

# The Impact of IFRS 8 on Geographical Segment Information

EDITH LEUNG AND ARNT VERRIEST\*

## 1. INTRODUCTION

This study examines the impact of IFRS 8 on segment reporting of European firms. Specifically, we investigate (i) the impact of IFRS 8 on geographical segment disclosures, (ii) cross-sectional differences in the effect of IFRS 8 adoption, and (iii) whether IFRS 8 has had any economic and informational consequences.

The IASB issued IFRS 8 in November 2006 to replace IAS 14, and it became effective in 2009.<sup>1</sup> As part of the ongoing convergence project between the FASB and IASB, IFRS 8 is aimed at reducing differences between US GAAP and IFRS. This resulted in IFRS 8 resembling its US counterpart, SFAS 131, which was introduced in the United States in 1997. Another reason for the introduction of IFRS 8 is the scope for managerial opportunism present in the industry (business or geographical) segmentation under IAS 14, which allowed managers to combine several operations into one, broadly defined, industry segment. A significant difference between IAS 14 and IFRS 8 is the requirement under IFRS 8 to report information for segments as they are defined for internal reporting purposes. The aim of the “management approach” to segment reporting is to increase the usefulness of segment reporting to investors and analysts, because it would allow them to see through the eyes of management (IASB, 2013).

Although IFRS 8 resembles its US GAAP counterpart to a great extent, it is uncertain that its effect on segmental reporting will be the same as in the US. Since enforcement and other relevant institutional designs differ considerably in Europe (and are far from homogenous within Europe compared to the US), we consider it an open question what the outcome of IFRS 8 adoption for European firms would be. With the exception of the UK, European countries have a lower enforcement and shareholders enjoy

\*The first author is from Erasmus School of Economics, Erasmus University Rotterdam, The Netherlands. The second author is from EDHEC Business School, Roubaix, France. The authors are grateful to Peter Pope (Editor) and an anonymous referee for detailed and valuable comments. We also greatly appreciate comments from Daniel Bens, Willem Buijink, Peter Easton, Philip Joos, Maarten Pronk, Jeroen Suijs and Leo van der Tas and seminar participants at Tilburg University and the 2014 JBFA conference. (Paper received October 2014, revised version accepted November 2014)

**Address for correspondence:** Edith Leung, Erasmus School of Economics, Erasmus University Rotterdam, PO Box 1738, 3000 DR, Netherlands.  
e-mail: leung@ese.eur.nl

1 When referring to IAS 14, we actually refer to the revised version of the original IAS 14 standard unless specified otherwise. The original standard was issued in 1981; the revised one in 1997.

fewer rights than in the US. Prior research (for example, Leuz et al., 2003; and Hope, 2003) shows that these differences are partially responsible for managers of European firms using their discretion to engage in more earnings management and provide less reliable disclosures and lower overall financial transparency than their American peers. Given these results from prior work and that the “management approach” under IFRS 8 still provides managers with discretion to obfuscate segmental information, we can expect managers to use this discretion more in Europe than in the US. But the answer to the question of how IFRS 8 affects segmental disclosures in Europe remains unclear.

To investigate this open issue, we focus on geographical segments and do so for three reasons. First, and most importantly, IFRS 8 implicitly lowers the disclosure requirements for geographical segments if firms define operating segments according to their products and services. For these firms, IFRS 8 does not require the disclosure of geographical segment information other than minimal entity-wide disclosures. Investors feared this would lead to a significant loss of geographical segment information and advanced this argument against the European Union’s adoption of IFRS 8 (Véron, 2007). We examine whether this is a valid concern.

Second, prior research has mainly focused on the determinants and consequences of business segment reporting. In comparison, we know much less about the quality of geographical segment disclosures and whether these matter to investors, particularly in non-US contexts. It is not straightforward to outline what a geographical segment should look like in an ideal situation. However, we argue it is reasonable to assume that investors can make better investment decisions and face less information risk when, *ceteris paribus*, firms provide financial statements for more segments and provide more financial items per segment, especially items relating to segmental income. For geographical segments, in particular, we deem it reasonable to assume that investors are better off when disclosed segments are less aggregated and therefore more detailed in nature. Consequently, our study provides empirical evidence on the number of segments, the number of items per segment, and the fineness of geographical segments to assess the quality of segmental disclosures.

Third, despite concerns about the impact of IFRS 8 on geographical segment disclosures that arose leading up to its adoption and remained after its implementation, no research has examined the actual impact of IFRS 8 on geographical disclosures in detail.<sup>2</sup> This study is the first.

To provide empirical evidence on the actual impact of IFRS 8, we hand-collect segment reporting data for a sample of 737 firms with geographical segment disclosures from 18 European countries.<sup>3,4</sup> We deliberately select a sample of firms with a high proportion of foreign sales. As such, demand for geographical information is likely to be high, making any changes to geographical segment reporting economically relevant. Similar to Berger and Hann (2003, 2007), we examine data in the year before adoption of IFRS 8, as firms are required to restate data for the year preceding the

2 See, for example, <http://www.taxresearch.org.uk/Blog/2010/01/08/ifrs-8-in-trouble-country-by-country-reporting-is-the-answer/>.

3 We also briefly analyze the impact of IFRS 8 on business segments. We have 632 firms for which these data could be collected.

4 We hand-collect segment data to enhance the reliability of the data. Thomson Datastream also reports segment data, but we noticed there are some coding errors, omissions and absences of data that are available in the annual reports, at least for the years around the adoption of IFRS 8.

adoption year for comparative purposes. This means we can compare historical IAS 14 data originally reported in 2008 to restated IFRS 8 data reported in 2009, thus holding other changes that could influence segment reporting constant. This makes it more likely that any observed changes in segment reporting are due to the change in standards rather than changes in a firm's economic circumstances.

We find that, on average, firms report more disaggregated segments under IFRS 8, which implies more geographical segments are disclosed. However, the amount of geographical information (that is, the number of reported items and the frequency of reporting geographical income) declines significantly. More importantly, we provide evidence that segment disaggregation does not increase uniformly for all firms. First, we find no significant improvements for firms that already reported poorly under IAS 14. This result indicates that improvements do not materialize for the firms with more room for increased disclosure, resulting in greater cross-sectional divergence in geographical segment reporting. Second, we find that corporate transparency affects the impact of IFRS 8. In general, our results show that IFRS 8 led to larger improvements as transparency increases. Finally, we do not find strong evidence that firms with improved segment reporting have significantly greater forecast accuracy or lower forecast dispersion, bid-ask spreads, and cost of equity capital in the year after IFRS 8 adoption. Collectively, these results cast doubt on whether IFRS 8 achieved its goal of improving the usefulness of segment information to users, since there appear to be little to no economic and informational consequences even for improved firms.

We contribute to the literature in the following ways. First, prior studies typically provide small-sample or single-country evidence or both on the impact of IFRS 8, whereas we focus on a large cross-country sample of European listed firms. Examining a large cross-country sample enhances the generalizability of our findings and provides comprehensive evidence on the impact of IFRS 8. Second, in contrast to most prior studies on segment reporting, our focus is on the impact of IFRS 8 on *geographical* segment reporting. For instance, Nichols et al. (2012) investigate the effect of IFRS 8 on business segments for European blue chip firms, while Bugeja et al. (2015) comprehensively study the impact of adopting the equivalent of IFRS 8, AASB 8, for business segments in Australia, but none focus on geographical segments in particular. Geographical segment disclosures are particularly interesting given our setting: European firms are much more geographically diversified than US firms, making geographical disclosures more important to investors and analysts.<sup>5</sup> Yet IFRS 8 implicitly lowers many of the disclosure requirements for geographical segments, which was also highlighted as an argument against the adoption of IFRS 8 by the European Union (Véron, 2007). We are the first to examine this issue in detail and find evidence consistent with these concerns. Third, we investigate heterogeneity in adoption of IFRS 8 across firms, an important aspect that has been mostly overlooked in prior research on IFRS 8. As Daske et al. (2013) show, firm-level heterogeneity should be accounted for when examining economic consequences of regulation. In particular, we examine whether firms that provide little segment information under the previous standard improve their segment disclosures as these are the firms for which improvements are most essential. However, we find that these are not the firms

<sup>5</sup> For instance, we find that the average (median) US company in the Compustat database has a ratio of foreign-to-total sales of 31% (15%), while the average (and median) European firm has foreign sales reaching 47% of total sales. Moreover, the 100 largest US (European) firms in terms of sales revenues have a foreign-to-total sales ratio of 43% (64%).

that increase their segment disclosures under IFRS 8. In addition, firms that improve do not have higher forecast accuracy or market liquidity or lower forecast dispersion after IFRS 8, which again casts doubt on whether IFRS 8 increased the usefulness of segment information. Fourth, as IFRS 8 is a prime example of a convergence project between the IASB and FASB, our results are also relevant to standard setters and to the debate on the consequences of convergence between the two sets of standards.

The paper proceeds as follows. Section 2 discusses prior literature on segment reporting and gives a brief overview of IFRS 8 and recent literature on the effects of this standard. Section 3 explains our methodology. Section 4 presents our results. Section 5 concludes.

## 2. PRIOR LITERATURE

Our study relates to two main streams of literature. The first addresses determinants of segment reporting (for example, Hayes and Lundholm, 1996; Harris, 1998; Botosan and Harris, 2000; and Berger and Hann, 2007). These studies mainly focus on competitive incentives to disclose or withhold segment information. The second stream of literature consists of studies that investigate reporting and economic consequences of changes in segment reporting standards (for example, Emmanuel and Garrod, 1988; Hermann and Thomas, 2000; Berger and Hann, 2003; Botosan and Stanford, 2005; Ettredge, Kwon et al., 2005; Ettredge et al., 2006). We provide a brief overview of both streams of literature below. We also discuss important differences between IFRS 8 versus IAS 14 and recent studies on the effects of adopting IFRS 8.

### *(i) Segment Reporting: Incentives and Consequences*

As mentioned, prior literature on segment reporting focuses mainly on segment reporting in a US context. These studies investigate the economic determinants of segment reporting quality, whether the change in US segment reporting standards (from SFAS 14 to SFAS 131) affected the quality of segment reports, and the associated capital market and economic consequences. We interpret segment reporting quality from an investor perspective, which is mainly determined by the amount of information firms disclose (that is, the number of reported financial items) as well as the level of disaggregation or fineness of segments (that is, the number of segments disclosed or the degree to which externally reported segments correspond with internally used segment definitions).

In terms of the determinants of segment reporting, Hayes and Lundholm (1996) demonstrate that firms face capital market incentives to provide detailed segment reports as well as competitive forces that may affect the level of disaggregation of segments. Many studies in this area investigate whether competition and the related proprietary costs affect segment disclosures, as companies themselves often cite these costs as a reason for opposing reporting standards that require them to disclose more reportable segments. A firm is reluctant to disclose which activities or geographical areas are most profitable, as competitors may use this information to its disadvantage. Therefore, managers have incentives to aggregate segments to conceal this information (Berger and Hann, 2007). The empirical evidence on the relationship between competition and segment reporting, however, is inconclusive.

On the one hand, Harris (1998) and Botosan and Stanford (2005) find that firms are less likely to report segments in less competitive industries, which is indeed consistent with the idea that firms disclose less to avoid attracting new competitors. Bens et al. (2011) use confidential US Census data at firms' plant level to investigate how firms aggregate information for external segment reporting and also find that proprietary costs drive aggregation. Botosan and Harris (2000), however, find no evidence that the initiation of voluntary quarterly segment reporting is related to the level of competition that firms face, which suggests that the proprietary costs of revealing segment information are limited. Ettredge et al. (2006) also fail to find that proprietary costs increase for multi-segment firms that have to disclose higher quality segment information. Importantly, Berger and Hann (2007) show that agency costs are a plausible alternative explanation for why firms conceal segment information. They find that firms concealed fewer, not more, profitable segments before SFAS 131 took effect, which is inconsistent with the proprietary cost explanation, but supports the idea that firms withhold information to prevent revealing agency problems and increased monitoring by shareholders. This result is in line with Bens et al. (2011), who find that agency costs also drive aggregation for multi-segment firms.

As mentioned above, proprietary and agency costs have often been the subject of investigation for the non-disclosure or aggregation of segments. Although most of these studies concentrate on business segments, and the literature is largely silent on the determinants of geographical segments, we expect proprietary cost and agency cost explanations to be valid for geographical segments as well. Managerial incentives to avoid taxes can also play an important role in segment disclosure decisions. Hope et al. (2013) show that firms attempt to obfuscate their tax avoidance by not disclosing geographic earnings.<sup>6</sup>

In addition to the literature on firm-level incentives that affect segment reporting, studies have also examined the impact of introducing new segment reporting standards in the US. The FASB replaced SFAS 14 with SFAS 131 in 1997, which requires firms to disclose segment reporting using the management approach. This means firms have to report segments as they are defined for internal management purposes. Most of these studies find that line-of-business segment reporting improved as a result. Hermann and Thomas (2000) examine a sample of the 100 largest US firms and find that they disclose more information about business segments after SFAS 131 implementation. Similarly, Berger and Hann (2003) find that firms disclose more disaggregated information under SFAS 131 and that part of this information is new to analysts. Ettredge et al. (2006) find an increase in the cross-segment variability of income for multi-segment firms, which they interpret as higher quality under SFAS 131. Ettredge et al. (2005) examine the capital market consequences of SFAS 131 and find that the relationship between current returns and future earnings improves after the adoption of the standard, which implies that SFAS 131 led to improved segment disclosures, enabling the stock market to better predict future earnings. This result is in line with Blanco et al., (2015), who find that better segment disclosures are associated with lower analyst forecast errors and cost of equity capital. Overall, these studies show that SFAS 131 resulted in better line-of-business segment disclosures and that better segment disclosures have positive economic consequences.

