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Abstract

The segment disclosures of multinational companies provide strategic information. We use the location characteristics of geographic segments to identify the reasons for withholding or disclosing segments. We examine segment data from around the adoption of IFRS 8, a reporting standard that requires firms to reveal more disaggregated information. Consistent with a proprietary cost motive for nondisclosure, we find that segments in regions that are deemed better for business tend to be hidden, while higher entry barriers for a segment are positively related to disclosure. These effects appear to be stronger for firms for which proprietary cost motives are more important. Among the previously unrevealed segments, proprietary costs explain the nondisclosure of segment earnings and other relevant financial information for investors.

Keywords: segment reporting, proprietary disclosure costs, IFRS 8

JEL-Codes: M41

1. INTRODUCTION

A firm's expansion into foreign markets complicates the processing, gathering, and analysis of information for managers (Egelhoff, 1991), investors (Callen et al., 2006; Hope et al., 2009; Blanco et al., 2015), and financial analysts (Duru and Reeb, 2002; Herrmann et al., 2008). This is primarily due to national differences in (for example) labor regulations, tax regimes, legal institutions, and business practices, and general cultural differences (Dunning, 1993; Reeb et al., 1998). The significant increase in internationalization and foreign operations among many companies over the last few decades has made access to information about firms' international operations even more important. Access to high-quality information about a firm's foreign operations is vital for investors' and analysts' ability to analyze its current performance accurately and forecast its future performance. Geographic information is particularly important for analyzing firms with substantial foreign operations, including many European firms.

Despite the importance of information on corporate foreign operations for evaluating firm performance, many firms are reluctant to provide extensive information on their geographic segments. Research on information disclosure typically assumes the existence of disclosure costs to explain why firms do not fully disclose all the information in their possession, even when there is a clear demand for it from external parties. The cost most commonly cited as an example is proprietary cost (Verrecchia, 2001)—the cost of disclosing strategic information to potential competitors that can harm the disclosing firm (Darrough and Stoughton, 1990).

This study investigates whether the economic characteristics of a segment's location or region make firms reluctant to disclose geographic segment information. First, we exploit a change in segment disclosure regulations that has resulted in more geographic segment disclosure: since January 2009, all firms reporting under IFRS have needed to prepare and disclose their segment reports in compliance with IFRS 8, which replaced the old standard, IAS 14. The new standard forces firms to disclose information on all "material" countries. Therefore, IFRS 8 provides more disaggregated, and higher quality, geographic segments.¹ Despite some initial concern as to whether firms would use the discretion in defining "materiality" for geographic segments, prior literature finds that IFRS 8 has resulted in more disclosure (Crawford et al., 2012; Nichols et al., 2012; Bugeja et al., 2015; Leung and Verriest, 2015; Cereola et al., 2017). The fact that, under IFRS 8, firms are required to restate their segments for the year *prior* to adoption to allow investors to compare financial statements over time is crucial for our methodology. This feature enables us to identify which geographic segments are newly disclosed under IFRS 8 for the pre-adoption year, since we also have the original segment disclosures under IAS 14. Since we examine data for the same year under two different disclosure standards, we effectively use each firm as its own control. Changes in segment disclosures are therefore likely to be due to disclosure incentives rather than changes in the firm's economic condition. We interpret newly disclosed segments as segments that management wanted to hide and segments that are revealed under both standards as those that management wanted to disclose. Subsequently, we investigate how these "new" geographic segments differ in nature from the "old" segments. This framework provides us with an excellent opportunity to investigate whether motives

such as proprietary costs affect disclosure without having to rely on the traditional, flawed proxies for these costs, such as industry concentration (Ali et al., 2009; Dedman and Lennox, 2009). Second, we apply our methodology to a sample of European firms. European multinationals have much greater foreign sales and operations than their US-based peers. Information on their geographic segments is therefore particularly important for investors. Our sample contains 1,277 stock-listed firms.

Following theoretical work on disclosure policies (e.g., Leuz and Verrecchia, 2000; Verrecchia, 2001), we expect firms to hide those geographic segments that reveal positive or “good” information that competitors can use to their advantage. If IFRS 8 forces firms to provide more geographic disclosure, we expect firms to reveal the segments they had previously decided to conceal. Specifically, we predict that firms are more likely to reveal “good” geographic segments after the introduction of IFRS 8. To test this notion empirically, we consider various characteristics of a geographic segment based on its location, including its attractiveness for doing business, its future economic prospects, and its credit risk. We predict that firms making disclosure decisions will hide segments that are attractive for business, have positive economic prospects, and have low credit risk. Next, we consider the extent to which a country has entry barriers for new market participants. We predict that lower entry barriers decrease the likelihood of disclosure. Prior research suggests that revealing information about segments in areas where it is easier for other firms to enter can be more costly, since this may reduce a firm’s competitive advantage more quickly (Leuz, 2003; Raith, 2003).

