

**FROM IAS 14 TO IFRS 8: ARE PROPRIETARY COSTS EFFECTIVELY AFFECTING  
FINANCIAL REPORTING?**

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## **From IAS 14 to IFRS 8: are proprietary costs effectively affecting financial reporting?**

### **Abstract**

As companies turn increasingly global and more diversified, operating in a wide range of businesses, segment reporting is with no doubt an indispensable disclosure factor. With the introduction of the IFRS 8 “*management approach*”, segment reporting regulation is considered to allow a better understanding and analysis of the potential risks and rewards of the different businesses and regions in which the company operates (IASB, 2013a). However, evidence reveals that segment disclosure has remained significantly sticky over, and the impact of IFRS8 has not succeeded as expected. The key motivation of the study is to understand within the Spanish setting, how segment disclosure has changed after the IFRS 8 issuance, as well as the key role of proprietary costs when understanding the factors that explain transparency vs. secrecy among firms. We aim to contribute to the literature looking at whether the implementation of IFRS 8 has had any impact on segment reporting across Spanish listed firms.

## 1. Introduction

As companies turn increasingly global and more diversified, operating in a wide range of business, segment reporting is with no doubt an indispensable disclosure factor (Wang, 2016, Chen and Zhang, 2003) of the analysis process. Segment reporting allows the company to provide a complete understanding of the business. It permits investors to assess past, current and potential future risks and rewards that may arise at any market across the Globe, or any business in where the company is settled. Segment reporting reduces information asymmetries (Bergen and Hann, 2007), affects cost of capital (Paul and Largay, 2005, Blanco et al. 2015), enhance security valuations (Tse, 1989; Kang and Gray, 2013) and improve earnings forecasts (Swaminathan, 1991. Herrmann et al, 2000)

From a users' and a stakeholder's perspective, managers should trigger to move to higher transparent segment disclosure policies in order to allow markets to better understand the business activities. In fact, changes in reporting standards have always pursued a constant improvement in segment reporting, turning the regulation more discretionary with the aim to allow investors to analyze the business through the eyes of the managers and promote consistency between the reportable segments with other sections of the annual report. With the introduction of the "*management approach*" under SFAS 131 in 1997 and later in IFRS 8, segment reporting regulation is considered to offer a better understanding and analysis of the potential risks and rewards of the different businesses and regions in which the company operates (IASB, 2013a).

However, evidence reveals that segment disclosure has remained significantly sticky over time (Kang and Gray, 2013, Bujea et al, 2012, Nichols et al, 2012), and the adoption of new standards, particularly in Europe (Pisano et Landriani 2012, Francer and Weissenberger, 2015), has not succeeded as expected. The issuance of IFRS 8, the last IASB standard on segment reporting, offers more discretion to managers on the definition of segments and the amount of detailed information, placing emphasis on internal reporting. Based on the SFAS

131 “*management approach*”, the IFRS 8 centers the definition of the reportable segments on the criteria that managers use to organize the company internally. However, the widespread and deep-rooted concerns on proprietary costs associated with segment disclosure (Gisbert et al, 2014) and therefore, the companies’ reluctance to disclose more information (Paul and Largay, 2005, Hodgdon et al, 2009) harm the usefulness of segment information and the potential benefits of the IFRS 8 adoption, particularly across small companies or jurisdictions with smaller capital markets.

While the evidence of SFAS 131 confirms an increase in the number of reported segments and an overall increase in the number of items (Nichols and Street, 2002; Nichols et al. 2000; Herrman and Thomas, 2000), evidence across IFRS jurisdictions is dissimilar. The application of IFRS 8 reveals that European companies are increasing the number of segments disclosed but decreasing the number of items (Nichols et al, 2012, Crawford et al ,2012, Pisano et Landriana,2012) finding no substantial changes in segment disclosure (Franzen and Weissenbergen, 2015).

The new segment disclosure standard has been in the centre of the debate (Wang, 2016), causing political controversy (Crawford et al., 2014). One way to look at the effect of a new accounting standard is to look at the differences of disclosure practices across firms, right before and after a new accounting pronouncement. In this study we look at the impact of the IAS 14R to IFRS 8 change into the segment disclosure of Spanish listed companies. Particularly, we look at the impact both on the number of segments reported and the number of disclosure items incorporated into the segment disclosure note to the financial statements. The analysis is based on a sample of non-financial Spanish companies over the period 2005-2011, covering the IFRS transition from IAS 14R to IFRS 8.

The key motivation of the study is to understand how segment disclosure has changed along the period, as well as the key role of proprietary and agency costs. We aim to contribute to the literature in several ways. Firstly, looking at whether the implementation of IFRS 8 has had any

impact on segment reporting disclosure across Spanish companies. Secondly, assess the time-series relevance of proprietary vs agency costs in the segment disclosure decision in the post-IFRS adoption period, within a context of sticky reporting policies for segment disclosure. The findings should be of interest to both regulators assessing potential future changes to the IFRS 8, and companies that aim to improve the consistency of disclosures and the degree of segment information for shareholders.

We manually track segment reported information for a sample of 76 Spanish firms for the period 2005-2011. Segment reporting is measured in two ways:  $Segments_{it}$  measures the number of reported segments, while  $Items_{it}$  corresponds to the number line items included for each reported segment.

Results show that consistent with the arguments of Kvaal and Nobes (2012), IFRS is applied with a “*national flavor*” (Nichols et al, 2013). Our findings suggest that IFRS 8 adoption has resulted in few benefits to segment reporting. Evidence shows two key positive effects: (a) increases in the number of items disclosed across segments, particularly across business primary segments; and (b) increases in the number of geographical secondary segments disclosed. After IFRS 8 adoption we can state that Spanish companies decreased the number of reported segments both for business and geographical primary segment disclosures. These results are consistent with previous literature.