<sup>6</sup> We have therefore re-run our analyses including the firm's effective tax rate (i.e., tax expenses/earnings before tax) as an additional control variable. Our results were not materially affected.

Fewer studies have examined the effects of SFAS 131 on geographical disclosures, and those that have, produce mixed results. Hope and Thomas (2008) find that SFAS 131 made it easier for managers to engage in foreign empire building. As SFAS 131 no longer requires geographical earnings to be disclosed, monitoring of foreign activities becomes harder for firms' shareholders, thus letting firms engage in foreign expansions that do not necessarily enhance firm value. Consistent with this, their findings show that firms that do not disclose geographical earnings post-SFAS 131 have relatively larger foreign operations but lower foreign profit margins and lower firm value. However, Hope, Thomas, and Winterbotham (2006) do not find that analyst earnings forecast errors and dispersion are higher post-SFAS 131 for non-disclosers compared to disclosers. This implies that non-disclosure of geographical earnings does not necessarily result in lower earnings predictability. Overall, the evidence is consistent with business segment disclosure improving after SFAS 131, while the findings for geographical segments are mixed.

Although the change was not as substantial as within US GAAP, segment reporting regulation under IAS also underwent a revision around the same time. In 1997 the IASC issued IAS 14 revised (IAS 14 R) to better meet outside investors' demand for relevant information. IAS 14 R became effective on July 1, 1998. Street and Nichols (2002) assess the impact of this revision in segment regulation on business and geographical segments for a sample of firms applying IAS at that period (mainly German and Swiss companies). They document that IAS 14 R resulted in (1) more business segments for some companies, (2) more transparent geographical segments, (3) more consistency between segment information and other disclosures in the annual report, and (4) a drop in the amount of single segment firms. Prather-Kinsey and Meek (2004) find mixed evidence on the impact of IAS 14 R. As expected, they find that compliance with IAS 14 R is greater for Big Four audited firms, larger firms and generally more transparent firms.

### *(ii) IFRS 8 versus IAS 14*

IFRS 8 was introduced in November 2006 to replace IAS 14 and became mandatory for fiscal periods starting on or after January 1, 2009. IAS 14 required firms to disclose both business and geographical segment information, choose which segment type was primary and which was secondary, and disclose a specific number of items such as revenue, income, assets, liabilities, capital expenditures, depreciation and other non-cash items. As part of the ongoing convergence project between FASB and IASB, IFRS 8 closely resembles its US counterpart, SFAS 131. IFRS 8 also requires firms to report segments that are consistent with how these are reported internally to the chief operating decision-maker. This "management approach" is meant to increase the usefulness of segment disclosures by allowing investors to see through the eyes of management, although there was concern that variation in internal management structures would lead to greater inconsistency in segment reporting across firms (IASB, 2013). Under the original IAS 14 (and many national accounting standards), segment disclosures were based on the industry (or business/geographical) approach, which provided managers with considerable discretion in defining industry. The revision of IAS 14 in 1997 (IAS 14 R) attempted to tackle this issue by, among other things, introducing IAS 14.26–27 in which the firm "should determine whether business or

geographical segments are to be used for its primary segment reporting format based on whether the entity's risks and returns are affected predominantly by the products and services it produces or by the fact that it operates in different geographical areas." The standard changed conceptually, but discretion in defining segments still remained. Managers could conceal segment data by combining several operations into one segment. Financial analysts, in particular, argued that this type of disaggregation would give rise to imprecise information (AIMR, 1992). The management approach under IFRS 8 aims to counterbalance such inadequacies by streamlining information disclosed externally with how the firm is managed internally.<sup>7</sup>

Two other features of IFRS 8 are worth mentioning. First, the standard allows firms to report segment items that are not measured in accordance with IFRS. Firms must base segment reporting on management information, which is not necessarily based on IFRS. The use of non-IFRS measures in external reporting could further reduce consistency and comparability across firms' segment disclosures. Second – and important for this study – the switch from IAS 14 to IFRS 8 has implications for the disclosure of geographical information. If firms choose business segments as primary segments under IAS 14, they would still have to disclose geographical segment information under a secondary reporting format, which requires the disclosure of revenue, assets and capital expenditures.<sup>8</sup> In contrast, IFRS 8 does not require any geographical information to be disclosed if this is (allegedly) not prepared for internal use, nor is it required as entity-wide disclosures if the cost of preparing this information would be excessive. In any event, these entity-wide disclosures are limited to disclosing sales and fixed assets and differentiating between the firm's home country and foreign countries as a whole. If an individual foreign country is considered material, then country-level disclosure is mandated. However, the standard does not define "material", nor does IFRS 8 provide clear guidance on this matter. With respect to SFAS 131, Herrmann and Thomas (2000) argue that this lack of guidance could imply that the "potential benefits of country-level disclosure may never be realized" (p. 14), as firms might apply high materiality thresholds and thus withhold information.

The potential loss of geographical segment information was a major concern to investors (Crawford et al., 2012) and was advanced as an argument for opposing the European Union's adoption of IFRS 8 (Véron, 2007). Moreover, prior research suggests that the management approach might entail a loss of comparability and quality. Emmanuel and Garrod (2002) find that, in the UK, where managers were allowed discretion when identifying segments during the period under investigation, both relevance and comparability are low because of the segment choices made by the management. In addition, note that standard-setting is usually the outcome of a political process in which trade-offs must be made. If, on the one hand, the management approach under IFRS 8 is expected to reveal valuable proprietary information, it should perhaps come as no surprise that concessions must be made in the form of reduced disclosure requirements on the other hand.<sup>9</sup>

7 The discussion on what segment reporting regulation should look like (which items should be disclosed, what level of financial detail must be maintained, and what degree of discretion managers should have) has been continuing for a long time (Emmanuel and Garrod, 1987).

8 Technically, IFRS 8 does not distinguish between primary and secondary segments. When referring to switching from secondary to primary, we mean that segments that were classified as secondary under IAS 14 are now defined as the "primary" reportable operating segments under IFRS 8.

9 We do not discuss how political forces shape standards as this is beyond the scope of our study.

Recently, several studies have investigated the effects of the switch to IFRS 8 in Europe. Crawford et al. (2012) examine the segment disclosures of 150 UK firms for the year before and the year of IFRS 8 adoption. They find an increase in the number of business and geographical segments, while the number of items reported per segment decreases. Nichols et al. (2012) use a larger sample of European companies and also find that segment disaggregation increases, while the amount of information (number of items) provided decreases slightly. The effects of IFRS 8 in Australia, where it was adopted as AASB 8, are largely similar to those in Europe. Bugeja et al. (2015) and He et al. (2012) find a similar pattern of higher disaggregation but a lower number of reported items for Australian firms. The latter study also finds that analyst forecast accuracy and dispersion do not significantly differ after the introduction of IFRS 8, although they do not account for potential heterogeneity in the impact of IFRS 8 across firms.

### *(iii) Variation in the Impact of IFRS 8*

It is likely that IFRS 8 will not have a uniform impact across all firms. Prior studies show that there is considerable heterogeneity in reporting and economic consequences of standards depending on firms' reporting incentives (for example, Ball et al., 2000; Ball et al., 2003; and Daske et al., 2008, 2013). In this study, we focus on firms' pre-IFRS 8 information environment and examine whether firms' geographical segment reporting choices under IAS 14 and firm-level transparency moderate the impact of IFRS 8. Since the aim of IFRS 8 is to improve segment disclosures and firms' information environment, it would be reasonable to examine whether improvements, if any, are more pronounced for firms with poorer information environments under IAS 14.

*A priori*, it is difficult to predict what the moderating impact of segment reporting choices under IAS 14 would be. On the one hand, firms that disclose little geographical segment information under IAS 14 have a higher potential for improving segment disclosure quality under IFRS 8. We might therefore expect IFRS 8 to lead to greater improvements for these firms. On the other hand, if firms already disclose a minimal amount of information or even less than required under IAS 14, it may suggest that these firms do not have incentives to comply with any standard, making it likely that IFRS 8 would have no effect for these firms. As some argue that the requirements of IFRS 8 are less stringent than under IAS 14 (Véron, 2007), it could even be true that the quality of segment information would decrease further for non-compliant firms.<sup>10</sup>

Corporate transparency is also expected to have an effect on the impact of IFRS 8. For instance, the management approach under IFRS 8 gives firms considerable discretion in disclosing segment information. A more independent and competent auditor is expected to prevent firms from abusing this discretion, such that segment disclosures of firms with better auditors are more informative under IFRS 8 compared to firms with lower quality auditors. One could also argue, however, that more transparent firms already have incentives to disclose high quality segment information under IAS 14. In this case, the impact of IFRS 8 on the disclosures of such firms would be smaller than for less transparent firms.

<sup>10</sup> We acknowledge that non-disclosure of certain items could also be due to immateriality rather than incentives to hide information. However, when collecting the data, we did not find instances where firms simply state that non-disclosure is due to immateriality.



The revision of IAS 14 in 1997 might also have (further) attenuated the impact of IFRS 8 on segment disclosures. Earlier requirements under the original IAS 14 may have partially resolved any potential reporting shortcomings for a majority of firms. However, we expect the impact of the revision in IAS 14 to be limited. The revised IAS 14 took effect more than 10 years before IFRS 8 came about. Since then, the population of European listed firms has dramatically changed, and, more importantly, all European listed firms have become subject to IFRS regulation. Before 2005, voluntary IAS adopters were mainly Swiss and German firms. For these reasons, a direct comparison of the impact of both changes in segment disclosure regulation is practically impossible.

As the discussion above indicates, it is not straightforward to expect that IFRS 8 will result in better segment disclosures. We therefore do not predict whether IFRS 8 increases or decreases the quality of segment disclosures, nor do we focus only on the overall impact of IFRS 8. Instead, we investigate how IFRS 8 affects different aspects of segment disclosure, and we analyze the potential impact of IFRS 8 for firms that report little under IAS 14, less transparent information environments, or both. Investigating each of these aspects is the key contribution of our study, and these tests embody the first and main part of the study. We employ a larger sample of European firms compared to most prior studies, which enhances the generalizability and relevance of our findings.

In the second part of the paper, we test whether there are any observable economic consequences of the switch in segmental reporting regulation. Specifically, we investigate potential changes in analyst forecast properties (accuracy and dispersion) and measures for market liquidity (bid–ask spreads and implied cost of capital). We also study the cross-sectional variation in the impact of IFRS 8 on analyst forecast properties, market liquidity and cost of capital. To the extent that changes in geographic segment disclosures coinciding with IFRS 8 improve (or worsen) the ability of investors to assess foreign operations, we expect forecast accuracy to increase (or decrease), and forecast dispersion, bid–ask spreads and cost of equity capital to decrease (or increase). We consider these analyses as distinct from the first part of the paper but a necessary complement. For instance, even if we find a significant change in disclosure quality because of IFRS 8 adoption, this does not necessarily indicate that investors are better off. Previous theoretical and empirical papers provide support for the association between these economic outcomes and quality of disclosure (Lambert et al., 2007; Lang and Lundholm, 1996; and Easley and O'Hara, 2004). In fact, many studies on IFRS adoption have investigated its economic effects, with Daske (2006) and Daske et al. (2008) as notable examples. Segment studies such as Hope et al. (2009) study whether the switch to SFAS 131 has changed valuation multiples in return–earnings relations for multinational US firms. As an integral part of our study and to better interpret the results from the first part on determinants of segment disclosures, we therefore investigate whether IFRS 8 led to any obvious economic effects.

### 3. METHODOLOGY

#### *(i) Data and Sample Selection*

As our paper focuses on the impact of IFRS 8 on geographical segment disclosures, we select all listed non-financial European firms with over 50% of foreign sales in

2008, the year before IFRS 8 adoption, since we focus on segment reporting in this year in our empirical analyses. This results in a selection of 1,178 firms. The foreign sales selection criterion ensures there is a high demand for geographical segment information by outside investors, as a significant proportion of a firm's sales is generated outside of the home country.<sup>11</sup> This makes geographical disclosures relevant to users of financial reports. Therefore, any changes associated with IFRS 8 are also likely to be economically meaningful.

We hand-collect data for the year preceding the adoption of IFRS 8 following Berger and Hann (2003, 2007). For instance, for firms adopting IFRS 8 in 2009, we gather the historical segment data under IAS 14 for 2008 from the 2008 annual report as well as the restated segment data under IFRS 8 for 2008 from the 2009 annual report.<sup>12</sup> This provides the cleanest way to measure the impact of IFRS 8, as changes in reporting are more likely to be due to the change in standard rather than a firm's operating activities or other circumstances.<sup>13</sup>

As Table 1 shows, we can gather geographical segment information for 737 firms.<sup>14</sup> For completeness, we also gather business segment information for our original set of 1,178 firms, which is available for 632 firms.<sup>15</sup>

We focus on the impact of IFRS 8 on geographical segments but also present some results for business segments to provide a more complete picture of the overall impact of IFRS 8. Table 2, Panel A, shows firm characteristics for these firms, and Panel B shows the distribution of our sample across countries. Eighteen percent of our sample firms record a loss. The firms also have a high proportion of foreign sales, due to our sampling criteria. Panel A further shows that average (median) analyst following is about seven (three) and 78.70% of our firms have at least one analyst following the firm (untabulated). This supports the assumption that there is demand for financial information about these firms. In Panel B, we find that the majority of firms is located in the UK, Germany and France, which is consistent with the sample distribution in, for example, Daske et al. (2008).