Our empirical findings are consistent with these predictions. First, we find that newly revealed geographic segments tend to be more economically attractive countries or locations. Specifically, we find that activities in more attractive business locations, more financially stable countries, and countries with lower credit risk are more likely to be hidden. Second, we find that newly revealed segments have lower entry barriers. In other words, multinational firms are more likely to hide locations to which other firms may easily gain access. Both sets of results are in line with the notion that firms have strong incentives to hide information that may harm their competitive stance.

We extend our analyses in three ways. First, we investigate whether the effects are stronger in sample subsets where we would *a priori* expect the proprietary costs of disclosure to be more

relevant. In line with prior findings (Ellis et al., 2012), we indeed find stronger indications of proprietary cost motives in more R&D-intensive industries.

Second, we examine the *amount* of information disclosed on the new segments. If these newly revealed segments were indeed intentionally hidden, we expect firms to disclose *less* information about these segments once they have to disclose them under IFRS 8. Information on segment earnings, as a single financial item, is arguably the most important piece of information, alongside data on revenues (Hope and Thomas, 2008). We investigate whether earnings are less likely to be disclosed for new segments. We also test whether fewer financial items are reported in these cases. Consistent with our predictions, we find that the likelihood that segment earnings are disclosed is greater when the segment's location is less attractive for business and when entry barriers are higher. We also find that fewer financial items are disclosed when the segments constitute more economically attractive regions.

Third, we examine whether our findings on the likelihood of earnings disclosure and the number of items are the same for segments that were already disclosed ("old" segments). We expect this *not* to be the case. Consistent with this prediction, we find that the likelihood of segment earnings disclosure is only weakly related to the attractiveness of a geographic segment location, while entry barriers are not at all associated with earnings disclosure. We also find that geographic segment characteristics have no effect on the amount of information provided for "old" segments. These findings are consistent with our earlier assertions.

Collectively, our results suggest that proprietary costs are an important motive for hiding relevant segmental information from competitors. Consequently, investors also receive less relevant information. Segments that are potentially attractive to competitors are not disclosed until IFRS 8 requires them to be. When adopting IFRS 8, firms limit the amount of information they disclose about these new segments. All our results provide significant evidence that more attractive and easier-to-enter geographic segments are more likely to be hidden than disclosed.

Our study makes several important contributions to the literature. First, we contribute to corporate disclosure research (e.g., Lang and Lundholm, 1996; Botosan and Stanford, 2005) by providing

insights into the determinants of geographic segments, which contain highly relevant information for investors. Our study demonstrates that the location of a segment, its economic characteristics, and its barriers to entry are important predictors for whether a multinational corporation will disclose rather than hide that segment or information about it. Second, a large body of accounting literature has explored the relations between country-specific factors and discretionary disclosure choices (e.g., Hope, 2003; Bushman et al., 2004). Whereas these studies typically focus on the home-country characteristics of the reporting company, we examine the effect of a country's or geographic region's characteristics measured at the firm-segment level rather than at the more aggregated firm level. The advantage of our approach is that it allows for potential within-firm variation in incentives to provide or conceal information on a specific geographic region from investors. To the best of our knowledge, we are the first to take this approach. Third, following several prior studies (Botosan and Stanford, 2005; Bugeja et al., 2015), we investigate proprietary cost motives using segment disclosure information. However, we extend this literature by using an alternative method of capturing proprietary costs of disclosure that enables us to circumvent problems involved in measuring industry concentration or related indicators of competition (Dedman and Lennox, 2009; Ali et al., 2014). Finally, we complement Berger and Hann (2007) and Bens et al. (2011), who focus on business segments, by providing evidence consistent with the existence of proprietary costs of disclosing relevant geographic segments. Our study thus contributes to the literature on disclosure incentives, and segment disclosures in particular.

The rest of this paper is organized as follows. Section 2 reviews the related literature and the conceptual basis of our study. Section 3 outlines our research hypotheses. Section 4 explains the identification of hidden segments. Section 5 describes our sample, defines the study's variables, and explains the model. Section 6 discusses the empirical findings, and Section 7 concludes the paper.

2. RELATED LITERATURE

Theoretical research in economics investigates firms' incentives to disclose versus withhold information from outside parties. Given adverse selection problems, managers have incentives to provide investors with all the information relevant to firm value (Grossman, 1981; Milgrom, 1981).

However, disclosing information may be costly for the firm. The literature's traditional explanation of nondisclosure is that disclosure reveals proprietary information. In his model, Verrecchia (1983) allows for the existence of proprietary costs of disclosure and derives an equilibrium in which some firms do not disclose all value-relevant information to the market. When the disclosed information is potentially more useful for competitors and when market rivals benefit from the disclosed information at the expense of the disclosing firm, the proprietary costs of disclosure increase. There are other potential explanations for why managers withhold relevant information from the market, such as agency costs or uncertainty about the information signals received. According to Verrecchia (2001), however, the cost of revealing sensitive information that could be used by competitors to gain a strategic advantage is the most compelling explanation for the lack of full disclosure equilibria.

