosed per entity. Generally referred to as "other", "holding", "corporate", "management", "intra-group", "unallocated", "eliminations", "adjustments", "reconciliations", among others.

In the reporting of information on operational segments, "others" are usually referred to in the context of reconciliation, incorporating, in addition to possible eliminations and / or adjustments, the so-called "common group functions", i.e. functions / activities that serve all Operating segments or the Group as a whole, making it impossible to allocate elements or items of income and / or equity items specifically to each operating segment.

In the same context, segments that aggregate the operating segments defined and disclosed separately by the entities do not represent real operating segments and, as such, were not considered in the counting. For example, the Retail segment, even if disclosed, is not configured as an operating segment if it is an aggregation of the separately reported operating segments: Food Retail, Home Appliances / Technology Retail, Furniture Retail and Clothing / Footwear Retail.

The next chapter is dedicated to the presentation and discussion of the results obtained within the methodological lines and defined objectives previously mentioned.

Findings

This study focuses on the analysis of some selected explanatory factors that may or may not influence the information by segments of listed entities.

Descriptive statistics

Table 5 sums up the information regarding the average number of operating segments reported per entity considering two types of distinct samples: all entities (91) and the entities with multiple operating segments (85).

Table 5
Number of operating segments reported per entity

	Total sample (91)	**Entities with multiple operating segments (85)**
Average number of operating segments	4.31	4.54
Products and/or services	2.78	2.91
Geographical areas	1.07	1.14
Products and/or services + Geographical areas	0.46	0.49

The average number of operating segments disclosed per entity was 4.31. By products and or services, geographical areas and both, the figures are lower than that in any case: 2.78, 1.07 and 0.46, respectively.

Considering the entities with multiple operating segments, the number increase slowly, from 4.31 (total sample) to 4.54, with a minimum value of 2 and a maximum of 12. In turn, the number of operating segments by products and or services, geographical areas and both were 2.91, 1.14 and 0.49, which are closer to the findings from Aleksanyan and Danbolt (2015) and Nichols *et al*. (2012).

Regarding the average number of operating segments per entity from the different markets assessed, and still based on the same sample (85 entities), Germany and France take the top positions, in that order, with 5.89 and 4.65. Portugal and the Nordic countries have values closer to each other, of 3.58 and 3.78, respectively. Given such differences and similarities, there are in fact statistically significant differences in the comparison between groups listed in Portugal or in the Nordic countries and entities listed in one of the first two countries (France and Germany).

The results of the entities from Portugal and the Nordic countries are the ones that most resemble the results obtained in the literature in general. Those from France are similar to the results obtained by Aleksanyan and Danbolt (2015) and Nichols *et al*. (2012). The entities of Germany are the ones that present better results, surpassing those identified in the analyzed literature on the subject.

Considering that the research by Pardal (2008) was aimed at a standard issued previously to IFRS 8, for which entities listed in Portugal presented a slightly higher number (4.00) to the result obtained here (3.58), there are thus indications that such entities have not evolved to provide more targeted information to users.

According to Franzen and Weißenberger's (2015) study, German listed companies report on average more operating segments (5.89) than in the first year of adoption of IFRS 8 (3.27), with the exception of the differences in terms of the samples from each study. Finally, with respect to the disclosure of information on operating segments, Table 6 shows the compliance rate with IFRS 8, in general and by country, for the sample of entities that disclosed multiple operating segments.

Table 6
Compliance index according to IFRS 8

	Portugal	France	Germany	Nordic countries	Total
Compliance índex	74.37%	59.30%	69.40%	63.77%	64.89%

Despite differences in the compliance rate between countries, it is possible to state that, on average, about two-thirds of IFRS 8 disclosure requirements are met by entities (for the total sample of the study, around 61%). However, the entities from Portugal are those that comply with the requirements of disclosure provided for in this regulation with greater rigor, observing for that country the maximum value (on average, they comply with about 75% of the requirements, distancing by 15 percentage points from France). In this context, there are statistically significant differences only in the comparison between Portugal and France, which is more distant from the requirements of that IFRS. Germany and the Nordic countries are distancing themselves from Portugal by around 5 and 10 percentage points, respectively.