The regression results reveal the impact of the ownership structure on the segment disclosure decision still prevails after the IFRS 8. Regarding proprietary costs, evidence suggests a loss of significance of proprietary costs factors after under the new IFRS 8 regulation.

The remainder of this paper is organized as follows. Section 2 looks at the development of the accounting regulation for segment reporting. Section 3 discusses the previous literature and the theoretical framework. Section 4 explains the sample selection and the methodology. Section 5 reports the results and Section 6 concludes.

## 2. The segment reporting regulation: The IAS 14 vs. IFRS 8 transition

Along the last decade, the European listed companies have faced three different segment reporting regimes: IAS 14 issued in 1998, revised in 1997 (IAS 14R) and finally, IFRS 8 issued in 2006. The IASB regulation has always been significantly influenced by its American counterpart.

IAS 14 (1981) was issued in a similar way to SFAS 14 (1976), incorporating the “*industry*” approach that required firms to report information by industry. However, criticisms were linked to the alternative interpretations of “*industry*” segment disaggregation, the lack of prescriptive guidance, or the use of ill-defined language (Nichols and Street, 2007; Prather-Kinsey and Meek, 2004). Exploratory studies at the time, revealed that the application of both IAS 14 across international companies and SFAS 14 in the US, had not significantly contributed to increase the degree of detailed information (Troberg et al., 2010).

SFAS 14 was finally superseded by SFAS 131 in 1997, and the new FASB standard led to an increase in the level of segment disaggregation, improving the level of disclosures for each reportable segment that were identified based on the known as “*management approach*”. Evidence reported on the adoption of SFAS 131, revealed an increase of the number of segments reported with fewer single-segments companies (Nichols et al., 2000; Hermann and Thomas, 2000; IASB, 2005; Nichols et al., 2013; Street et al. 2000; Botosan and Standford, 2005).

The IASB followed a similar strategy with the revision of IAS 14 in the same year. However, in spite of the introduction of the “*management approach*” concept (IAS 14 par. 31), the revised standard did not succeed in converging with the US standard neither in satisfying the claims and needs of the users (Nichols and Street 2002; Prather-Kinsey and Meek, 2004). The SFAS 131 and the IAS 14R, were different in the following three aspects (IASB, 2013): (a) identification of segments; (b) measurement basis and (c) reported line items.

The segment reporting convergence project was one of those added to the IASB agenda after the Norwalk agreement in September 2002, with the aim to shorten the persistent differences that still were present between the IASB and the FASB financial reporting framework. IFRS 8 issued in 2008 is nearly identical to its US counterpart SFAS 131, except for some terminology issues (Crawford et al., 2014). IFRS 8 was expected to improve segment information allowing investors to see the company's operations with a "*management perspective*", and therefore, facilitate users a better understanding of the overall performance of the company's operations and markets (IASB, 2013; EU, 2007). However, despite the argued benefits of the adoption of the new approach, (i.e. reduced costs for preparing the information; higher levels of transparency; usefulness and relevance of reported segment information), along the IFRS 8 long due process that started in early 2006, comment letters from preparers raised concerns about: (a) a potential reduction of geographical segment disclosures (Nichols et al, 2013; Veron, 2007); (b) the lack of comparability across segments between companies from similar industrial sectors or (c) the lack of time-series comparability within the firm, due to frequent internal organizations (IASB, 2013). Notwithstanding the criticisms received during the IASB due process, both the IASB and the European Commission were highly confident that the benefits of the adoption would always outweigh any potential costs.

However, most studies on IFRS 8 adoption report few changes in segment reporting, (Bugeja et al, 2012; He et al. 2012; Wilkins and Khoo, 2012; Weissenberger and Franzen, 2013) showing an increase in the number of segments reported only by bigger companies (Crawford et al. 2012) and a lower number of items disclosed (Bugeja et al., 2015) with the exception of geographic disclosure, where the evidence shows an increase (Nichols et al., 2012; He et al., 2012). Nichols et al. (2013, p. 273) posit that "*based on the review of the academic research on SFAS 131, the IASB anticipated an increase in the number of reportable segments following the IFRS 8 adoption*". Evidence on SFAS 131 reveals a significant improvement in segment reporting. However, institutional differences across countries in the EU, and the fact that the management approach had already been introduced under the IAS 14 in 1997, may led to

small variations in the way that companies faced the introduction of the new segment reporting standard (Gisbert et al., 2014; Nichols et al. 2013).

As Nichols et al. (2012) explain, the IAS 14 revision in 1997 had already affected the way in which European companies faced segment reporting. Evidence suggests that the benefits of adopting the *management approach* under IFRS 8, had been already introduced and anticipated across companies with the revised version of the IAS 14 in 1997.

IFRS 8 removed the IAS 14 R “*risk and rewards approach*”, and the requirements to choose between the “*line of business*” or “*geographic*” criteria for primary segments, maintaining the “*management approach*” as the key criteria to identify operating segments to increase the amount of segment information, reduce preparation costs and promote higher consistency between segment disclosures and the financial statements. However, the application of IFRS 8 did not achieve the expected results (Cereola et al; 2013; Mardini et al, 2012; Weissenberger and Franzen, 2012).

Spain adopted the international accounting regulation in 2005 with the endorsement of the IFRS across listed companies. Before the IFRS adoption, segment information in Spain was non-existent, with few companies voluntarily releasing this information. As explained in Gisbert et al. (2014), proprietary costs have traditionally prevailed across Spanish firms, over the benefits associated with further disclosures. Previous empirical results suggest that Spanish firms are more reluctant to increase segments than the number of items reported. Therefore, even with further changes in the accounting regulation, Spanish companies are expected to maintain a stable pattern for segment reporting disclosures.