11 The extent to which sales are "foreign" differs by area. For instance, sales within the EU are probably less foreign than sales outside of Europe. For practical reasons, we distinguish only between home-country and foreign sales in this study.

12 We also included firms that voluntarily adopted IFRS 8 before 2009. One of the main reasons to include these firms is that the first firms adopting a new or revised standard might set the tone and create a benchmark for others to follow (e.g., Crawford et al., 2012). Our results are unchanged if we exclude voluntary adopters.

13 If firms restructure their operations in the adoption year, causing changes to their segmentation, this would affect the restated lag-adoption year data. In those instances, changes in segment reporting may be due to restructuring rather than IFRS 8. We believe this to be a minor issue, as we observe few instances where firms state they are restructuring in the adoption year. Moreover, conversations with an experienced auditor reveal that certain firms have restructured in response to IFRS 8, meaning that any changes in segment reporting could still be attributed to the change in standards.

14 A number of firms drop because there is no English annual report available. Jean-Jean et al. (2010) find that internationalization, language barriers, ownership structure and financial concerns affect the likelihood of disclosing an English report. So there is a potential self-selection bias in imposing this selection criterion (we do so for reasons of convenience of data collection) as it most likely deletes more opaque firms than transparent ones. This bias probably works against us in finding IFRS 8 effects.

15 For a few firms, we only found the adoption year annual report. In the reported analyses, we do not exclude these observations as we also control for a variety of firm characteristics in the regressions. However, removing these observations does not affect our inferences.

**Table 1**  
Sample Selection

	<i>Geographical</i>		<i>Business</i>	
	<i>Number of Firms</i>	<i>Number of firm-year observations</i>	<i>Number of Firms</i>	<i>Number of firm-year observations</i>
Non-financial firms with > 50% foreign sales in 2008	1,178	2,356	1,178	2,356
Less: Annual report unavailable for adoption and/or pre-adoption year or not available in English	280	610	420	954
	898	1,746	758	1,402
Less: No data for independent variables	161	308	126	209
<b>Sample main analysis</b>	<b>737</b>	<b>1,438</b>	<b>632</b>	<b>1,193</b>

*Note:*

This table shows the intermediate steps in the sample selection process, for the combined sample of firms as well as separately for the geographical and business segment samples.

(ii) *Model*

We rely on the following regression model to test the overall impact of IFRS 8 on reporting choices:

$$SRQ_{it} = \alpha_0 + \alpha_1 IFRS8_{it} + \sum_k \alpha_k CV_i + \varepsilon_{it}, \quad (1)$$

where  $i$  represents each firm, and  $t$  denotes historical versus restated data.  $SRQ$  denotes the segment reporting quality of a firm;  $IFRS8$  distinguishes between the historical IAS 14 and restated IFRS8 data; and  $CV$  represents the set of variables controlling for firm characteristics. As discussed in Section 2, it is unclear whether IFRS 8 would improve or decrease the quality of segment reporting; we thus do not predict the sign of  $\alpha_1$ .

We use the following two models to test for cross-sectional variation in the impact of IFRS 8:

$$SRQ_{it} = \beta_0 + \beta_1 IFRS8_{it} + \beta_2 Low\ IAS14_i + \beta_3 IFRS8_{it} * Low\ IAS14_i + \sum_k \beta_k CV_i + \varepsilon_{it} \quad (2)$$

$$SRQ_{it} = \gamma_0 + \gamma_1 IFRS8_{it} + \gamma_2 TRANS_i + \gamma_3 IFRS8_{it} * TRANS_i + \sum_k \gamma_k CV_i + \varepsilon_{it}, \quad (3)$$

where  $LowIAS14$  denotes reporting behavior under IAS14, and  $TRANS$  denotes measures of firm-level transparency. These and the other variables used in the model are briefly discussed below; more details are provided in the Appendix.

**Table 2**  
Descriptive Statistics Sample

**Panel A: Firm Characteristics Pre-adoption Year – Geographical Segment Sample**

<i>Variable</i>	<i>N</i>	<i>Mean</i>	<i>Standard Deviation</i>	<i>Q1</i>	<i>Median</i>	<i>Q3</i>
<i>Size</i>	737	13.55	2.46	11.81	13.59	15.23
<i>Herfindahl</i>	737	0.14	0.19	0.04	0.07	0.14
<i>ROA</i>	737	0.06	0.14	0.03	0.07	0.12
<i>D(Loss)</i>	737	0.18	0.39	0.00	0.00	0.00
<i>Leverage</i>	737	0.22	0.20	0.08	0.21	0.33
<i>MTB</i>	737	3.05	3.54	1.47	2.22	3.58
<i>Foreign Sales %</i>	737	72.81	19.89	59.19	72.89	87.43
<i>Analyst</i>	737	6.79	8.06	1.00	3.00	10.00
<i>Big4</i>	737	0.84	0.36	1.00	1.00	1.00

**Panel B: Distribution of Firms Across Countries**

	<i>Geographical Segment Sample</i>	<i>Business Segment Sample</i>
Austria	20	17
Belgium	19	16
Denmark	22	19
Finland	39	31
France	71	59
Germany	88	88
Greece	9	7
Hungary	2	3
Ireland	12	11
Italy	36	33
Luxembourg	7	5
The Netherlands	32	31
Norway	35	33
Portugal	5	2
Spain	10	10
Sweden	55	46
Switzerland	41	36
United Kingdom	234	185
Total	737	632

*Note:*

Table 2 shows the distribution of firm-level characteristics of the firms in the geographical segments sample (Panel A), and the distribution of firms across countries (Panel B). Variables are as defined in the Appendix.

(iii) *Variable Measurement*

(a) SRQ: Segment Reporting Quality

We define segment reporting quality as the amount of segment reporting information and the level of segment disaggregation, following prior research (for example, Hayes and Lundholm, 1996; Street et al., 2000; and Berger and Hann, 2003). We realize that this is only one dimension of quality, which does not take into account whether, for instance, information becomes more comparable across firms. However, since we lack

a measure of comparability of segment reporting across firms, we choose to focus on the amount of reported information.

To capture the amount of segment information, we first identify whether a firm reports segment income ( $D(\text{Report Income})$ ). Second, we count the number of items disclosed. IAS 14 requires the disclosure of at least six (three) items for primary (secondary) segments, irrespective of the firm's choice for business or geographical segmentation as primary segments. IFRS 8 requires a similar list as for primary segments under IAS 14. (See the Appendix for more details.) There is a caveat in the "number of items" measure as it is difficult to count the number of required items, especially under IFRS 8. Certain items must be disclosed but are not applicable for all firms (and will therefore not be disclosed by each firm).<sup>16</sup> Examples include interest expenses and investments in associates and joint ventures.

The third and fourth SRQ measures capture segment disaggregation. We use the number of disclosed segments and a geographical fineness score adapted from Doupnik and Seese (2001).<sup>17</sup> This score ranges from 0 (for example, when a firm reports geographical sales using terms as "other" or "foreign") to 4 (for example, when a firm reports at the country or within-country regional level). This measure captures disaggregation more accurately, as illustrated by the following example. Consider firms A and B. Each discloses three geographical segments. Firm A discloses at the continent level (Europe, Americas, Asia), while firm B discloses at the country level (UK, Canada, India). The number of reported segments is three for both, whereas the geographical fineness score would be 2 for firm A and 4 for firm B. The level of disaggregation is higher for firm B but is not reflected in the number of segments measure. Therefore, geographical fineness is arguably a more accurate measure of geographical segment aggregation.

#### (b) Reporting Behavior under IAS 14

For the second part of our analyses, we investigate whether the impact of IFRS 8 differs across firms depending on (1) reporting behavior under IAS 14, and (2) corporate transparency. We first examine how reporting choices under IAS 14 affect the impact of IFRS 8. As discussed earlier, IAS 14 requires firms to disclose business and geographical segment information but allows a choice between primary and secondary segments. If a firm chooses the secondary reporting format for its geographical segments, this implies a choice for disclosing less geographical information, as reporting requirements for this format are less extensive. Furthermore, we find that around 18% of firms disclose even less than the minimal IAS 14 disclosure requirements for secondary segments: revenue, assets and capital additions (IAS 14.69–72). Hence, we examine whether the impact of IFRS 8 is different for these minimal disclosure firms. We code an indicator variable *LowIAS14*, which equals 1 if a firm chooses the secondary reporting format for geographical segments under IAS 14 and reports fewer than the

16 Under IFRS 8, firms that have identified business segments as operating segments only need to disclose sales and assets for "relevant" geographical segments, unlike under IAS 14. In addition, note that firms that chose geographic segments as operating segments under IFRS 8 might therefore also have fewer *total* items disclosed (i.e., across both types of segments). This is not an issue in our analyses, as we always separate business from geographic segment information in measuring each of our SRQ indicators.

17 We exclude "segments" that represent corporate, headquarter or reconciliation segments, as these are not defined as operating segments under IFRS 8, similar to Berger and Hann (2003, 2007).

required three items.<sup>18</sup> We do acknowledge, however, that the choice of the firm to report geographic segments as secondary under IAS 14 may indicate that business segments better reflect how the business is organized internally and that the primary source of risk and reward stems from product lines rather than geographic locations.

As indicated in model (2), we interact this variable with *IFRS8* to investigate whether the impact of this standard is greater or smaller for firms that do not comply with the previous standard. As discussed earlier, it is unclear *ex ante* how firms with minimal disclosure under IAS 14 will report under IFRS 8. We therefore have no prediction for the sign of  $\beta_3$ .<sup>19</sup>

### (c) Transparency and Monitoring Environment

In addition to IAS 14 segment reporting, we investigate whether firm-level transparency (*TRANS*) affects the impact of IFRS 8. We draw on Lang and Maffett (2011) and use the absolute value of discretionary accruals (*Abs(DA)*), analyst following (*Analyst*), the accuracy of analyst forecasts (*Accuracy*), and whether a firm uses a Big Four auditor (*Big4*) as proxies for transparency. We also aggregate these four variables into a single measure of transparency (*AggTrans*), by ranking the variables in percentiles and averaging the ranked values across the four measures. Similar to *LowIAS14*, how corporate transparency affects the impact of IFRS 8 is unclear *ex ante*, and we therefore do not predict the sign of  $\gamma_3$ .

### (d) Control Variables

We control for a number of firm-level characteristics that could influence segment reporting quality. We control for firm size using the log of total assets (*Size*). Almost all prior studies on disclosure add firm size as a control variable; larger firms provide better disclosures, as size may proxy for various underlying constructs such as information production costs. The association between disclosure and profitability, captured by return on assets (*ROA*) and a dummy *D(Loss)* for firms that suffer a loss, is ambiguous. On the one hand, more profitable firms suffer less from agency problems which may enhance disclosure. On the other hand, higher profitability might indicate higher proprietary costs giving firms incentives to reduce disclosure of segment information (Berger and Hann, 2007). We also include *Leverage*. Firms with high debt levels are expected to provide more segment information to reduce agency costs in the relationship with creditors, and once they produce this information for lenders, they are also likely to disclose it in the annual reports (Giner 1997; and Prencipe, 2004). The percentage of foreign sales to total sales (*Foreign Sales*) is expected to be positively associated with geographical segment disclosures. Firms with higher growth opportunities, measured by market-to-book (*MTB*), are expected

18 If we define *LowIAS14* as firms that report fewer than three items for geographical segments (whether primary or secondary), results are the same.

19 As we indicated in footnote 10, one may argue that *LowIAS14* may also capture firms that do not have material sales, assets or capital expenditures in other geographical regions and are not necessarily firms that report poorly. However, in this case, we would not expect to find any changes for *LowIAS14* firms if it is purely due to immateriality. Yet we find in Table 6 that the likelihood of reporting income still decreases, even for *LowIAS14* firms. These firms also have lower geographic fineness under IAS 14, suggesting that they report segments in a less precise, more aggregated manner. This result suggests that this variable does not merely capture immateriality but also incentives for non-disclosure.

to provide more information. Following Berger and Hann (2007), we include an indicator of industry concentration (*Herfindahl*) measured at the three-digit SIC level. Note that we include *private* European firms, in addition to listed firms, to calculate industry concentration, by using data from the Amadeus database. Ali et al. (2009) show that not including private firms in calculating concentration ratios may cause a bias in these competition measures, resulting in substantially different outcomes. This is particularly important for our setting as several European countries do not have a large stock market, and many large companies are not listed on a stock market.<sup>20</sup>

#### 4. Results

##### (i) *Changes in Segment Reporting under IFRS 8*

Before conducting our multivariate analyses, we provide univariate and descriptive statistics in Table 3 on the changes in reporting due to IFRS 8. Panel A reports results for geographical segments. As mentioned, we use the historical and restated data for the pre-adoption year, so any changes in segment reporting are directly attributable to the switch in standards, instead of other factors. Firstly, we find that there are relatively few firms that report as a single geographical segment firm under both regimes: we observe three (two) single segment firms under IAS 14 (IFRS 8). We also find that the number of firms that report segment income under IFRS 8 declines significantly from 243 to 206, suggesting a loss of information about segment income under the new standard. Similarly, the number of income measures and number of items reported decreases significantly. However, the average number of geographical segments increases significantly from 4.75 to 5.13, as does the average geographical fineness of reported segments (2.40 to 2.52).

For completeness, we examine the overall impact of IFRS 8 on business segments. In Panel B, we find that the number of single business segment firms also does not change significantly after IFRS 8. In contrast to geographical segments, firms report business segment income more often under IFRS 8 than under IAS 14 (521 versus 500). For the number of reported items and segments, we find a similar pattern as for geographical segments: the number of reported items decreases significantly, while the number of segments increases under IFRS 8.