Of the entities considered, only eight (9.5%) met more than 90% of IFRS 8 disclosure requirements, of which five (5.9%) fulfilled completely. By country, Portugal stands out with four entities, followed by Germany with three entities, and France with only one entity.

Multiple linear regression

Before analyzing the relationships proposed in this research, it is important to highlight if some of the assumptions underlying multiple linear regression were verified in both Model 1 and Model 2 (corresponding respectively to the relationships between the variables defined in Equations 1.1 and 1.2).

In multiple linear regression, there should be no multicollinearity, that is, the explanatory variables must be linearly independent. The tests for the correlation between the variables (Pearson's correlation tests), as it may be checked through the Tables 7 and 8, presented values lower than +/- 0.4, which indicate a weak or moderate correlation. In this sense, there are no significant problems in terms of multicollinearity (sector was not included, considering that it is a dummy variable).

Further, analyzing the Variance Inflation Factor (VIF) indicator through the Tables 9 and 12 for the variables number of operating segments disclosed and the compliance index, respectively, it can be seen that there is also a lack of significant correlation between the variables, since the estimated values are well below the threshold above which there is multicollinearity, that is, VIF greater than 10.

Table 7
Pearson correlations of multiple linear regression Model 1

		NOS	SIZE	IND	PROF	INT	BTE
Pearson Correlations	NOS	-	.181	.042	-.244*	.020	.075
	SIZE	.181	-	.172	-.061	.330**	-.075
	IND	.042	.172	-	-.248*	-.086	-.051
	PROF	-.244*	-.061	-.248*	-	.047	-.145
	INT	.020	.330**	-.086	.047	-	-.018
	BTE	.075	-.075	-.051	-.145	-.018	-

* The correlation is statistically meaningful at the level of 0.05 (two-tailed).
** The correlation is statistically meaningful at the level of 0.01 (two-tailed).

Table 8
Pearson correlations of multiple linear regression Model 2

		CI	SIZE	IND	PROF	INT	BTE
Pearson Correlations	CI	-	.143	.202	-.309**	-.191	.177
	SIZE	.143	-	.172	-.061	.330**	-.075
	IND	.202	.172	-	-.248*	-.086	-.051
	PROF	-.309**	-.061	-.248*	-	.047	-.145
	INT	-.191	.330**	-.086	.047	-	-.018
	BTE	.177	-.075	-.051	-.145	-.018	-

* The correlation is statistically meaningful at the level of 0.05 (two-tailed).
** The correlation is statistically meaningful at the level of 0.01 (two-tailed).

Next, the statistical results on the relationship between the number of operating segments disclosed and the explanatory factors assessed in this research are summarized in Tables 9 to 11.

Table 9
Coefficients of Multiple Linear Regression Model 1

Variable	Non-standardized coefficients		Standardized coefficients	t	Sig.	Collinearity Statistics	
	B	Standard Error	Beta			Tolerance	VIF
(Constant)	-5.177	2.992		-1.731	.087		
SIZE	.720	.192	.453	3.756	.000	.669	1.494
IND	-1.920	3.020	-.071	-.636	.527	.772	1.296
PROF	-1.700	1.580	-.118	-1.076	.285	.812	1.232
INT	-1.397	.950	-.164	-1.471	.145	.780	1.283
BTE	.813	1.344	.062	.605	.547	.934	1.070
SEC	-.854	.526	-.173	-1.623	.108	.856	1.169

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Table 10
Multiple linear regression of ANOVA Model 1

	Sum of Squares	df	Medium Square	F	Sig.
Regression	87.263	6	14.544	3.616	.003
Residual	325.828	81	4.023		
Total	413.091	87			

Table 11
Coefficient of linear multiple correlation (R). coefficient of determination (R^2) and adjusted coefficient of determination (R^2 adjusted) of Model 1

R	R2	R2 Adjusted	Standard Error of Estimate
.460	.211	.153	2.0056

The results obtained in Model 1 highlight a positive association between the number of disclosed operating segments and size exclusively. Conversely, all other possible explanatory factors present a negative relationship, excepting the barriers to entry. However, as mentioned before, only the result for size has a statistically significant association with the dependent variable (Table 9). This confirms H 1.1, where larger entities have a higher level of disclosure of information by segment.