### **3. Related literature and research questions**

#### *3.1. The relevance of proprietary costs after the IFRS 8 adoption*

As Wang (2016) posits, segment disclosures are commercially sensitive and therefore, companies with higher exposure to potential proprietary costs will have an interest to conceal

segment disclosures to avoid any potential competitive disadvantage. Following the Proprietary Costs Theory (Verrecchia, 1983) companies with segment disclosure deficiencies are expected to be those associated with higher proprietary costs. Prior research demonstrates that avoiding potential competitive harm implies reducing the detail provided in segment disclosures (Tsakumis, et al, 2006).

Despite the preparers concerns about the release of “*commercially sensitive information*” after IFRS 8 adoption, the IASB has always consider IFRS 8 an opportunity to improve information about operating segments, and therefore, has been always reluctant to the inclusion of any exemption from disclosure based on potential “*commercial costs*” associated to the release of sensitive and strategic information. In fact, the IASB has always argued that competitors have alternative sources to obtain sensitive and strategic information. However, despite the previous arguments, the IASB has been simultaneously concerned on the fact that segment information under the current reporting IFRS 8 framework may be highly sensitive, particularly in jurisdictions with smaller capital markets and small listed entities (IASB, 2013a; Katselas et al, 2001).

Considering the relatively short history of Spanish companies in segment reporting, Spain provides an interesting setting to look at the relevance of proprietary costs on the segment disclosure decision across time. Before the IFRS adoption, companies would rarely disclosure segment information. For many years, companies and national regulators gave priority to the avoidance of proprietary costs. The adoption of IFRS in Spain introduced a new reporting philosophy based on disclosure and transparency. Previous evidence (Gisbert et al., 2014) reveals that under the context of IFRS 14R (2005-2007), proprietary costs are a significant determinant of the number of reported segments.

Differences in the relevance of proprietary costs along time would be observable in a context in which information changes significantly after a new regulatory change, coupled with a simultaneous development of additional determinant factors as the governance framework that

promotes additional disclosures and balances the effects of proprietary costs on the disclosure decision. Recent evidence (Leung and Verriest, 2015) reveals that after IFRS 8 adoption there has been few improvements across EU firms that already reported in a poorly manner under IAS 14. As the authors explain, the regulatory improvements of IFRS 8 “*did not materialize for the firms with more room for increased disclosure*”, suggesting that despite the time, proprietary costs are still determinant, and companies are not significantly increasing segment disclosures.

We have no prediction in the Spanish context but considering the institutional setting and previous studies (Farías and Rodríguez, 2015), we expect few changes in segment reporting after IFRS 8 adoption. In spite of adoption of the management approach, we hypothesize that proprietary costs are still a key determinant factor on the segment disclosure decision after the IFRS 8 adoption and therefore, Spanish companies have not significantly changed their reporting policies under IFRS 8. The “*management approach*” turns segment information more sensitive to proprietary costs and therefore, limits companies to improve segment information.

Alternatively, as companies have already adopted and consolidated the IAS/IFRS segment reporting approach from 2005 onwards, with few reporting changes along the IFRS 8 adoption period, we could expect a decrease of the relevance of proprietary costs along the time-period of study. Differences in the relationship between segment disclosure and proprietary costs after the IFRS 8 adoption is an open question that we investigate. We measure proprietary costs using the number of competitors within the firm’s primary sector and the industry-adjusted return on equity.

### 3.2. *Agency costs and the segment disclosure decision.*

Managers face a trade-off between disclosing information that may help capital markets to properly assess the value of the firm and therefore reduce agency costs, or conceal information to avoid potential harm to the firm’s competitive position (Healy and Palepu, 2001). Segment reporting permits investors to assess past, current and potential future risks and rewards of

the company (Wang, 2016, Chen and Zhang, 2003). Berger and Hann (2007) find evidence on the impact of both proprietary and agency costs on the segment disclosure decision, depending on what motivates the managerial disclosing decision.

We proxy agency costs using the degree of ownership concentration and the relevance of independent directors in the board of directors. Disclosure is expected increase with higher levels of ownership diffusion (Raffournier, 1995), as minority shareholders demand for more information detail. However, in settings in which ownership structure is highly concentrated, agency conflicts appears between majority and minority shareholders (Dyck and Zingales, 2004), resulting in firms with lower levels of disclosure, unless the regulatory frameworks forces to increase transparency, requiring additional disclosures. Even under the context of a good corporate governance system, the presence of independent directors may be compromised in scenarios of high ownership concentration.

The adoption of IFRS 8 brings a new setting to assess how ownership structure and the role of independent directors has affected segment disclosures. Particularly, we look at the role of governance factors within a national context where firms and national regulators have traditionally given priority to the avoidance of proprietary costs and therefore, the effect of governance factors such as the role of independent directors may not be effective. Additionally, we posit that from 2005 onwards, Spanish companies adopted and consolidated a segment reporting approach, with few changes after the IFRS 8 adoption, where the disclosure “*constraining factors*” (i.e. ownership concentration) have exceeded the potential role of independent directors in promoting transparency. We therefore investigate the impact of the agency relationship factors on the segment disclosure decision before and after the IFRS 8 adoption.

Together with the agency and proprietary costs variables, we also introduce a set of control variables: *Size*, *Leverage*, *ROA* and *Industry diversification*.

## 4. Methodology

### 4.1. Data and sample selection

The initial sample includes all non-financial listed Spanish companies for the period 2005-2011. Annual Reports were obtained directly from the Spanish Securities and Exchange Commission Database (CNMV). Segment reporting data was hand-collected from the notes to the consolidated financial statements. The sample is restricted to companies with data available for at least 6 out of the seven years of analysis, so that we guarantee that changes in the segment reporting practices are not driven by changes in the composition of the sample.

The final sample consists of 76 Spanish companies (521 observations). Table 1 details the final sample selection process. Excluding outliers for the regression variables reduces the final sample to 74 companies and 447 observations.