There are two points worth noting in these results. First, there are differences in the effect of IFRS 8 on business and geographical segment disclosures. This suggests that one cannot draw clear conclusions from the impact of IFRS 8 by merely examining business segments without considering geographical segments.<sup>21</sup> Second, the results caution against using a single disclosure quality measure when analyzing the impact of

20 We have also run the analyses for geographical segments including a measure for operational diversity, captured by the number of a firm's business segments. A highly diversified company in terms of its operations is expected to provide relatively more business segment information than geographical information (Ettredge et al., 2006). Since we cannot include this variable in the business segment analyses in Tables 4 and 5, we report results without this variable for consistency in the reported tables. Results are unchanged by inclusion of this control variable.

21 Given the potential dependence between business and geographical segment disclosures, errors in the business and geographical segment regressions may be correlated. One method to address this is to estimate seemingly unrelated regressions (SUR), which results in equally consistent but more efficient estimates. We obtain the same results with SUR: since the right-hand side regressors are the same for both sets of regressions in Table 4, OLS and SUR result in the same outcome.

**Table 3**  
Segment Disclosure IAS 14 vs. IFRS 8

<b>Panel A: Geographical Segments</b>						
	<i>IAS 14 (N = 722)</i>		<i>IFRS 8 (N = 716)</i>		<i>Difference</i>	
Number ( <i>Percentage</i> ) of single geographical segment firms	3 (0.42%)		2 (0.28%)		-1 (-0.14%)	
Number ( <i>Percentage</i> ) of firms that report income	243 (33.66%)		206 (28.77%)		37** (-4.89%)	
	<i>Mean</i>	<i>Median</i>	<i>Mean</i>	<i>Median</i>	<i>Difference mean</i>	<i>Difference median</i>
Number of segments	4.75	4.00	5.13	4.00	0.38***	0.00***
Number of items	3.75	3.00	2.98	2.50	-0.77***	-0.50***
Number of income measures	0.47	0.00	0.41	0.00	-0.06	0.00**
Geographical fitness	2.40	2.20	2.52	2.43	0.12***	0.23***
<b>Panel B: Business Segments</b>						
	<i>IAS 14 (N = 600)</i>		<i>IFRS 8 (N = 593)</i>		<i>Difference</i>	
Number ( <i>Percentage</i> ) of single business segment firms	38 (6.33%)		32 (5.40%)		-6 (-0.93%)	
Number ( <i>Percentage</i> ) of firms that report income	500 (83.33%)		521 (87.86%)		21** (4.53%)	
	<i>Mean</i>	<i>Median</i>	<i>Mean</i>	<i>Median</i>	<i>Difference mean</i>	<i>Difference median</i>
Number of segments	3.15	3.00	3.34	3.00	0.19**	0.00**
Number of items	5.58	6.00	5.27	6.00	-0.31**	0.00***
Number of income measures	1.20	1.00	1.28	1.00	0.08	0.00

*Note:*

Table 3 shows the mean and median of several segment disclosure characteristics based on the historical IAS 14 data and restated IFRS 8 data for the pre-adoption year. Significant differences in the means and medians are based on two-sided *t*-tests and Wilcoxon median tests, respectively. Variables are as defined in the Appendix. \*, \*\*, \*\*\* denote significance at the 10%, 5% and 1% level, respectively.



a switch in standards, as we find that quality decreases on certain disclosure aspects (for example, likelihood of reporting segment income) and increases on other measures (for example, disaggregation). To test this, we conducted (untabulated) analyses using an aggregate measure of segment reporting quality as our dependent variable, where we rank and average the four (three for business segments) reporting measures. We find that IFRS 8 is not significantly associated with this single aggregate measure, while Table 3 clearly shows that IFRS 8 has an impact on the individual measures but in different directions.

*(ii) Impact of IFRS 8: Multivariate Analysis*

We present the multivariate analysis of the overall impact of IFRS 8 in Table 4. We run regression model (1), clustering standard errors by firm and including country-fixed effects to capture potential differences in segment reporting practices between countries.<sup>22</sup> Columns (1) and (2) of Panel A show that IFRS 8 has a negative impact on the amount of geographical segment information firms disclose per segment: the likelihood a firm reports geographical segment income decreases significantly under IFRS 8, as does the number of reported items per segment. In terms of marginal effects, we find a 5.9% decrease in the likelihood of disclosing geographical segment income under IFRS 8. The number and fineness of geographical segments increases, which indicates an improvement in the level of disaggregation. For business segments, we find that IFRS 8 increases the likelihood of a firm reporting income by 3.6% as well as the number of segments, while the number of reported items is significantly lower under IFRS 8. So similar to the univariate results in Table 3, Table 4 shows that IFRS 8 has a different impact on segment reporting, depending on the type of segments and the measure of segment reporting quality.

We also find that for business segments, industry concentration is positively related to the number of reported segments, which would be consistent with the explanation that, as competition intensifies, the proprietary costs of disclosing detailed segment operations become higher, and thus firms disaggregate segments less. However, concentration also affects the likelihood of reporting income and the number of reported items negatively, which contrasts with the previous finding and is inconsistent with the proprietary cost explanation for withholding segment information. This highlights the problems with using concentration as a proxy for proprietary costs, even if we use both private and public firms in calculating this measure (Ali et al., 2009). We also note that firms with higher proportions of foreign sales are more likely to report disaggregated geographical segments but less likely to report segmental profits. The opposite appears to be true for business segments. This result is consistent with the notion that firms with substantial foreign operations face higher costs of disclosure of segment income. Finally, we find that larger firms report more segments and more financial items, for both geographical and business segments.<sup>23</sup>

22 We have run the analyses with standard errors clustered by firm and country. Results are similar to those reported in the paper. We have also included the changes of each control variable along with their levels (i.e., change in *Size*, *Leverage*, etc.) in an additional analysis. Results are robust to this procedure.

23 In further tests, we investigate whether investor protection and securities regulation as country factors affect either SRQ or the relationship between SRQ and IFRS 8. Results (not shown) show no apparent institutional influences.

**Table 4**  
Impact of IFRS 8 on Business and Geographical Segment Reporting in  
Pre-adoption Year Model:

$$SRQ_{it} = \beta_0 + \beta_1 IFRS8_{it} + \sum_k \beta_k CV_{it} + \varepsilon_{it}$$

**Panel A: Geographical Segments**

<i>Variables</i>	(1) <i>SRQ = D(Report Income)</i>	(2) <i>SRQ = Number of items</i>	(3) <i>SRQ = Number of segments</i>	(4) <i>SRQ = Geographical fineness</i>
<i>IFRS8</i>	-0.238*** (-3.757)	-0.765*** (-12.868)	0.375*** (5.550)	0.118*** (5.966)
<i>Herfindahl</i>	0.385 (0.892)	0.464 (1.182)	0.609 (1.256)	0.055 (0.364)
<i>ROA</i>	0.688 (0.882)	0.822 (1.239)	0.488 (0.822)	-0.316 (-1.430)
<i>D(Loss)</i>	0.352 (1.302)	0.196 (0.832)	-0.121 (-0.417)	0.066 (0.758)
<i>Leverage</i>	0.029 (0.080)	-0.072 (-0.235)	0.092 (0.294)	0.069 (0.555)
<i>Foreign Sales %</i>	-0.008** (-2.072)	-0.004 (-1.180)	0.017*** (4.555)	0.005*** (3.115)
<i>Size</i>	-0.011 (-0.265)	0.095*** (2.716)	0.272*** (5.957)	-0.010 (-0.789)
<i>MTB</i>	0.031 (1.580)	0.009 (0.448)	-0.009 (-0.447)	-0.023*** (-4.617)
<i>Constant</i>	0.232 (0.301)	3.305*** (4.380)	-0.627 (-0.906)	2.131*** (8.533)
<i>Country FE</i>	YES	YES	YES	YES
<i>Clustered SE</i>	Firm	Firm	Firm	Firm
<i>Num. of Obs.</i>	1,434	1,438	1,438	1,438
<i>Num. of Firms</i>	735	737	737	737
<i>Log likelihood</i>	-851.765			
<i>Pseudo/Adj. R-squared</i>	0.044	0.066	0.153	0.093

**Panel B: Business Segments**

<i>Variables</i>	(1) <i>SRQ = D(Report Income)</i>	(2) <i>SRQ = Number of items</i>	(3) <i>SRQ = Number of segments</i>
<i>IFRS8</i>	0.380*** (3.269)	-0.326*** (-4.437)	0.205*** (4.629)
<i>Herfindahl</i>	-1.800*** (-3.272)	-1.384*** (-3.004)	0.528* (1.731)
<i>ROA</i>	-0.275 (-0.322)	-0.974 (-1.240)	-0.956 (-1.637)
<i>D(Loss)</i>	-0.409 (-1.198)	-0.267 (-0.996)	-0.139 (-0.747)
<i>Leverage</i>	-0.321 (-0.675)	-0.430 (-0.948)	0.217 (0.641)
<i>Foreign Sales %</i>	0.009* (1.735)	0.006 (1.576)	-0.005* (-1.783)

(Continued)

**Table 4**  
Continued

**Panel B: Business Segments**

<i>Variables</i>	(1) <i>SRQ =</i> <i>D(Report</i> <i>(Income)</i>	(2) <i>SRQ =</i> <i>Number</i> <i>of items</i>	(3) <i>SRQ =</i> <i>Number of</i> <i>segments</i>
<i>Size</i>	0.142** (2.520)	0.184*** (4.696)	0.299*** (7.779)
<i>MTB</i>	0.033 (0.907)	-0.023 (-0.615)	0.038 (1.325)
<i>Constant</i>	-0.133 (-0.105)	3.291*** (4.252)	-0.559 (-1.000)
<i>Country FE</i>	YES	YES	YES
<i>Clustered SE</i>	Firm	Firm	Firm
Number of Obs.	1,170	1,193	1,193
Number of Firms	620	632	632
Log likelihood	-453.308		
Pseudo/Adj. R-squared	0.072	0.080	0.167

*Note:*

Table 4 presents regression analyses of the overall impact of IFRS 8 on geographical segment (Panel A) and business segment (Panel B) characteristics. All variables are as defined in the Appendix. All regressions include country-fixed effects; *Z*- and *t*-statistics are presented below the coefficients in parentheses and are based on robust standard errors clustered by firm. \*, \*\*, \*\*\* denote significance at the 10%, 5%, and 1% level (two-sided), respectively.

*(iii) Primary vs. Secondary Segments and Switching*

Next, we examine whether the effects of IFRS 8 on segment reporting quality depend on whether a particular type of segment is primary or secondary under IAS 14. This may be important because IFRS 8 reduced the disclosure requirements more for secondary segments. We therefore would expect any detrimental effects to be more pronounced when segments were defined as secondary. In Table 5, we differentiate between firms that define geographical segments as primary or secondary under IAS 14 and examine whether the impact of IFRS 8 differs across the two sets of firms.<sup>24</sup> Interestingly, Panel A shows that for both samples the likelihood of reporting income and the number of items is lower, while segment disaggregation is higher under IFRS 8. At first glance, this result seems counterintuitive for the primary segments, as IFRS 8 still requires income to be reported for operating segments. However, when we take into account whether firms “switch”, that is, whether geographical segments change from being primary under IAS 14 to non-operating segments under IFRS 8, we find that the lower likelihood of reporting geographic segment income is driven by the firms that switch. Similarly, in Panel C we find that, when firms switch geographical segments from secondary under IAS 14 to “primary” operating segments under IFRS 8, the number of reported items increases marginally. However, the positive effect on disaggregation disappears. Collectively, these results suggest that some (mainly secondary-switch) firms use the discretion in IFRS 8 to reduce the amount of information they provide about geographical segments.

<sup>24</sup> We include the same control variables as in Table 4 but for parsimony do not report them in Table 5.