Theoretically, considering the different levels of Gross Domestic Product (GDP), entities from France and Germany are likely larger compared to the entities of Portugal and the Nordic countries. Statistically, using the average size of the entities per country (not tabulated), this is confirmed.

Crossing the results identified in the previous study, entities in France and Germany are the ones that publish, on average, a greater number of operating segments. These results suggest that the larger entities have a greater range of operations, including by geography, since they are more complex and diversified. In turn, those entities disclose more operational segments.

The previous explanation seems to be the most plausible to justify the findings. However, other aspects mentioned in the literature review and methodology that express the relationship between size and level of disclosure of information by segment, including the number of operating segments disclosed, cannot be excluded.

Multiple linear regression analysis should not be restricted to previous results alone, and other indicators should be observed. The F test to analysis of variance (ANOVA) is significant, indicating that Model 1 has explanatory power provided that at least one beta is different from zero (Table 10).

Further, through adjusted R^2 (adjusted coefficient of determination), it can be seen that the explanatory factors under analysis (independent variables) can explain the number of operating segments disclosed (dependent variable) by about 15.3% (Table 11).

As for the statistical results on Model 2, these are summarized in Tables 12 to 14. In this case, what differentiates the first model from the second one is that the latter has as its dependent variable the compliance index, instead of the number of segments (Model 1).

Table 12
Coefficients of Multiple Linear Regression Model 2

Variable	Non-standardized coefficients		Standardized coefficients	t	Sig.	Collinearity Statistics	
	B	Standard Error	Beta			Tolerance	VIF
(Constant)	-.028	.293		-.097	.923		
SIZE	.043	.019	.273	2.282	.025	.669	1.494
IND	-.384	.295	-.145	-1.302	.197	.772	1.296
PROF	.153	.154	.107	.989	.326	.812	1.232
INT	-.226	.093	-.269	-2.433	.017	.780	1.283
BTE	.220	.131	.170	1.678	.097	.934	1.070
SEC	-.022	.051	-.046	-.435	.665	.856	1.169

Table 13
Multiple linear regression of ANOVA Model 2

	Sum of Squares	df	Medium Square	F	Sig.
Regression	.911	6	.152	3.947	.002
Residual	3.115	81	.038		
Total	4.026	87			

Table 14
Coefficient of linear multiple correlation (R), coefficient of determination (R^2) and adjusted coefficient of determination (R^2 adjusted) of Model 2

R	R2	R2 Adjusted	Standard Error of Estimate
.476	.226	.169	.196108

In this sense, Model 2 attempts to investigate possible relationships between the level of disclosure of certain information required by IFRS 8 for each operating segment and the explanatory factors defined in this research. This information includes the mandatory segment information items (information on profit or loss, assets and liabilities set forth in paragraphs 23 and 24 of IFRS 8), the general information (paragraph 22 of IFRS 8) and reconciliations (paragraph 28 of IFRS 8).

From the results obtained in Model 2, and regarding the signals of the relationship, it may be verified the same overall results as the checked from the Model 1, with the exception of the profitability, which is positive within the Model 2. Again, size has a significant association with the compliance index (level of disclosure of information required by IFRS 8 for each operating segment). Notwithstanding, also two further variables are significant with the dependent variable under analysis, namely the internationalisation and the barriers to entry. For this latter, however, at a significance level of 10%. In this sense, H 1.1 is reinforced and H 1.5 only partially supported, in line with Leuz (2004) and Pardal *et al*. (2015).

Contrary to the literature, which supported H 1.4, the evidence obtained for internationalization features a significantly negative association. In fact, and like Pardal and Morais (2011), who related the same findings (international listing as the measure applied), the high weight of foreign sales does not exactly imply that the firm is deeply internationalized. This is the case of our sample where 85% of the entities have more than 50% of the sales directed to foreign countries and only less than 10% of them have been listed in different markets. Furthermore, firms listed in multiple markets tend to have a more internationalized ownership structure that privilege the quality of the information disclosed, that should include the key financial indicators, instead of reporting a large number of items per segment.