**Insert table 1 about here**

We measure segment disclosure in two ways. The  $Segment_{it}$  variable measures the total number of segments reported in the notes to the financial statements, while the  $Items_{it}$  variable measures the total number of balance sheet and net income line items for each segment reported. The segment disclosure data has been hand-collected for the period 2005-2011. We collect data on the number of primary and secondary segments reported as well as the number financial items reported for each segment.

Governance variables are directly collected from the corporate governance reports available at the Spanish Capital Market Securities and Exchange Commission. Industry information is collected from the Spanish Central Bank database about industry economic ratios for non-financial corporations. Finally, control variables are downloaded from the Orbis Database.

## 4.2. Methodology

We rely on the following model to assess the key determinants on the segment disclosure decision:

$$\begin{aligned} \text{Segments}_{it} (\text{Items}_{it}) = & \alpha_0 + \beta_1 \text{Ownership}_{it} + \beta_2 \text{Independence}_{it} + \beta_3 \text{Competitors}_{it} + \beta_4 \text{Industries}_{it} \\ & + \beta_5 \text{adjROE}_{it} + \beta_6 \text{Size}_{it} + \beta_7 \text{Leverage}_{it} + \beta_8 \text{ROA}_{it} \end{aligned}$$

$\text{Segments}_{it}$  measures the number of reportable segments, while  $\text{Items}_{it}$  corresponds to the number of financial statements line items.  $\text{Ownership}_{it}$  measures the degree of ownership concentration as the percentage of equity shares controlled by majority shareholders. Previous studies (André et al. 2016) document that high (low) levels of ownership concentration are associated with higher (low) agency costs, while the presence of independent directors mitigates the misalignment of interest between majority and minority investors promoting additional disclosures (Lim et al, 2007).  $\text{Independence}_{it}$  is measured as the percentage of independent members in the board of directors.

Similar to previous studies (Gisbert et al, 2014; Berger and Hann, 2003) the vector of proprietary costs includes a set of variables that measure (a) the performance of the firm relatively to the industry and (c) the degree of current competition intensity (concentration) within the industry sector.

The variables *Competitors*, *Industries* and *AdjROE* proxy for proprietary costs. *Competitors* is the number of companies within the firm's main industry sector. Industry sectors are identified according to the primary NACE industrial code. *AdjROE* is a dummy variable that takes value 1 if the firm's industry adjusted ROE (Return on Equity) is positive (0 for negative industry adjusted ROE). Therefore, *AdjROE* will take value 1 for companies outperforming the average ROE for the key industry in which they operate. Industry ROE data has been collected from the Spanish Central Bank Database. The degree of industry diversification (*Industries*) is measured as the number of SIC industry codes where the firm operates.

Together with the agency and proprietary costs variables, we also introduce a set of control variables: *Size*, *Leverage* and ROA. *Size* is measured as the natural logarithm of total assets, *Leverage* corresponds to the debt to equity ratio while ROA corresponds to the return on assets ratio.

## **5. Main results**

### **5.1. Descriptive analysis on the segment reporting decision.**

We provide univariate and descriptive analysis of the number of segments and items disclosed across sample firms. Consistent with previous studies (Farias and Rodriguez, 2015; IASB, 2013), IFRS8 does not have a significant effect on the number of segments or items reported. The IASB post-implementation review highlights that, despite the interest of investors, expecting a higher number of reported segments, there has not been significant changes neither in the structure nor in the number of segments reported (IASB, 2013).

Results in Table 2 and 3 are consistent with previous literature (Franzen and Weibenberger, 2013; Leung and Verriest, 2015) and corroborate the lack of significant changes in the segment reporting data after the introduction of the IFRS 8 “*management approach*”. In fact, during the data collection period, we observed that in a significant number of companies, the format and information content of the IAS 14R and IFRS 8 segment information note to the financial statements had not changed across time.

Table 2 reports the number of sample firms using either the industry or the geographical criteria for segment reporting purposes. Across the total period of analysis (2005-2011) more than 80% of sample companies use “*Products*” as the primary segment criteria, whereas geographical areas is used as the primary segmentation criteria just only across 14% of the sample firms. Geographical segmentation is chosen as “entity wide disclosures” (secondary segment criteria under IAS14R) for 70% of the sample companies.

**Insert Table 2 about here**

Table 3 provides the descriptive statistics for the  $Segments_{it}$  and  $Items_{it}$  dependent variables. Only 19 out of the 76 sample firms, increase the number of reported segments after the IFRS adoption. Similarly, 16 sample companies decrease the number of reported segments after the IFRS adoption. Therefore, around 50% of the sample companies do not change their segment reporting disclosures after the adoption of IFRS 8.

On average, IFRS 8 brings a decrease in the number of reported segments both for business and geographical primary segment disclosures. However, the decrease in the number of reported segments seem to be slightly more pronounced for geographic segments compared to business primary segments. Conversely, this tendency is not replicated for secondary segments (Table 3 Panel B). Whereas business segmentation presents a stable pattern across the time period of study, the geographic secondary segmentation, that is, “entity wide disclosures”, shows a slight increase in the number of segments reported.

Regarding the balance sheet and income items, IFRS 8 requires similar disclosures compared to IAS 14 and adds others (i.e. interest revenue, interest expense and tax expense) to the list of potential disclosures. However, IFRS 8 disclosures are only required if reported to the CODM and this requirement raised concerns from the very beginning on a potential decrease in the number of balance sheet or profit and loss items disclosed across segments (Nichols, et al. 2013; Crawford et al., 2012 and Nichols et al., 2012).

Evidence for our sample, show that the number of items disclosed across segments increase with IFRS 8, particularly across business primary segments. Both the number of balance sheet and net income items show a slight increase for the 2009-2011 period. However, this increasing tendency is not replicated across geographical segments, where the number of items reported decreases along the IFRS 8 time period of analysis. These results are extended to the number of items reported across secondary segments (panel B Table 3). The adoption of IFRS 8 increases the average number of balance sheet and income line items for business but not for geographic secondary segments. Additionally, we observe that the number of items

disclosed across business secondary segments doubles the number of items disclosed across geographic secondary segments.