**Table 5**  
 Primary vs. Secondary Segments and Switching Model:  

$$SRQ_{it} = \beta_0 + \beta_1 IFRS8_{it} + \sum_k \beta_k CV_{it} + \varepsilon_{it}$$

	Primary				Secondary			
	(1) SRQ = D(Report Income)	(2) SRQ = Number of items	(3) SRQ = Number of segments	(4) SRQ = Geographical fitness	(5) SRQ = D(Report Income)	(6) SRQ = Number items	(7) SRQ = Number of segments	(8) SRQ = Geographical fitness
<i>IFRS8</i>	-0.449*** (-3.125)	-0.931*** (-7.334)	0.308*** (3.197)	0.061* (1.837)	-0.319** (-2.149)	-0.666*** (-10.985)	0.435*** (5.557)	0.146*** (6.352)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered SE	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm
Observations	486	496	496	496	864	906	906	906
Pseudo/Adj. R-squared	0.135	0.173	0.266	0.112	0.069	0.131	0.162	0.091

  

	No Switch				Switch			
	(1) SRQ = D(Report Income)	(2) SRQ = Number of items	(3) SRQ = Number of segments	(4) SRQ = Geographical fitness	(5) SRQ = D(Report Income)	(6) SRQ = Number items	(7) SRQ = Number of segments	(8) SRQ = Geographical fitness
<i>IFRS8</i>	-0.000 (-0.000)	-0.604*** (-5.084)	0.197** (2.200)	0.030 (1.006)	-3.837*** (-3.721)	-2.462*** (-5.824)	0.818** (2.158)	0.203 (1.471)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered SE	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm
Observations	378	408	408	408	84	88	88	88
Pseudo/Adj. R-squared	0.240	0.227	0.277	0.117	0.420	0.327	0.287	0.228

(Continued)

**Table 5**  
Continued

	No Switch				Switch			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<b>Panel C: Geographical Segments Secondary – No Switch vs. Switch</b>	SRQ = D(Report Income)	SRQ = Number of items	SRQ = Number of segments	SRQ = Geographical fitness	SRQ = D(Report Income)	SRQ = Number items	SRQ = Number of segments	SRQ = Geographical fitness
IFRS8	-0.619*** (-3.735)	-0.745*** (-13.096)	0.439*** (5.434)	0.146*** (6.373)	4.311 (1.608)	1.050* (1.735)	0.350 (0.891)	0.137 (0.674)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered SE	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm
Observations	780	866	866	866	34	40	40	40
Pseudo/Adj. R-squared	0.099	0.165	0.166	0.103	0.563	0.165	0.561	0.247
<b>Panel D: Business Segments – Primary vs. Secondary IAS 14</b>	Primary				Secondary			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	SRQ = D(Report Income)	SRQ = Number of items	SRQ = Number of segments	SRQ = D(Report Income)	SRQ = Number of items	SRQ = Number of segments	SRQ = Number of items	SRQ = Number of segments
IFRS8	-0.157 (-0.689)	-0.343*** (-4.414)	0.215*** (4.816)	1.306*** (5.792)	0.177 (0.927)	0.047 (0.416)	0.177 (0.927)	0.047 (0.416)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered SE	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm
Observations	824	1,025	1,025	266	276	276	276	276
Pseudo/Adj. R-squared	0.089	0.043	0.179	0.199	0.112	0.073	0.112	0.073

(Continued)

**Table 5**  
Continued

	No Switch			Switch		
	(1) SRQ = <i>D(Report Income)</i>	(2) SRQ = Number of items	(3) SRQ = Number of segments	(4) SRQ = Number of items	(5) SRQ = Number of segments	
<i>IFRS8</i>	0.057 (0.218)	-0.318*** (-4.330)	0.200*** (4.451)	-3.016*** (-2.410)	0.763 (1.631)	
Control Variables	Yes	Yes	Yes	Yes	Yes	
Clustered SE	Firm	Firm	Firm	Firm	Firm	
Observations	766	990	990	35	35	
Pseudo/Adj. R-squared	0.092	0.042	0.174	0.402	0.237	
<b>Panel F: Business Segments Secondary -No Switch vs. Switch</b>						
	No Switch			Switch		
	(1) SRQ = <i>D(Report Income)</i>	(2) SRQ = Number of items	(3) SRQ = Number of segments	(4) SRQ = Number of items	(5) SRQ = Number of segments	
<i>IFRS8</i>	0.373 (1.254)	-0.857*** (-5.669)	0.106 (0.807)	1.561*** (3.354)	-0.097 (-0.399)	
Control Variables	Yes	Yes	Yes	Yes	Yes	
Clustered SE	Firm	Firm	Firm	Firm	Firm	
Observations	164	188	188	88	88	
Pseudo/Adj. R-squared	0.211	0.284	0.050	0.167	0.304	

*Note:*

Table 5 presents regression analyses of the impact of IFRS 8 on geographical segment reporting (Panels A–C), and business segment reporting (Panels D–E) for subsamples based on whether segments were defined as primary or secondary under IAS 14. We also distinguish between whether segments change from primary to secondary (Panels B and E) or vice versa (Panels C and F) under IFRS 8. We were unable to conduct a regression using *D(Report Income)* for switching firms in Panels E and F, due to small sample size. We include the same control variables and country fixed-effects as in Table 4 but omit them for parsimony. All variables are as defined in the Appendix. All regressions include country-fixed effects; Z- and t-statistics are presented below the coefficients in parentheses and are based on robust standard errors clustered by firm. \*, \*\*, \*\*\* denote significance at the 10%, 5%, and 1% level (two-sided), respectively.

We repeat the same set of analyses for business segments. We find that the increased likelihood of reporting income is driven by firms that switch business segments from secondary under IAS 14 to operating segments under IFRS 8: column (4) of Panel D shows that *IFRS8* is only significantly positive when business segments are secondary, while column (1) of Panel F shows that it is insignificant for non-switchers.<sup>25</sup> We also find that disaggregation only increases for firms that continue to define business segments as primary under IFRS 8.

Overall, our results are consistent with the notion that, for the geographical segments in particular, a trade-off occurs between reporting more information per segment versus disaggregation. In particular, Panel C shows that increases in the amount of reported information are not accompanied by higher levels of disaggregation. This again highlights the importance of examining different types of segments and different measures of quality separately.

#### (iv) Cross-sectional Variation in the Impact of IFRS 8

Next, we examine potential cross-sectional variation in the effect of IFRS 8. As this study focuses mainly on geographical segment disclosures, the analyses in Tables 66–8 deal with this type of segment information only.<sup>26</sup>

#### (a) Reporting Behavior under IAS 14

Table 6 examines whether the effect of IFRS 8 is different for firms with low geographic segment disclosures under IAS 14; the results indicate that this is indeed the case. In column (1), we find that IFRS 8 only significantly decreases the likelihood of disclosing income for firms with *LowIAS14* = 0. This means that for firms that disclose (more than) the minimum required number of items, IFRS 8 leads to a 6.5% reduction in the likelihood of disclosing income (see marginal effects shown in the table), while IFRS 8 has a smaller, but still significant, impact for firms that disclose little information under IAS 14 (0.6%). This result is by construction: *LowIAS14* firms generally do not disclose segment income under the previous regime and continue to do so under IFRS 8. This is also why the main effect of *LowIAS14* is negative and significant in columns (1) and (2). Secondly, we find that *LowIAS14* firms show no reduction in the number of reported items (as the F-test shows that the sum of the coefficients on *IFRS8* and its interaction with *LowIAS14* is not different from zero), while for the other firms the number of items does decrease. Again, this result is partially by construction, as low disclosure firms are those that did not report many items in the first place. Finally, and most notably, when we consider the level of disaggregation, we find that the number of segments and disaggregation increases for firms with higher amounts of disclosure under IAS 14, while for firms with low IAS 14 disclosures, the positive effect of IFRS 8 on the number of disclosed segments is not

25 We cannot estimate the coefficients for *D(Report Profit)* for switchers in the business segment sample, as the logistic regressions will not achieve convergence due to small sample sizes.

26 We do not differentiate between primary and secondary segments or switchers for these analyses, because we explicitly take into account cross-sectional variation in the impact of IFRS 8. Moreover, the analyses in Table 6 cannot be performed separately for primary and secondary segments, as *LowIAS14* equals 0 for all observations when geographical segments are primary under IAS 14. In other words, firms reporting geographical segments as primary segments under IAS 14 all comply with the standard. We did not find any exception.

**Table 6**

Cross-sectional Variation in the Impact of IFRS 8: Low Disclosure under IAS14 Model:

$$SRQ_{it} = \beta_0 + \beta_1 IFRS8_{it} + \beta_2 LowIAS14_i + \beta_3 IFRS8_{it} * LowIAS14_i \sum_k \beta_k CV_{it} + \varepsilon_{it}$$

Variables	(1) SRQ= D(Report Income)	(2) SRQ= Number items	(3) SRQ= Number of segments	(4) SRQ= Geographical fineness
<i>IFRS8</i>	-0.278*** (-3.882)	-0.937*** (-13.389)	0.427*** (5.509)	0.138*** (6.007)
<i>LowIAS14</i>	-3.327*** (-6.614)	-2.380*** (-23.301)	0.638*** (3.048)	-0.166*** (-2.695)
<i>IFRS8* LowIAS14</i>	0.046 (0.092)	0.865*** (9.575)	-0.267* (-1.810)	-0.113*** (-2.788)
<i>Marginal Effects of IFRS8 LowIAS14 = 0</i>	-0.065*** (-3.85)			
<i>LowIAS14 = 1</i>	-0.006* (-1.93*)			
<i>Control Variables</i>				
<i>Herfindahl</i>	0.064 (0.147)	0.101 (0.273)	0.703 (1.447)	0.013 (0.089)
<i>ROA</i>	-0.088 (-0.151)	0.570 (0.937)	0.554 (0.947)	-0.346 (-1.576)
<i>Leverage</i>	-0.008** (-1.997)	-0.003 (-0.837)	0.017*** (4.513)	0.005*** (3.288)
<i>Foreign Sales %</i>	-0.074* (-1.775)	0.042 (1.257)	0.286*** (6.176)	-0.016 (-1.250)
<i>Size</i>	0.046** (2.001)	0.010 (0.636)	-0.009 (-0.487)	-0.023*** (-4.649)
<i>MTB</i>	0.064 (0.147)	0.101 (0.273)	0.703 (1.447)	0.013 (0.089)
<i>D(Loss)</i>		0.114 (0.535)	-0.100 (-0.342)	0.056 (0.661)
Constant	1.351* (1.717)	4.318*** (6.428)	-0.893 (-1.263)	2.226*** (8.836)
Country FE	YES	YES	YES	YES
Clustered SE	Firm	Firm	Firm	Firm
Num. of Obs.	1,434	1,438	1,438	1,438
Num. of Firms	735	737	737	737
F-test: <i>IFRS8 + IFRS8*LowIAS14</i>	0.22	1.59	1.61	0.56
Pseudo/Adj. R-squared	0.143	0.214	0.159	0.106

Note:

Table 6 presents regression analyses of the differential impact of IFRS 8 on geographical segment disclosures for firms that were non-compliant under IAS 14 (i.e., *LowIAS14* = 1). All variables are as defined in the Appendix. Pseudo R-squared is reported in column (1), and adjusted R-squared is reported in columns (2)–(4). All regressions include country-fixed effects; Z- and t-statistics are presented below the coefficients in parentheses and are based on robust standard errors clustered by firm. \*, \*\*, \*\*\* denote significance at the 10%, 5%, and 1% level (two-sided), respectively.



significant. Similarly, the positive effect of IFRS 8 on disaggregation for low disclosure firms is insignificant as well. Collectively, these results show that, when IFRS 8 leads to a decrease in the amount of disclosed information, this reduction is exacerbated for firms that were already providing less information under IAS 14 (that is, when segments are primary). Similarly, improvements in the level of disaggregation due to IFRS 8 are more pronounced for firms that reported more information under IAS 14. This pattern suggests that IFRS 8 does not uniformly lead to better geographical segment reporting; rather, it suggests that the discrepancy between firms that reported less than required by IAS 14 versus those that reported adequately increases.

#### (b) Transparency and Monitoring Environment

We next examine the effect of corporate transparency on the impact of IFRS 8. These findings are shown in Table 7. We first examine the relationship with  $D(\text{Report Income})$ . Given the difficulties with interpreting interaction terms in logistic regression models (for example, Ai and Norton, 2003), we provide the marginal effects of IFRS 8 at the Q1 and Q3 levels of the transparency variables. (For *Big4*, the marginal effects are shown for the levels 0 and 1.) We find that *IFRS8* generally has a negative impact on the likelihood of reporting geographical segment income, regardless of the transparency level. For the number of disclosed items (column (2)), we find that IFRS 8 leads to a marginally significant decrease, which is greater for firms with higher analyst following (and for *Big4* firms, in which case the interaction term is almost significantly negative). Although this seems counterintuitive at first sight, one explanation could be that, under IAS 14, scrutiny by auditors and analysts was less of a concern, as the standard was more restrictive. In comparison, IFRS 8 provides more discretion, making it harder to insist on the disclosure of more information. This would result in the interaction between IFRS 8 and transparency having a negative coefficient.

We now turn to the results for the other segment reporting indicators in columns (2)–(4). Results for number of items in column (2) are insignificant as we only find a significant interaction between analyst following and IFRS 8. The impact of IFRS 8 on number of items (which is significantly negative as shown in Table 4) apparently does not differ strongly across different levels of corporate transparency. The main effects on *IFRS8* and *AggTrans* convey that very opaque firms disclose significantly fewer items under IFRS 8 and that more transparent firms disclose more items (under IAS 14). In column (3), we find more segments were reported under IFRS 8 for firms with higher analyst following or higher forecast accuracy. This suggests that more transparent firms are those that disaggregate segments more under IFRS 8. Results in column (4) are worth attention. We find a significant and positive interaction between aggregate transparency and IFRS 8 in its relationship with geographical fineness. Moreover, the main effect of IFRS 8 is  $-0.010$  and not significantly different from zero. This implies that, for very opaque firms, IFRS 8 has no impact on disaggregation. When we examine the individual measures of transparency, we find that IFRS 8 has a positive impact on fineness for firms that have higher quality accruals (lower  $Abs(DA)$ ) and higher forecast accuracy.