Assessing the indicators in Tables 13 and 14, the findings are similar to those obtained for Model 1. The F test for analysis of variance (ANOVA) is significant (Table 13). Besides, it is verified that the explanatory factors under analysis are able to explain, based on the adjusted R^2, the level of disclosure required by IFRS 8 for each operating segment (dependent variable) by about 16.9% (Table 14).

The results presented above reflect limitations that may have prevented some of the tested variables from becoming more significant and subsequently obtaining larger adjusted R^2. Among the possible limitations are the following:

• Small sample size: it would still be possible to test other variables with a larger sample, namely dummy or binary variables, where they would probably gain relevance since normally the number of observations of "1" or "0" tends to be unbalanced. An example of a variable of this type to be tested would be the sector, segregating the sectors between industrial and non-industrial;

• Type of sample used: exclusively listed entities: the inclusion of non-listed entities could provide a more diversified sample, with a lower balance between the effects of agency and ownership costs and, consequently, increase the significance of some explanatory factors;

• The use of the data recorded for the first study, within a methodological line that may negatively affect the results obtained in the second study of multiple linear regression. For example, some more comprehensive variables, such as the number of voluntary operational segment information items, would have to be more restricted and narrow in their definition. However, it is also necessary to emphasize that the majority of the literature on the determinants of the disclosure of information by segments obtained a R^2 adjusted between 5% and 25%, with some difficulties in the application of multiple linear regression in studies on the report by segments.

In summary, despite the low levels obtained for the adjusted R^2 in the two models defined in this paper, by multiple linear regression, size is consistently an explanatory factor that positively influence the level of disclosure of information by segments.

Conclusions

This research was developed with the objective of identifying the explanatory factors with likely influence on the level of disclosure of information by segments.

It was observed that size is the main explanatory factors related to the level of disclosure of information by segment, namely the number of operating segments disclosed and the level of disclosure of information required by IFRS 8 for each operating segment, respectively.

The influence of size, with a positive relation, can be explained, particularly, from the fact that larger entities are more complex and diversified in the types of businesses and geographic areas where they operate.

Other explanatory factors were also identified as relevant, despite their exclusive incidence to the level of disclosure of information required by IFRS 8 for each operating segment, namely the internationalisation (negative association) and the barriers to entry (positive association, but at a 10% significance level). Regarding the latter, some explanations may be presented in order to explain the opposite signal of relationship found, which includes the fact that firms listed in multiple markets tend to have a more internationalized ownership structure. Those firms have more concerns regarding the quality of the information disclosed, instead of the amount of the information, such as the reporting a large number of items per segment. With respect to the former, findings are aligned with the Leuz (2004) and Pardal *et al*. (2015). According to those authors, firms from industries where the capital intensity is higher have no propensity to withhold information, following previous researches in this matter.

This paper presents, of course, some limitations that need to be highlighted. The sample used could have been larger and more diversified, including, in particular, unlisted entities, to particularly assist the results of the second study developed where multiple linear regression was used.

Another limitation relates to the complexity in collecting and recording data. In fact, there was some difficulty in interpreting segment information in some cases, that is, to change the qualitative data gathered into quantitative data. In spite of this, it was tried to remove this limitation to the maximum, establishing a more specific methodology that would help in the collection and registration of this information.

It should also be noted that this study did not focus on the evaluation of the quality of the information underlying the segments disclosed by the entities, from the point of view of relevance / usefulness to the investors, that is, if this information is of a sufficient quality capable of influencing the decisions of the investors. It is expected that this study will contribute to the understanding of the explanatory factors of the level of disclosure of information by segment, being relevant to standardization bodies such as the IASB, which seeks to take into account studies of this nature in the post-implementation analysis of IFRS.

Future investigations may analyze other possible explanatory factors, namely, at the segment presentation level, from a larger sample, possibly using a database. In this line, the use of samples of entities not listed in these investigations could be an asset to the existing literature.

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