**Insert Table 3 about here**

Results in Table 4 corroborated the previous analysis. A detailed time-series analysis of the key independent variables ( $Segments_{it}$  and  $Items_{it}$ ) indicates: (a) a decrease in the number of reported primary segments compared to the 2005 IFRS implementation period and (b) a moderate increase in the number of items reported in the primary segment, particularly in 2009, the IFRS 8 implementation year. Additionally, the time-series analysis shows that geographical secondary segments disclosures have improved with the IFRS 8 implementation.

**Insert Table 4 about here**

Table 5 provides descriptive statistics for the explanatory variables. This table reports the mean, median, standard deviation, 1<sup>st</sup> and 4<sup>th</sup> quartile values for the explanatory variables. This table also reports the frequency values and percentages for the following dichotomy variables: CCAP and DifROE. CCAP takes value 1 when the firm's main shareholders own more than the average capital concentration of the sample (56,11%), otherwise, it takes value 0. DifROE takes value 1 if the firm's industry adjusted ROE is positive. It takes value 0 for a negative adjusted ROE.

The average ownership concentration of the sample is 56,11%, with majority shareholders controlling on average 28% of the equity ownership. These results corroborate that the ownership structure of the Spanish listed companies is highly concentrated and therefore, presents a scenario where agency conflicts between majority vs. minority shareholders may compromise disclosures. More than 50% of the sample is highly controlled by majority shareholders (CCAP). These results are consistent with the relevance of gray directors (45%) compared to independent directors (28%) in corporate boards.

Sample firms operate across a mean of 2.3 industries (*Industries*) with an average of 170 competitors (*Competitors*). 75% of the sample firms operating in industries with an average of 35 firms (p75).

49% of sample companies report a positive industry-adjusted ROE. However, on average, adjusted ROE is negative, which means that there is a significant number of companies underperforming compared to the industry.

Panel B reports the descriptive statistics of the variables for the pre and post IFRS 8 periods of analysis. The descriptive statistics for the sample firms remain stable across time.

**Insert Table 5 about here**

**5.2. Regression results**

Table 6 and 7 summarize the OLS (Panel A) and firm-fixed effects<sup>1</sup> (Panel B) econometric results for the dependent variables  $Segments_{it}$  and  $Items_t$ . The regression coefficients are estimated separately for the pre and post IFRS8 time period (2005-2008) and (2009-2011). Table 6 reports the results for  $Segments_{it}$ , whereas Table 7 reports the results for  $Items_t$  as dependent variable.

Results on Table 6 corroborate the significant impact of the ownership structures on the segment disclosure decision. More precisely, along the whole period of analysis, ownership concentration offsets the previously documented (Gisbert et al., 2014) positive influence of independent directors on the number of reported segments. Results are consistent for both OLS and fixed-effects regression results, and corroborates that concentrated ownership mitigates transparency regardless of the reporting regulatory regime for segment disclosures. Conversely, regression results suggest that majority shareholders are not concerned about the line items disclosed for each reportable segment.

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<sup>1</sup> Results from the fixed-effects analysis should be interpreted with caution. Controlling for fixed effects when explanatory variables have little within-firm variation leads to substantially larger standard errors, higher p-values and wider confidence intervals, and therefore, non-significant results.

**Insert Table 6 about here**

Regarding the proprietary costs variables, the results reinforce the view that firms reporting positive industry-adjusted ROE conceal segment information to avoid potential competitive disadvantages. However, the statistical significance of the AdjROE variable only prevails for the IAS 14R time-period of analysis, suggesting that the documented lack of variability in segment reporting across time, turns segment information less sensitive to proprietary costs. However, this argument does not prevail for the *competitors* variable. As the numbers of competitors grows, the risk of entrance of new rivals lowers and therefore, we expect the managerial tendency to conceal information to be mitigated. Conversely, regression results reveal that number of competitors within the firm, affects negatively to the number of reported segments, particularly across the IFRS 8. However, this result must be interpreted with caution, since it may be influenced by the way in which the *competitors* variable is measured. Further analysis will corroborate these results. Additionally, proprietary costs do not have any influence on the number of items reported.

The results for the control variables Size, Leverage and ROA are consistent with the expectations. Larger firms report more segments and more balance sheet and net income items. Conversely, good performers tend to conceal segment information. The ROA variable has a negative and significant effect on the Segments and Items variables for all the period of analysis. Regarding the *leverage* variable there is not a defined impact of this firm-specific characteristic on the segment disclosure decision. Non-reported Spearman and Pearson correlation coefficients corroborate regression results.

**Insert Table 7 about here**

## Conclusions

Using a sample of 74 Spanish listed companies, we manually track segment reporting disclosures for the period 2005-2011 in order to test whether the IFRS 8 adoption implied a significant change in segment reporting practices across Spanish firms.

Our findings suggest that IFRS 8 adoption has resulted in few benefits to segment reporting. Evidence shows two key positive effects: (a) An increase in the number of items disclosed across business primary segments; and (b) an increase in the number of geographical secondary segments disclosed. However, on average, after IFRS 8 adoption firms decrease the number of reported segments both for business and geographical primary segment disclosures. These results are consistent with previous literature, that observes few positive changes in segment reporting practices after the IFRS 8 adoption and corroborates that the benefits of adopting the *management approach* under IFRS 8, had been already introduced and anticipated across companies with the revised version of the IAS 14 in 1997.

The preliminary regression results documents that concentrated ownership mitigates transparency regardless of the reporting regulatory regime for segment disclosures, whereas, proprietary costs variables have reduced their influence with the IFRS 8 adoption. Particularly, we observe that the statistical significance of the AdjROE variable only prevails for the IAS 14R time-period of analysis, suggesting that the lack of variability in the structure of segment reporting across time, turns this information less sensitive to proprietary costs. However, the results for the *Competitors* explanatory variable do not support this hypothesis. Additional analyses will focus more specifically on this conflicting results.