These cross-sectional analyses yield two insights. First, the results with the transparency measure show somewhat contradictory results. While we have weak evidence for the notion that transparency enhances or even drives the negative impact of IFRS 8 for the number of disclosed items per geographical segment, it does exactly the

**Table 7**

Cross-sectional Variation in the Impact of IFRS 8: The Effect of Transparency Model:

$$SRQ_{it} = \beta_0 + \beta_1 IFRS8_{it} + \beta_2 TRANS_i + \beta_3 IFRS8_{it} * TRANS_i + \sum_k \beta_k CV_{it} + \varepsilon_{it}$$

(1) $SRQ = D(\text{Report Income})$					
Aggregate Transparency Measure	Individual Transparency Measures				
Variables	$TRANS =$ <i>AggTrans</i>	$TRANS =$ <i>Abs(DA)</i>	$TRANS =$ <i>Analyst</i>	$TRANS =$ <i>Accuracy</i>	$TRANS =$ <i>Big4</i>
<i>IFRS8</i>	-0.238 (-0.817)	-0.148* (-1.911)	-0.181** (-2.255)	-0.212*** (-2.662)	-0.258* (-1.670)
<i>TRANS</i>	0.721 (0.754)	1.672 (1.502)	-0.010 (-0.731)	0.038 (1.306)	-0.301 (-1.221)
<i>IFRS8* TRANS</i>	0.007 (0.014)	-1.282* (-1.837)	-0.009 (-1.048)	0.032 (0.768)	0.024 (0.141)
<i>TRANS = Q1 or = 0</i>	-0.046 (-0.81)	-0.030* (-1.90)	-0.039** (-2.23)	-0.042*** (-2.65)	-0.059 (-1.62)
<i>TRANS = Q3 or = 1</i>	-0.046 (-0.81)	-0.031* (-1.91)	-0.038** (-2.27)	-0.043*** (-2.65)	-0.054* (-1.68)
<i>Herfindahl</i>	0.042 (0.077)	0.399 (0.909)	0.401 (0.929)	0.079 (0.146)	0.403 (0.927)
<i>ROA</i>	2.002* (1.922)	1.526* (1.891)	0.661 (0.851)	1.900* (1.782)	0.693 (0.853)
<i>D(Loss)</i>	0.571* (1.734)	0.517* (1.882)	0.356 (1.325)	0.571* (1.739)	0.332 (1.220)
<i>Leverage</i>	0.025 (0.060)	0.018 (0.049)	0.014 (0.038)	-0.023 (-0.054)	0.030 (0.083)
<i>Foreign Sales %</i>	-0.012** (-2.240)	-0.009** (-1.970)	-0.008** (-2.051)	-0.013** (-2.374)	-0.008** (-2.060)
<i>Size</i>	-0.043 (-0.683)	-0.005 (-0.121)	0.024 (0.475)	-0.025 (-0.492)	0.009 (0.198)
<i>MTB</i>	0.026 (1.147)	0.025 (1.297)	0.034* (1.727)	0.026 (1.123)	0.033* (1.668)
Constant	0.594 (0.576)	-0.246 (-0.288)	-0.206 (-0.242)	0.815 (0.790)	0.240 (0.306)
Country FE	Yes	Yes	Yes	Yes	Yes
Clustered SE	Firm	Firm	Firm	Firm	Firm
Num. of Obs.	1,058	1,373	1,434	1,058	1,434
Num. of Firms	538	704	735	538	735
F-test: $IFRS8 + IFRS8 * TRANS = 0$	0.90	4.73**	6.34**	3.33*	11.29***
Pseudo R-squared	0.060	0.050	0.046	0.063	0.046

(Continued)

opposite for the level of segment disaggregation. This again highlights the importance of examining the effects of a standard on different aspects of segment reporting separately. Second, all cross-sectional findings show that increases in disaggregation under IFRS 8 are *least* pronounced or even absent for firms with minimal segment reporting and low transparency under IAS 14. This suggests that improvements in

**Table 7**  
Continued

<i>Variables</i>	(2) <i>SRQ = Number of items</i>	(3) <i>SRQ = Number of segments</i>	(4) <i>SRQ = Geographical fineness</i>
<i>IFRS8</i>	-0.479*	0.108	-0.010
	(-1.844)	(0.318)	(-0.110)
<i>AggTrans</i>	1.279*	-0.345	-0.470*
	(1.692)	(-0.408)	(-1.750)
<i>IFRS8* AggTrans</i>	-0.552	0.573	0.255*
	(-1.212)	(0.924)	(1.668)
<i>Herfindahl</i>	0.114	0.740	0.011
	(0.249)	(1.281)	(0.065)
<i>ROA</i>	1.076	1.004	-0.571*
	(1.364)	(1.074)	(-1.938)
<i>D(Loss)</i>	0.324	0.024	0.032
	(1.133)	(0.065)	(0.320)
<i>Leverage</i>	-0.131	0.043	-0.084
	(-0.401)	(0.115)	(-0.730)
<i>Foreign Sales%</i>	-0.011**	0.021***	0.004**
	(-2.449)	(4.202)	(2.061)
<i>Size</i>	0.055	0.305***	0.011
	(1.113)	(4.535)	(0.665)
<i>MTB</i>	0.012	-0.029*	-0.020***
	(0.585)	(-1.660)	(-3.521)
Constant	3.573***	-1.336	2.167***
	(3.753)	(-1.404)	(7.338)
<b>Individual Transparency Measures</b>			
<i>IFRS8* Abs(DA)</i>	0.264	-0.414	-0.620*
	(0.422)	(-0.788)	(-1.944)
<i>IFRS8* Analyst</i>	-0.015**	0.016*	0.003
	(-2.279)	(1.797)	(1.484)
<i>IFRS8* Accuracy</i>	-0.002	0.008**	0.002*
	(-0.389)	(2.257)	(1.884)
<i>IFRS8* Big4</i>	-0.279	0.142	0.094
	(-1.627)	(0.732)	(1.403)
Country FE	Yes	Yes	Yes
Clustered SE	Firm	Firm	Firm
Num. of Obs.	1,060	1,060	1,060
Num. of Firms	539	539	539
F-test: <i>IFRS8+IFRS8*AggTrans</i> = 0	22.98***	5.09**	12.04***
F-test: <i>IFRS8+IFRS8*Abs(DA)</i> = 0	0.76	0.00	2.29
F-test: <i>IFRS8+IFRS8*Analyst</i> = 0	84.42***	12.96***	15.75***
F-test: <i>IFRS8+IFRS8*Accuracy</i> = 0	129.74***	27.14***	31.55***
F-test: <i>IFRS8+IFRS8*Big4</i> = 0	158.96***	29.63***	42.66***
Adj. R-squared	0.081	0.159	0.101

Note:

Table 7 presents regression analyses of the differential impact of IFRS 8 on geographical segment disclosures for firms with different levels of transparency. Transparency is measured using the absolute value of discretionary accruals, analyst following, forecast accuracy, and the presence of a Big4 auditor. All variables are as defined in the Appendix. All regressions include country-fixed effects; *Z*- and *t*-statistics are presented below the coefficients in parentheses and are based on robust standard errors clustered by firm. \*, \*\*, \*\*\* denote significance at the 10%, 5%, and 1% level (two-sided), respectively.

disclosures do not materialize for firms where there is arguably most room for improvement.

(v) *Economic and Informational Consequences of IFRS 8*

Prior studies do not consistently find that IFRS 8 led to capital market consequences or changes in analyst forecast properties (for example, He et al., 2012; Vorst, 2012; and Weissenberger and Franzen, 2012). One reason for this result could be that these studies lack statistical power due to small sample sizes. Also, these studies do not account for the differential impact of IFRS 8 cross-sectionally, as is evident from our analyses. Moreover, Daske et al. (2013) emphasize the importance of examining firm-level heterogeneity in the economic consequences of IFRS. This is why we examine whether forecast accuracy, dispersion, bid–ask spreads, and cost of equity capital differ significantly after the implementation of IFRS 8, taking this heterogeneity into account.<sup>27</sup>

Forecast accuracy is measured as the absolute difference between the first annual consensus forecast and actual earnings per share, scaled by lagged price, multiplied by  $-1$ ; dispersion is the standard deviation of forecasts; bid–ask spreads are the yearly average of the daily difference between bid and ask prices, scaled by the midpoint of the bid–ask spread. We use the following model from Easton (2004) to derive our measure of cost of capital:  $r_{PEG} = \sqrt{\frac{EPS_2 - EPS_1}{P_0}}$ , where  $EPS_t$  represents the earnings forecast for  $t$  years ahead and  $P_0$  is fiscal year end price. Botosan and Plumlee (2005) find this measure of cost of capital to be most consistently and predictably related to risk factors compared to a number of alternative measures.<sup>28</sup>

We examine whether these indicators differ in the year after IFRS 8 adoption, compared to the year before adoption. So for a firm that adopts IFRS 8 in 2009, we compare forecast accuracy, dispersion, bid–ask spreads, and cost of capital for 2010 and 2008. To account for heterogeneity in the impact of IFRS 8, we split our sample into firms that increase (*Improve SRQ*), decrease (*Worsen SRQ*), or do not change in terms of segment reporting quality, using the four SRQ measures. We thus estimate the following general model:

$$\begin{aligned} \text{Economic Outcome}_{it} = & \delta_0 + \delta_1 \text{IFRS8}_{it} + \delta_2 \text{Improve SRQ}_i + \delta_3 \text{IFRS8}_{it} * \text{Improve SRQ}_i \\ & + \delta_4 \text{Worsen SRQ}_i + \delta_5 \text{IFRS8}_{it} * \text{Worsen SRQ}_i + \sum_k \delta_k CV_{it} + \varepsilon_{it} \end{aligned}$$

*Economic Outcome* equals forecast accuracy, forecast dispersion, bid–ask spread or  $r_{PEG}$ . We interact *ImproveSRQ* and *WorsenSRQ* with IFRS8. (This resembles examining whether the change in economic outcomes is associated with the variation in SRQ.)

27 We conduct these analyses mainly for completeness, to show whether there are any economic and informational effects when we take into account heterogeneity in IFRS 8 adoption. We do not predict that there should be strong effects. In fact, we expect these effects to be limited, given that IFRS 8 adoption only seems to improve segment reporting for firms that were already reporting more information and are more transparent to begin with. In addition, IFRS 8 is adopted in a turbulent period in which the financial crisis takes place. This also has a severe impact on our economic outcome variables. Results should therefore be interpreted carefully.

28 We also conduct analyses using the Botosan and Plumlee (2002) measure of cost of capital ( $r_{BP}$ ). This method requires more earnings forecast data (i.e., 1- to 5-year ahead earnings forecasts), which reduces our sample size significantly. Because the results with  $r_{BP}$  resemble those with  $r_{PEG}$ , we only report those in the paper.

If IFRS 8 had any economic or informational consequences, we expect them to be most pronounced for firms that increase or decrease the amount of reported segment information after IFRS 8. Hence, we expect  $\delta_3$  to be positive;  $\zeta_3$ ,  $\eta_3$  and  $\theta_3$  to be negative;  $\delta_5$  to be negative; and  $\zeta_5$ ,  $\eta_5$  and  $\theta_5$  to be positive. We also control for a variety of factors that could affect forecast accuracy and dispersion, following Hope (2003), and bid–ask spreads, following Daske et al. (2008).<sup>29</sup>

In Panel A of Table 8, we examine the effects of IFRS 8 for firms that start and stop reporting segment income. We find that, in the year following IFRS 8 adoption, firms that continue to (not) report income have higher cost of capital (column (4)). However, since most firms adopt IFRS 8 in 2009, we are effectively comparing these variables for 2008 and 2010. This period coincides with the recent financial crisis, which likely affects these results and makes it harder to interpret the IFRS 8 coefficient. We do not find significant negative effects for firms that stop reporting income, but we find that cost of capital increases *less* for firms that start reporting income supporting the view that improvements in reporting can have positive economic consequences.

In the remainder of the panels, we do not find that changes in SRQ are predictably related to changes in economic outcomes. For instance, we find that firms improving their geographical segment reporting exhibit higher bid–ask spreads (Panel B), lower accuracy (Panel C), and higher dispersion (Panel D), although most of these results are only marginally significant. Most interaction terms are insignificant, which suggests that IFRS 8 had limited or no capital market consequences. These results are in line with the findings of Hope et al. (2006), who find that the lack of geographical segment information under SFAS 131 did not have detrimental effects on earnings predictability.<sup>30</sup>

One potential reason for the lack of significance and consistency in our economic effects analyses is rooted in the historical background of IFRS 8. Although IAS 14 R was introduced by the IASC in 1997, the majority of our sample adopted IAS 14 for the first time in 2005, when IFRS was mandatorily introduced for all stock-listed European companies. The insignificant impact of IFRS 8 may therefore be partially attributable to the impact of the mandatory switch from local GAAP requirements on segment reporting (which were non-existent for many countries) to IAS 14. Since IFRS was mandatorily introduced for most companies at the same time, it is impossible to tease out which economic benefits came about because of the introduction of IAS 14 in 2005.<sup>31</sup>

Another important caveat we alluded to earlier is that most firms adopt IFRS 8 in 2009, which means that we examine changes in forecast properties, liquidity and cost of capital from 2008 to 2010. This period coincides with the recent financial crisis,

29 For the accuracy and dispersion regressions, we include size, profitability, standard deviation of ROE, leverage, auditor, analyst following, earnings surprise, forecast horizon and Zmijewski's (1984) financial distress measure as control variables. For the bid–ask spread and cost of capital regressions, we include a US listing dummy, share turnover, return volatility, index membership, firm size, profitability, leverage and auditor as control variables. Daske et al. (2008) also include firm-fixed effects, which isn't feasible for our sample. Instead, we included profitability, leverage, and auditor variables as an alternative way to control for firm effects. Precise definitions of these variables are provided in the Appendix.

30 In further tests, we study whether investor protection and securities regulation, measured at the country level, are associated with different economic consequences after the adoption of IFRS 8, improved SRQ, or both. The overarching conclusion from this battery of (untabulated) tests is that there are no significant joint effects from the institutional environment on any of the economic consequence variables.