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**Table 1** Final sample

<b>Panel A: Sample selection process</b>	Companies	Obs
<b>Non financial firms listed in the Madrid Stock Exchange for the period 2005-2011</b>	<b>118</b>	<b>794</b>
Less missing observations	(33)	(237)
Les companies with less than six years of full data	(9)	(36)
<b>Final sample</b>	<b>76</b>	<b>521</b>
<b>Regression sample excluding outliers</b>	<b>74</b>	<b>447</b>

**Table 2** Segment reporting criteria (primary vs. operating) across periods and sample firms**Panel A: Primary segment**

	2005-2008 IAS 14R		2009-2011 IFRS 8		2005-2011		
	N	%	N	%	Companies	N	%
Products	247	83.16%	186	83.04%	69	433	83.1%
Geographical areas	41	13.8%	34	15.18%	16	75	14.4%
n.a.	9	3.03%	4	1.34%	1	3	0.5%
<b>Total</b>	<b>297</b>		<b>224</b>		<b>76</b>	<b>521</b>	

**Panel B: Secondary segment**

	2005-2008 IAS 14R		2009-2011 IFRS 8		2005-2011		
	N	%	N	%	Companies	N	%
Products	26	8,75%	15	6,7%	10	41	7.9%
Geographical areas	214	72,05%	158	70,54%	65	372	71.4%
n.a.	57	19,19%	51	22,7%	11	108	20.73%
<b>Total</b>	<b>297</b>		<b>224</b>		<b>76</b>	<b>521</b>	

**Table 3 Descriptive statistics of the segment disclosure variables**

*Panel A: Descriptive statistics for the primary segments*

<b>Primary segment</b>						
2005-2008			2009-2011			
	<i>Segments<sub>1</sub></i>	<i>Items<sub>1</sub>_BS</i>	<i>Items<sub>1</sub>_P&amp;L</i>	<i>Segments<sub>1</sub></i>	<i>Items<sub>1</sub>_BS</i>	<i>Items<sub>1</sub>_P&amp;L</i>
Mean	3.58	5.61	7.38	3.43	5.80	7.69
Median	3.00	4	7	3.00	4	7
Std	1.6	5.30	4.86	1.60	5.73	4.73
Max	8	26	25	8.00	26	25
Min.	0	0	0	2.00	0	1

  

<b>Primary segment = Products</b>						
2005-2008			2009-2011			
	<i>Segments<sub>1</sub></i>	<i>Items<sub>1</sub>_BS</i>	<i>Items<sub>1</sub>_P&amp;L</i>	<i>Segments<sub>1</sub></i>	<i>Items<sub>1</sub>_BS</i>	<i>Items<sub>1</sub>_P&amp;L</i>
Mean	3.68	5.63	7.68	3.53	5.73	7.94
Median	4	4	7	3	4	7
Std	1.58	5.11	4.65	1.67	5.57	4.77
Max	8	26	25	8	26	25
Min.	1	0	0	0	0	1

  

<b>Primary segment = Geographical Areas</b>						
2005-2008			2009-2011			
	<i>Segments<sub>1</sub></i>	<i>Items<sub>1</sub>_BS</i>	<i>Items<sub>1</sub>_P&amp;L</i>	<i>Segments<sub>1</sub></i>	<i>Items<sub>1</sub>_BS</i>	<i>Items<sub>1</sub>_P&amp;L</i>
Mean	3.57	6.73	7.17	2.92	6.62	6.68
Median	3	5	6	3	4	6
Std	1.31	6.27	5.45	1.03	6.73	4.56
Max	7	23	22	7	23	18
Min.	2	1	0	2	1	3

Panel B: Descriptive statistics for the secondary segments

<b>Secondary segment</b>						
	2005-2008			2009-2011		
	<i>Segments<sub>2</sub></i>	<i>Items<sub>2</sub> BS</i>	<i>Items<sub>2</sub> P&amp;L</i>	<i>Segments<sub>2</sub></i>	<i>Items<sub>2</sub> BS</i>	<i>Items<sub>2</sub> P&amp;L</i>
Mean	2,98	1,79	1,39	3,09	1,62	1,31
Median	3,00	1,00	1,00	3,00	1,00	1,00
Std	2,36	3,39	2,50	2,5	3,06	2,18
Max	13	24,00	21,00	11,00	23,00	17,00
Min.	0,00	0,00	0,00	0,00	0,00	0,00

**Secondary segment = Products**

	2005-2008			2009-2011		
	<i>Segments<sub>2</sub></i>	<i>Items<sub>2</sub> BS</i>	<i>Items<sub>2</sub> P&amp;L</i>	<i>Segments<sub>2</sub></i>	<i>Items<sub>2</sub> BS</i>	<i>Items<sub>2</sub> P&amp;L</i>
Mean	4.00	4.30	3.92	4.00	4.73	4.13
Median	3	2	1,5	3	0	1
Std	2.58	7.20	6.13	2.62	9.13	6.49
Max	10	24	21	9	23	17
Min.	2	0	0	2	0	1

**Secondary segment = Geographical Areas**

	2005-2008			2009-2011		
	<i>Segments<sub>2</sub></i>	<i>Items<sub>2</sub> BS</i>	<i>Items<sub>2</sub> P&amp;L</i>	<i>Segments<sub>2</sub></i>	<i>Items<sub>2</sub> BS</i>	<i>Items<sub>2</sub> P&amp;L</i>
Mean	3.65	1.96	1.42	3.98	1.83	1.43
Median	3	2	1	4	2	1
Std	1.99	2.87	1.72	2.08	1.99	1.29
Max	13	23	17	11	21	11
Min.	0	0	0	1	0	0

**Table 4 Time series descriptive values of the segment disclosure variables**

Panel A. Time-series descriptive statistics for primary and secondary segments

	Primary segment			Secondary segment		
	2005-2011			2005-2011		
	N_SEG <sub>1</sub>	N_ITEM <sub>1</sub> BS	N_ITEM <sub>1</sub> P&L	N_SEG <sub>2</sub>	N_ITEM <sub>2</sub> BS	N_ITEM <sub>2</sub> P&L
<b>2005</b>	3.74	5.07	6.88	2.80	1.49	1.22
<b>2006</b>	3.57	5.47	7.50	3.10	1.80	1.29
<b>2007</b>	3.65	5.62	7.68	3.09	1.87	1.33
<b>2008</b>	3.37	6.24	7.42	2.92	1.99	1.70
<b>2009</b>	3.48	5.83	7.82	2.96	1.73	1.43
<b>2010</b>	3.37	5.72	7.60	3.03	1.55	1.28
<b>2011</b>	3.45	5.86	7.64	3.29	1.60	1.24

Panel B. Time series analysis analysis for products vs. geographical primary segments

	Primary segment			Primary segment		
	Products			Geographical		
	N_SEG <sub>1</sub>	N_ITEM <sub>1</sub> BS	N_ITEM <sub>1</sub> P&L	N_SEG <sub>1</sub>	N_ITEM <sub>1</sub> BS	N_ITEM <sub>1</sub> P&L
<b>2005</b>	3.87	5.15	7.27	3.83	6.83	6.33
<b>2006</b>	3.67	5.41	7.67	3.80	7.50	8.6
<b>2007</b>	3.73	5.54	7.84	3.63	7.09	8.09
<b>2008</b>	3.46	6.43	7.92	3.22	5.86	5.78
<b>2009</b>	3.57	5.75	8.18	3.25	7.08	6.75
<b>2010</b>	3.47	5.61	7.80	2.72	6.36	6.63
<b>2011</b>	3.54	5.84	7.85	2.72	6.36	6.63

Panel C. Time series analysis analysis for products vs. geographical secondary segments

	Secondary segment			Secondary segment		
	Geographical			Products		
	N_SEG <sub>2</sub>	N_ITEM <sub>2</sub> BS	N_ITEM <sub>2</sub> P&L	N_SEG <sub>2</sub>	N_ITEM <sub>2</sub> BS	N_ITEM <sub>2</sub> P&L
<b>2005</b>	3.35	1.86	1.5	4.4	1.6	1.6
<b>2006</b>	3.78	1.84	1.24	4	5.14	4.28
<b>2007</b>	3.76	1.93	1.24	4	5.14	4.28
<b>2008</b>	3.70	2.24	1.74	3.71	4.57	4.86
<b>2009</b>	3.88	2.01	1.61	4	5	4
<b>2010</b>	3.89	1.76	1.35	4	4.6	4.2
<b>2011</b>	4.18	1.73	1.31	4	4.6	4.2

**Table 5** Descriptive statistics of the main explanatory variables  
Panel A: Descriptive statistics across the total sample period 2005-2011

	n	mean	median	std.dev.	P25	P75	%
Total_Items	447	16.41	15	9.03	11	20	
Total_Segments	447	6.59	6	2.90	4	8	
Ownership concentration	447	56.11	59.65	21.85	43.13	69.79	
Maj_shareholder	447	27.78	22.19	20.92	11.17	40.09	
%_independent directors	447	31.74	30	17.10	20	41.66	
%_grey directors	447	44.73	44.44	22.49	30	61.53	
Competitors	447	169.48	21	1004.98	9	35	
Industries	447	2.31	2	1.43	1	3	
Adj_ROE	447	-0.018	-0.0010	0.268	-0.070	0.074	
Size	447	14.001	13.87	1.75	12.6	15.13	
Leverage	447	1.89	1.31	1.57	0.812	2.72	
ROA	447	0.030	0.0328	0.334	0.0093	0.06	
ROE	447	0.088	0.118	0.276	0	0.185	
Ccap = 1	447						55.7%
DifROE>0	447						49.44%

Panel B: Separate descriptive statistics for period 1 (2005-2008) and period 2 (2009-2011):

	Period 1: 2005-2008			Period 2: 2009-2011		
	n	mean	median	n.	mean	median
Total_Items	262	16.26	14	184	16.62	15
Total_Segments	262	6.67	6	184	6.47	6
Ownership concentration	262	55.20	59.63	184	57.4	59.7
Maj_shareholder	262	27.88	22.30	184	27.65	22.16
%_independent directors	262	31.89	30	184	31.52	30
%_grey directors	262	44.21	44.21	184	45.46	46.15
Competitors	262	153.80	18.5	184	191.68	26
Industries	262	2.34	2	184	2.27	2
Adj_ROE	262	-0.014	0.0022	184	-0.0235	-0.0053
Size	262	13.94	13.81	184	14.09	14.07
Leverage	262	1.81	1.26	184	2.014	1.36
ROA	262	0.041	0.045	184	0.014	0.016
ROE	262	0.119	0.141	184	0.043	0.0728
Ccap = 1	262	54,19%		184	57.8%	
DifROE>0	262	50,76%		184	47,5%	