31 We thank the referee for bringing this notion to our attention.

**Table 8**

Economic and Informational Consequences of IFRS 8 Model:

$$EI\ Outcome_{it} = \delta_0 + \delta_1 IFRS8_{it} + \delta_2 Improve\ SRQ_j + \delta_3 IFRS8_{it} * Improve\ SRQ_j \\ + \delta_4 Worsen\ SRQ_j + \delta_5 IFRS8_{it} * Worsen\ SRQ_j + \sum_k \delta_k CV_{it} + \varepsilon_{it}$$

**Panel A: Start or Stop Reporting Income**

<i>EI Consequence Variable =</i>	(1) <i>Accuracy</i>	(2) <i>Dispersion</i>	(3) <i>Bid-Ask Spread</i>	(4) <i>r<sub>PEG</sub></i>
<i>IFRS8</i>	0.093 (1.249)	0.008 (0.548)	0.001 (0.110)	0.036*** (4.018)
<i>D(Start report income)</i>	0.307 (0.709)	0.225** (2.117)	-0.005 (-0.777)	0.019 (0.817)
<i>IFRS8*D(Start report income)</i>	-0.561 (-1.227)	-0.144 (-1.520)	0.002 (0.247)	-0.020* (-1.785)
<i>D(Stop report income)</i>	-0.074 (-0.325)	0.038 (0.928)	0.001 (0.223)	0.000 (0.030)
<i>IFRS8*D(Stop report income)</i>	0.137 (0.531)	-0.052 (-1.246)	-0.010 (-1.410)	0.032 (1.476)
Control Variables	Yes	Yes	Yes	Yes
Country-Fixed Effects	Yes	Yes	Yes	Yes
Clustered SE	Firm	Firm	Firm	Firm
Observations	1,098	1,091	1,101	499
Adj. R-squared	0.471	0.432	0.065	0.314

**Panel B: Increase or Decrease Number of Reported Items**

<i>IFRS8</i>	0.031 (0.323)	-0.006 (-0.314)	-0.004* (-1.756)	0.038*** (2.983)
<i>D(Number Reported Items Increase)</i>	-0.492 (-1.555)	0.140** (2.511)	-0.008** (-2.194)	-0.018 (-1.275)
<i>IFRS8*D(Number Reported Items Increase)</i>	0.277 (0.714)	-0.092 (-1.436)	0.006* (1.899)	0.009 (0.367)
<i>D(Number Reported Items Decrease)</i>	-0.111 (-0.878)	0.022 (0.936)	0.001 (0.218)	0.006 (0.809)
<i>IFRS8*D(Number Reported Items Decrease)</i>	0.076 (0.546)	0.021 (0.750)	0.006 (0.727)	0.001 (0.050)
Control Variables	Yes	Yes	Yes	Yes
Country-Fixed Effects	Yes	Yes	Yes	Yes
Clustered SE	Firm	Firm	Firm	Firm
Observations	1,098	1,091	1,101	499
Adj. R-squared	0.472	0.432	0.066	0.311

**Panel C: Increase or Decrease Number of Segments**

<i>IFRS8</i>	0.196** (2.212)	-0.014 (-0.834)	-0.004** (-2.369)	0.041*** (4.244)
<i>D(Number Reported Segments Increase)</i>	0.338** (2.258)	-0.040 (-1.379)	0.000 (0.176)	0.002 (0.209)

(Continued)

**Table 8**  
Continued

**Panel C: Increase or Decrease Number of Segments**

<i>EI Consequence Variable =</i>	(1) <i>Accuracy</i>	(2) <i>Dispersion</i>	(3) <i>Bid-Ask Spread</i>	(4) <i>r<sub>PEG</sub></i>
<i>IFRS8*D(Number Reported Segments Increase)</i>	-0.412** (-2.305)	0.035 (0.997)	0.014 (0.904)	-0.022 (-1.376)
<i>D(Number Reported Segments Decrease)</i>	0.101 (0.534)	0.027 (0.662)	0.002 (0.498)	-0.003 (-0.203)
<i>IFRS8*D(Number Reported Segments Decrease)</i>	-0.129 (-0.640)	0.031 (0.736)	0.002 (0.459)	0.019 (0.692)
Control Variables	Yes	Yes	Yes	Yes
Country-Fixed Effects	Yes	Yes	Yes	Yes
Clustered SE	Firm	Firm	Firm	Firm
Observations	1,098	1,091	1,101	499
Adj. R-squared	0.473	0.427	0.068	0.314

**Panel D: Increase or Decrease Geographical Fineness**

	(1)	(2)	(3)	(4)
<i>IFRS8</i>	0.162* (1.723)	-0.014 (-0.831)	-0.004** (-2.465)	0.041*** (4.002)
<i>D(Geographical Fineness Increase)</i>	0.212 (1.535)	-0.035 (-1.322)	0.000 (0.179)	-0.002 (-0.296)
<i>IFRS8*D(Geographical Fineness Increase)</i>	-0.258 (-1.584)	0.053* (1.734)	0.014 (0.924)	-0.018 (-1.096)
<i>D(Geographical Fineness Decrease)</i>	0.058 (0.272)	0.039 (0.947)	0.004 (0.847)	-0.001 (-0.051)
<i>IFRS8*D(Geographical Fineness Decrease)</i>	-0.088 (-0.422)	-0.005 (-0.104)	0.002 (0.607)	0.010 (0.450)
Control Variables	Yes	Yes	Yes	Yes
Country-Fixed Effects	Yes	Yes	Yes	Yes
Clustered SE	Firm	Firm	Firm	Firm
Observations	1,098	1,091	1,101	499
Adj. R-squared	0.471	0.427	0.068	0.313

*Note:*

Table 8 presents regression analyses of the impact of IFRS 8 on the average analyst forecast accuracy, forecast dispersion, bid-ask spreads, and *r<sub>PEG</sub>*. Accuracy is winsorized at the bottom 5% level and dispersion at top 5% level (result similar without winsorizing). We differentiate between firms that exhibit an increase, decrease or no change in the quality of geographical segment disclosures. We use the four segment reporting quality measures that were used in the earlier analyses. In Panel A, we differentiate between firms that stop or start reporting income or remain the same; in Panel B, we differentiate between firms that increase, decrease or report the same number of segment items; in Panel C, we differentiate between firms that increase, decrease or report the same number of segments; in Panel D, we differentiate between firms that increase, decrease or have the same level of geographical fineness. IFRS8 is equal to 1 for the year following IFRS 8 adoption, and 0 for the year preceding adoption. For the majority of firms this means that measures for 2008 are compared with 2010. We control for *Log(MVE)*, *ROE*, *D(Loss)*, *Leverage*, *Big4 auditor*, *Earnings Surprise*, *Earnings Volatility*, *Log(Analyst Following)*, *Log(Forecast Horizon)*, Exchange score, and Z-score in the accuracy and dispersion regressions, following Hope (2003). We control for *Size*, *ROE*, *D(Loss)*, *Leverage*, *Big4 auditor*, US listing dummy, *Log(Share Turnover)*, *Log(Return Volatility)*, and Index Membership in the bid-ask spread and *r<sub>PEG</sub>* regressions, following Daske et al. (2008). All variables are as defined in the Appendix. *T*-statistics are presented below the coefficients in parentheses and are based on robust standard errors clustered by firm \*, \*\*, \*\*\* denote significance at the 10%, 5%, and 1% level, respectively.

which had a large effect on these variables. We therefore caution against drawing strong conclusions from the analyses in Table 8. Nevertheless, it is interesting to find that the consequences of IFRS 8 do differ between firms that exhibit improvements or decreases in reporting quality, although not strongly. These results again highlight the importance of firm-level heterogeneity in examining the reporting, economic and informational consequences of regulation changes.

## 5. Conclusion

This paper investigates the impact of IFRS 8 on geographical segment disclosures, cross-sectional heterogeneity in the effects of IFRS 8 and whether its introduction has resulted in any economic and informational consequences. We hand-collect geographical segment data for a sample of 737 European firms with over 50% foreign sales, as geographical segment information and a change therein is relevant to investors of those firms. We analyze historical IAS 14 segment data and restated IFRS 8 data for the pre-adoption year and find that, while IFRS 8 led to more disaggregated geographical segment reporting, it reduced the number of reported items. Interestingly, we find that firms that already reported little geographical segment information under IAS 14 do not disaggregate segments more finely afterwards. This result implies that IFRS 8 did not lead to the same improvement for the firms with more room to increase disclosures, resulting in greater cross-sectional divergence in segment reporting. We also find that the negative effect of IFRS 8 on the number of reported items and the probability of reporting segment earnings is stronger for more transparent firms, while the increase in the level of disaggregation is greater for transparent firms. Finally, our results indicate that analyst forecast accuracy, forecast dispersion, market liquidity and cost of equity capital are not strongly affected by IFRS 8, including instances where IFRS 8 improved segment reporting.

Aside from providing more detailed evidence on the effect of IFRS 8 and the factors that affect its impact for a large sample of firms, we contribute to prior literature on segment disclosures by showing that the level of disaggregation and the amount of financial items are two distinct quality dimensions of segment reporting. As such, this paper's arguments and findings direct attention to hitherto neglected determinants of geographical segment information. Future research can focus on whether there are other substitutive effects in segment reporting; for instance, whether firms make a trade-off between the amount and level of business segment information and geographical segment information. Another potentially fruitful avenue for future research would be to investigate how a segment's regional economic conditions and institutions affect segment disclosures.

## APPENDIX

### *Variable Definitions*

#### *Segment Reporting Quality (SRQ):*

1. *D(Report Income)*: Indicator variable equal to 1 if a firm reports an income measure at the segment level, 0 otherwise.

2. *Number of items*: Number of segment line items reported. IAS 14 outlines a specific number of items that are mandatory to disclose for primary segments (which could



be geographical or business): sales, assets, liabilities, capital expenditures, result and depreciation; and secondary segments: sales, assets and capital expenditures. IFRS 8 also provides a list of items that are mandatory to disclose for the identified operating segments (which could be geographical or business segments): sales (separated into external and internal), expenses (with specifically disclosure of interest revenue and expense, depreciation, income tax expense or income and material non-cash items), result, assets, liabilities and capital expenditures. IFRS 8 also requires the disclosure of sales and assets per geographical segment, irrespective of the identification of operating segments.

**3. Number of segments:** Number of segments reported by a firm. Similar to Berger and Hann (2003, 2007), we exclude segments such as headquarters, corporate or unallocated segments, as these do not represent real operating segments under IFRS 8.

**4. Geographical fineness:** Score ranging from 0 to 4 representing the level of disaggregation for geographical segments, refined from Doupnik and Seese (2001). Each segment is assigned a score based on the following scheme, which is averaged to obtain a firm-level geographical fineness score.

1. if geographical region cannot be traced (for example, "other", "foreign", "rest of the world", "overseas", "abroad").
2. if segment represents multiple continents (for example, "Africa and Middle East", "Asia and Pacific").
3. if segment represents a single continent (for example, "Australia and New Zealand", "The Americas", "USA and Canada") or "rest" of continent (for example, "Rest of Europe").
4. if segment represents a group of countries within continents (for example, "Eastern Europe").
5. if segment represents a single country (and more detailed areas such as parts of countries, regions, provinces, and cities).

**Improve SRQ:** Variable indicating whether firms have improved their segment reporting after IFRS 8 adoption. We use four indicator variables based on the SRQ measures above.

- *D(Start report income)*: Indicator variable equal to 1 if a firm starts reporting segment income after IFRS 8.
- *Increased Number of Items*: Indicator variable equal to 1 if a firm reports more segment line items after IFRS 8.
- *Increased Number of Segments*: Indicator variable equal to 1 if a firm reports more segments after IFRS 8.
- *Increased Geographical Fineness*: Indicator variable equal to 1 if a firm has higher geographical fineness after IFRS 8.

**Worsen SRQ:** Variable indicating whether segment reporting quality has decreased after IFRS 8 adoption. Definition is similar to *Improve SRQ*.

- *D(Stop report income)*: Indicator variable equal to 1 if a firm stops reporting segment income after IFRS 8.
- *Decreased Number of Items*: Indicator variable equal to 1 if a firm reports fewer segment line items after IFRS 8.
- *Decreased Number of Segments*: Indicator variable equal to 1 if a firm reports fewer segments after IFRS 8.
- *Decreased Geographical Fineness*: Indicator variable equal to 1 if a firm has lower geographical fineness after IFRS 8.

Other Variables:

**IFRS8:** Indicator variable equal to 1 for pre-adoption year data restated in IFRS 8, 0 otherwise. For Table 8, *IFRS8* is equal to 1 for the year following IFRS 8, and 0 for the year preceding adoption. For example, if a firm adopts IFRS 8 in 2009, *IFRS8* equals 1 for the 2010 observation and 0 for the 2008 observation.

**LowIAS14:** Indicator variable equal to 1 if firm chooses secondary reporting format for geographical segments under IAS 14 and discloses fewer than three items, 0 otherwise.

**Abs(DA):** Absolute value of discretionary accruals (DA); DA calculated using the cross-sectional modified Jones model (industry regressions with at least eight firms per industry).

**Analyst:** Number of analysts following a firm (number of estimates from I/B/E/S).

**Accuracy:** Forecast accuracy, defined as absolute difference between first consensus forecast of 1-year-ahead annual earnings and actual annual earnings per share, divided by lagged price, multiplied by  $-1$ .

**Big4:** Indicator variable equal to 1 if a firm uses a Big 4 auditor, 0 otherwise.

**AggTrans:** Aggregate indicator of transparency; average of the percentile ranked values of *Abs(DA)*, *Analyst*, *Accuracy* and *Big4*.

**Herfindahl:** Herfindahl-Hirschman index based on the top 50 public and private firms in SIC3 industry (restricted to top 50 firms following the US Census calculation). Data retrieved from Amadeus.

**ROA:** Firm-level operating income divided by total assets.

**D(Loss):** Indicator variable equal to 1 for firms with  $EPS < 0$ , 0 otherwise.

**Foreign Sales%:** Proportion of foreign sales on total sales.

**Size:** Log of total assets

**MTB:** Market value of equity divided by book value of equity.

**Leverage:** Total debt scaled by total assets

**Dispersion:** Standard deviation of analyst forecasts of annual earnings from I/B/E/S.

**Bid-Ask Spread:** Yearly average of the absolute difference between the daily bid and ask price, divided by the midpoint between the bid and ask price.

**Earnings Surprise:** Absolute value of current year net income minus prior year's net income, divided by prior year's net income.

**Earnings Volatility:** Standard deviation of ROE over the previous 5 years. If current year  $< 2009$ , we use all prior years after 2004 to avoid problems with the mandatory adoption of IFRS in 2005.

**$r_{PEG}$ :** Cost of capital measure based on Easton (2004), calculated as follows:  $r_{PEG} = \sqrt{\frac{EPS_2 - EPS_1}{P_0}}$ , where  $EPS_t$  is the  $t$ -year-ahead annual earnings forecast (we take the first forecast following the annual earnings announcement), and  $P_0$  is the end of fiscal year price.

**ROE:** Net income divided by market value of equity.

**Log(Analyst):** Log of number of analysts following a firm.

**Log(Forecast Horizon):** Log of number of days between forecast date and earnings announcement date.

**Log(MVE):** Log of market value of equity in US\$.

**Exchange Score (Hope, 2003):** Summary of all the major stock exchanges on which a firm was listed during the sample period. Listings on domestic exchanges as well as European (other than London), London, Asian and US listings are recorded. Listings on US exchanges are given a weight of 1.5, all other listings are given a weight of 1, and the scores for each firm are summed.

**Index Membership:** Indicator variable equal to 1 if firm has shares that are constituents of national or international stock market indices as defined in Worldscope field 05661.

**Log(Return Volatility):** Annual standard deviation of monthly stock returns.

**Z-score:** Zmijewski (1984) financial distress score. Z-score =  $-4.3 - 4.5 * (\text{net income} / \text{total assets}) + 5.7 * (\text{total debt} / \text{total assets}) - 0.004 * (\text{current assets} / \text{current liabilities})$ .

## REFERENCES

- Ai, C. and E. C. Norton (2003), 'Interaction Terms in Logit and Probit Models', *Economics Letters*, Vol. 80, No. 1, pp. 123–9.
- Ali, A., S. Klasa and E. Yeung (2009), 'The Limitations of Industry Concentration Measures Constructed with Compustat Data: Implications for Finance Research', *Review of Financial Studies*, Vol. 22, No. 10, pp. 3,839–71.
- Association for Investment Management Research (AIMR), (1992), Financial reporting in the 1990s and beyond: A position paper of the AIMR, prepared by Peter H. Knutson for the Financial Accounting Policy Committee, AIMR, Charlottesville, VA.
- Ball, R., S. P. Kothari and A. Robin (2000), 'The Effect of International Institutional Factors on Properties of Accounting Earnings', *Journal of Accounting and Economics*, Vol. 29, No. 1, pp. 1–51.
- , A. Robin and J. S. Wu (2003). 'Incentives Versus Standards: Properties of Accounting Income in Four East Asian Countries', *Journal of Accounting and Economics*, Vol. 36, Nos. 1–3, pp. 235–70.
- Bens, D.A., P. G. Berger and S. J. Monahan (2011), 'Discretionary Disclosure in Financial Reporting: An Examination Comparing Internal Firm Data to Externally Reported Segment Data', *The Accounting Review*, Vol. 86, No. 2, pp. 417–49.
- Berger, P. G. and R. Hann (2003), 'The Impact of SFAS no. 131 on Information and Monitoring', *Journal of Accounting Research*, Vol. 41 No. 2, pp. 163–223.
- and R. Hann (2007), 'Segment Profitability and the Proprietary and Agency Costs of Disclosure'. *The Accounting Review*, Vol. 82, No.4, pp. 869–06.
- Blanco, B., J.M. Garcia Lara and J.A. Tribo (2015), 'Segment Disclosure and Cost of Capital', *Journal of Business Finance & Accounting*, Vol. 42, No. 3 & 4, pp. 367–411.
- Botosan, C. A. and M. S. Harris (2000), 'Motivations for a Change in Disclosure Frequency and Its Consequences: An Examination of Voluntary Quarterly Segment Disclosures', *Journal of Accounting Research* Vol. 38, No. 2, pp. 329–53.
- and M. Plumlee (2002), 'A Re-examination of Disclosure Level and Expected Cost of Equity Capital', *Journal of Accounting Research* Vol. 40, No. 1, pp. 21–40.

- and ——— (2005), Assessing Alternative Proxies for the Expected Risk Premium. *The Accounting Review* Vol. 80, No. 1 pp. 21–53.
- and M. Stanford. (2005), ‘Managers’ Motives to Withhold Segment Disclosures and the Effect of SFAS No. 131 on Analysts’ Information Environment’, *The Accounting Review* Vol. 80, No.3, pp. 751–71.
- Bugeja, M., R. Czernkowski and D. Moran (2015), The Impact of the Management Approach on Segment Reporting. *Journal of Business Finance & Accounting* Vol. 42, No. 3 & 4, pp. 310–66.
- Crawford, L., H. Extance, C. Hellier and D. Power (2012), Operating Segments: the Usefulness of IFRS 8. ICAS Insight, the Institute of Chartered Accountants in Scotland, Edinburgh.
- Daske, H. (2006), ‘Economic Benefits of Adopting IFRS or US-GAAP – Have the Expected Cost of Equity Capital Really Decreased?’ *Journal of Business Finance & Accounting*, Vol. 33, Nos. 3–4, pp. 329–73.
- , L. Hail, C. Leuz and R. Verdi. (2008), ‘Mandatory IFRS Reporting around the World: Early Evidence on the Economic Consequences’, *Journal of Accounting Research*, Vol. 46, No. 5, pp. 1,085–142.
- , ———, ——— and ——— (2013), ‘Adopting a Label: Heterogeneity in the Economic Consequences around IAS/IFRS Adoptions’, *Journal of Accounting Research*, Vol. 51, pp. 495–547.
- Doupnik, T. S. and L. P. Seese (2001), ‘Geographic Area Disclosures under SFAS 131: Materiality and Fineness’, *Journal of International Accounting, Auditing and Taxation*, Vol. 10, No. 2, pp. 117–38.
- Easley, D. and M. O’Hara. (2004). ‘Information and the Cost of Capital’, *The Journal of Finance*, Vol. 59, No. 4, pp. 1,553–83.
- Easton, P. D. (2004), ‘PE Ratios, PEG Ratios, and Estimating the Implied Expected Rate of Return on Equity Capital’. *The Accounting Review*, Vol. 79, No. 1, pp.73–95.
- Emmanuel, C. R. and N. Garrod (1987), ‘On the Segment Identification Issue’. *Accounting and Business Research*, Vol. 17, 235–40.
- and ——— (1988), ‘The Impact of Company Profile on the Predictive Ability of Disaggregated Data’, *Journal of Business Finance & Accounting*, Vol. 15, pp. 135–54.
- and ——— (2002), ‘On the Relevance and Comparability of Segmental Data’ *Abacus*, Vol. 38, pp. 215–34.
- Entredge, M. L., S. Y. Kwon, D. B. Smith and M. S. Stone (2006), ‘The Effect of SFAS No. 131 on the Cross-Segment Variability of Profits Reported by Multiple Segment Firms’, *Review of Accounting Studies*, Vol. 11, No. 1, pp. 91–117.
- , ———, ——— and P. A. Zarowin, (2005), ‘The Impact of SFAS No. 131 Business Segment Data on the Market’s Ability to Anticipate Future Earnings’ *The Accounting Review*, Vol. 80, No. 3, pp. 773–804.
- Giner, B. (1997), ‘The Influence of Company Characteristics and Accounting Regulation on Information Disclosed by Spanish Firms’ *European Accounting Review*, Vol. 6, No. 1, 45–68.
- Harris, M. (1998), ‘The Association between Competition and Managers’ Business Segment Reporting Decisions’ *Journal of Accounting Research*, Vol. 36, No. 1, pp. 111–28.
- Hayes, R. M. and R. Lundholm (1996), ‘Segment Reporting to the Capital Market in the Presence of a Competitor’, *Journal of Accounting Research*, Vol. 34, No. 2, pp. 261–79.
- He, R., L. He and E. Evans (2012), The Impact of AASB 8 on Segment Disclosure Practices and Analysts’ Information Environment. Working Paper, Macquarie University.
- Herrmann, D. and W. B. Thomas (2000), ‘An Analysis of Segment Disclosures under SFAS No. 131 and SFAS No. 14’ *Accounting Horizons*, Vol. 14, No. 3, pp. 287–302.
- Hope, O.-K. (2003), ‘Disclosure Practices, Enforcement of Accounting Standards, and Analysts’ Forecast Accuracy: An International Study’ *Journal of Accounting Research*, Vol. 41, No. 2, pp. 235–72.
- , T. Kang, W. B. Thomas and F. Vasvari (2009), ‘The Effects of SFAS 131 Geographic Segment Disclosures by US Multinational Companies on the Valuation of Foreign Earnings’, *Journal of International Business Studies*, Vol. 40, pp. 421–43.
- , M. Ma and W. B. Thomas (2013), Tax Avoidance and Geographic Earnings Disclosure. Working Paper, University of Toronto.
- and W. B. Thomas, (2008). ‘Managerial Empire Building and Firm Disclosure’, *Journal of Accounting Research*, Vol. 46 No. 3, pp. 591–626.

- , ——— and G. Winterbotham, (2006), 'The Impact of Nondisclosure of Geographic Segment Earnings on Earnings Predictability', *Journal of Accounting, Auditing & Finance*, Vol. 21, No. 3, pp. 323–46.
- International Accounting Standards Board (2013). *Post-Implementation Review: IFRS 8 Operating Segments*. (London: IASB). Available online at: [http://www.ifrs.org/Current-Projects/IASB-Projects/PIR/IFRS-8/Documents/PIR-IFRS-8-Operating-Segments-July\(2013\).pdf](http://www.ifrs.org/Current-Projects/IASB-Projects/PIR/IFRS-8/Documents/PIR-IFRS-8-Operating-Segments-July(2013).pdf).
- Jeanjean, T., C. Lesage and H. Stolowy (2010), 'Why Do You Speak English (in your Annual Report)?' *The International Journal of Accounting*, Vol. 45, No. 2, pp. 200–23.
- Lambert, R., C. Leuz and R. E. Verrecchia, (2007), 'Accounting Information, Disclosure, and the Cost of Capital', *Journal of Accounting Research*, Vol. 45, No. 2, pp. 385–420.
- Lang M. H. and R. J. Lundholm (1996), 'Corporate Disclosure Policy and Analyst Behavior', *The Accounting Review*, Vol. 71, No. 4, pp. 467–92.
- Lang M. H. and M. Maffett (2011), 'Transparency and Liquidity Uncertainty in Crisis Periods', *Journal of Accounting and Economics*, Vol. 52, Nos. 2–3, pp. 101–25.
- Leuz, C., D. Nanda and P.D. Wysocki (2003), 'Earnings Management and Investor Protection: An International Comparison', *Journal of Financial Economics*, Vol. 69, pp. 505–27.
- Nichols, N., D. Street and S. Cereola (2012), 'An Analysis of the Impact of Applying IFRS 8 on the Segment Disclosures of European Blue Chip Companies', *Journal of International Accounting Auditing and Taxation*, Vol. 21, No. 2, pp. 79–105.
- Prather-Kinsey, J., and G. Meek (2004), 'The Effect of Revised IAS 14 on Segment Reporting by IAS Companies', *European Accounting Review*, Vol. 13, No. 2, pp. 213–34.
- Prencipe A. (2004), 'Proprietary Costs and Determinants of Voluntary Segment Disclosure: Evidence from Italian Listed Companies', *European Accounting Review*, Vol. 13, No. 2, pp. 319–40.
- Street, D. and N. Nichols (2002) 'LOB and Geographic Segment Disclosures: an Analysis of the Impact of IAS 14 (revised)', *Journal of International Accounting, Auditing, and Taxation*, Vol. 11, No. 2, pp. 91–113.
- Street, D. L., N. B. Nichols and S. J. Gray (2000), 'Segment Disclosures under SFAS No. 131: Has Business Segment Reporting Improved?' *Accounting Horizons*, Vol. 14, No. 3, pp. 259–85.
- Véron, N. (2007), EU Adoption of the IFRS 8 Standard on Operating Segments – Note for the ECON Committee of the European Parliament. 21 September 2007. Available online at: <http://www.bruegel.org/download/parent/21-eu-adoption-of-the-ifrs-8-standard-on-operating-segments/file/376-eu-adoption-of-the-ifrs-8-standard-on-operating-segments-english/>.
- Vorst, P. (2012), The Effects of IFRS 8 on a Company's Segment Disclosures and the Cost of Equity Capital. Working Paper, Maastricht University, Maastricht (The Netherlands). Available online at: <http://arno.unimaas.nl/show.cgi?fid=16929>
- Weissenberger, B. and N. Franzen (2012), The Impact of Mandatory IFRS 8 Application on Information Asymmetry in Germany: Much Ado About Nothing? Working Paper, Justus-Liebig-University Giessen.
- Zmijewski, M. E. (1984), 'Methodological Issues Related to the Estimation of Financial Distress Prediction Models', *Journal of Accounting Research*, Vol. 22 (Studies on Current Econometric Issues in Accounting Research) pp. 59–82.

Copyright of Journal of Business Finance & Accounting is the property of Wiley-Blackwell and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.