**Table 6 Regression results - Dependent variable  $SEG_{it}$  (number of reported segments)**

**Panel A: OLS Regression results**

	2005-2008			2009-2011			2005-2011		
	Coef.	t-stat	Pr >  t	Coef.	t-stat	Pr >  t	Coef.	t-stat	Pr >  t
Constant	-4.123***	-3.29	0.0011	-3.432***	-2.16	0.0325	-3.749***	-3.84	0.0001
Own_con	-0.011	-1.40	0.1641	-0.014	-1.42	0.1569	-0.0107***	-1.83	0.0675
Independent	0.002	0.22	0.8238	-0.0009	-0.07	0.9469	0.0010	0.13	0.8948
<i>Industries</i>	0.379***	3.42	0.0007	0.740***	5.44	<.0001	0.534***	6.27	<.0001
<i>Competitors</i>	-0.00016	-1.02	0.3077	-0.0003	-1.53	0.1288	-0.0002*	-1.80	0.0723
AdjROE	-0.7365***	-2.27	0.0243	-0.367	-0.92	0.3606	-0.574***	-2.31	0.0212
Size	0.7810***	8.43	<.0001	0.664***	5.50	<.0001	0.723***	9.89	<.0001
Leverage	-0.0134	-0.12	0.9023	0.006	0.05	0.9600	-0.025	-0.31	0.7594
ROA	-1.0874	-0.45	0.6564	-5.864***	-2.12	0.0356	-2.755	-1.56	0.1195
R- Sq	0.35			0.35			0.34		
Adj R- Sq	0.33			0.32			0.32		
Max VIF	1.35			1.40			1.30		

\* 10% significant - two-tailed T-test; \*\* 5% significant - two-tailed T-test; \*\*\* 1% significant - two-tailed T-test

**Panel B: Firm-Fixed effects Regression results**

	2005-2008			2009-2011			2005-2011		
	Coef.	t-stat	Pr >  t	Coef.	t-stat	Pr >  t	Coef.	t-stat	Pr >  t
Constant									
Own_con	-0.015	0.01130	-1.34	-0.009	-0.03	0.9775	-0.0038	-0.42	0.6765
Independent	-0.005	0.01103	-0.49	0.051	2.41***	0.0178	0.006	0.66	0.5120
<i>Industries</i>	-	-	-	-	-	-	-	-	-
<i>Competitors</i>	0.0006	0.00191	0.29	0.0005	0.49	0.6245	0.0001	0.21	0.8355
AdjROE	0.103	0.28498	0.36	-.181	-0.52	0.6025	0.471	2.41***	0.0164
Size	0.818***	0.40839	2.00	0.633	0.73	0.4643	0.767	2.91***	0.0039
Leverage	0.123	0.12880	1.01	0.082	0.45	0.6546	-.083	-1.04	0.2975
ROA	2.142	2.61410	0.82	0.765	0.29	0.7745	-.706	-0.45	0.6562
R- Sq	84,35%			89,88%			78,79%		
F-Value	12.13 (<.0001)			13.21 (<.0001)			16.95 (<.0001)		

\* 10% significant - two-tailed T-test; \*\* 5% significant - two-tailed T-test; \*\*\* 1% significant - two-tailed T-test

**Table 7 – Regression results - Dependent variable  $Items_{it}$  (number of reported items)**

**Panel A: OLS Regression Results**

	2005-2008			2009-2011			2005-2011		
	Coef.	t-stat	Pr >  t	Coef.	t-stat	Pr >  t	Coef.	t-stat	Pr >  t
Constant	-5.145	-1.14	0.2544	-4.769	-0.88	0.3815	-4.714	-1.38	0.1681
Own_con	0.008	0.31	0.7559	-0.021	-0.63	0.5311	-0.005	-0.25	0.8030
Independent	-0.083***	-2.52	0.0124	-0.045	-0.99	0.3252	-0.070***	-2.67	0.0080
<b>Industries</b>	0.458	1.15	0.2519	0.594	1.28	0.2027	0.5203*	1.75	0.0810
<b>Competitors</b>	-0.0005	-0.84	0.4024	-0.0001	-0.19	0.8511	-0.0003	-0.79	0.4325
<b>AdjROE</b>	-0.269	-0.23	0.8185	0.617	0.45	0.6516	-0.034	-0.04	0.9687
Size	1.622***	4.87	<.0001	1.527	3.71	0.0003	1.571***	6.15	<.0001
Leverage	0.548	1.39	0.1650	0.560	1.31	0.1926	0.559**	1.98	0.0478
ROA	-21.203***	-2.42	0.0164	-18.201	-1.93	0.0558	-18.301***	-2.97	0.0032
<b>R- Sq</b>	17.89			15.19%			16.34%		
<b>Adj R- Sq</b>	15.28			11.33%			14.8%		
<b>Max VIF</b>	1.35			1.40			1.30		

\* 10% significant - two-tailed T-test; \*\* 5% significant - two-tailed T-test; \*\*\* 1% significant - two-tailed T-test

**Panel B: Firm-Fixed effects**

	2005-2008			2009-2011			2005-2011		
	Coef.	t-stat	Pr >  t	Coef.	t-stat	Pr >  t	Coef.	t-stat	Pr >  t
Constant									
Own_con	-0.029	-0.96	0.3401	-0.037	-0.58	0.5648	-0.025	-1.04	0.2972
Independent	0.027	0.88	0.3780	0.044	1.00	0.5648	0.044*	1.89	0.0592
<b>Industries</b>									
<b>Competitors</b>	0.003	0.52	0.6025	-0.0005	-0.25	0.7999	0.0008	0.53	0.5933
<b>AdjROE</b>	-0.075	-0.10	0.9228	-0.389	-0.54	0.5880	-0.517	-1.00	0.3185
Size	1.667	1.50	0.1346	0.522	0.29	0.7695	1.686***	2.41	0.0166
Leverage	0.570	1.63	0.1049	0.246	0.65	0.5163	-0.096	-0.45	0.6495
ROA	-4.611	-0.65	0.5168	-1.268	-0.23	0.8178	-6.718	-1.60	0.1112
<b>R- Sq</b>	88,70%			95,20%			78,79%		
<b>F-Value</b>	17.66 (<.0001)			29.51 (<.0001)			22.41 (<.0001)		

\* 10% significant - two-tailed T-test; \*\* 5% significant - two-tailed T-test; \*\*\* 1% significant - two-tailed T-test