The literature indeed commonly cites proprietary costs as a reason for nondisclosure. Managers often justify the nondisclosure of segments by referring to competitive concerns. Ettredge et al. (2002) find that 86 percent of the manufacturing firms that commented on the exposure draft of a new segment disclosure rule in the US opposed the new standard because "it would put them at competitive disadvantage". Empirical tests of the proprietary cost hypothesis typically examine the decision to disclose business segment information and use measures of competition to capture the importance of proprietary costs. Using several measures of competition, Harris (1998) and Botosan and Stanford (2005) find that there is less business-segment information in less competitive industries. Leuz (2003) also finds that German managers are less likely to voluntarily disclose business segment data when it is easier for other competitors to enter a market, when segments are less aggregated, and when firms are more profitable. Further, Wang et al. (2016) find that managers conceal segment earnings growth because of proprietary costs of disclosure. Andre et al. (2016) find that managers address potential proprietary concerns by deviating from the suggested line item disclosure or by decreasing segment reporting quality in general. Collectively, these results are consistent with the view that proprietary costs can play a vital role in determining disclosure levels. By contrast, Botosan and Harris (2000) do not find that increases in competition lead managers to adjust the disclosure of segment information. Berger and Hann (2007) also find that proprietary costs are a comparatively

weaker explanation for segment disclosure than agency cost motives, although Bens et al. (2011) find evidence supporting both the agency cost and proprietary cost perspectives. These ambiguous results could be due to the difficulties in measuring proprietary costs.² We propose a different approach based on the economic characteristics of geographic segment locations in order to better understand segment disclosure incentives.

In addition, whereas most studies investigating discretionary disclosure choices in the segment-reporting setting focus on business segmentation, we focus on geographic segments. Geographic segments inform investors about the locations where the firm generates its revenues and has its operating assets, information that is potentially useful to competitors and thus bears proprietary costs. As soon as a company operates outside of its domestic or home market, geographic information on a firm's revenues and profits becomes highly relevant for investors (Herrmann, 1996; Behn et al., 2002; Hope et al., 2009). However, less is known about the motives behind geographic segment disclosure choices. Moldovan (2014) expresses concern over the unavailability of geographic information for key items under IFRS 8. There is some evidence that agency costs may drive the nondisclosure of segment information. In a sample of US firms, Hope and Thomas (2008) find that, when firms are no longer required to disclose earnings by geographic area under SFAS 131, nondisclosing firms' value decreases, foreign sales increase, and foreign profit margins decrease relative to firms that continue to disclose geographic earnings. Whether proprietary costs explain geographic segment disclosure decisions is, however, unknown.

We are the first to use geographic segment information and location characteristics as a setting to investigate disclosure choices. Specifically, we investigate disclosure behavior around the time of the adoption of the new standard IFRS 8. In section 4, we explain in detail how this regulatory change allows us to identify hidden segments. A segment that is hidden is, in fact, aggregated into another or larger geographic segment. For instance, instead of showing financial information for "Italy," "Spain," and "Portugal," the firm might aggregate these countries into a segment labeled "Southern Europe." The more disaggregated segment disclosure is, or the higher the number of geographic

segments that are disclosed, the more detailed the information becomes and the more useful this information is for investors (Hope et al., 2009).

3. RESEARCH HYPOTHESES

Building on the theoretical and (admittedly limited) empirical literature, we argue that managers face proprietary costs when determining the amount of information to disclose. We expect that managers make a cost–benefit tradeoff between informing investors and informing competitors when deciding between aggregating (or concealing) geographic segments and disaggregating (or disclosing) these segments. We focus on a segment’s attractiveness for business. From the proprietary cost perspective, when a geographic segment is an attractive location for business purposes relative to other locations, competitors may follow the disclosing company’s business and marketing strategies and enter that specific market of the segment. Hence, the managers of the disclosing company may have a proprietary cost motive to withhold attractive geographic segments to preserve their firm’s competitive advantage.

Accurately estimating the benefits and risks involved when making foreign investments is a crucial aspect of strategic decision making (e.g., Howell, 1998; Miller, 1992). Some locations are therefore assessed as being more attractive to invest in than others. We capture a geographic segment’s attractiveness by focusing on three location characteristics: 1) the country’s overall image or general reputation as a location for doing business; 2) its future economic prospects; and 3) its financial stability and exposure to credit risk. When a geographic segment has favorable prospects in terms of growth and prosperity, competitors may enter these segments as well, providing managers with an incentive to conceal segments with high economic prospects. Similarly, when a geographic segment enjoys strong financial stability and low currency and credit risk, it serves as a more attractive location for a firm and its competitors to do business in. Therefore, managers may be inclined to hide these geographic segments and instead aggregate them into others. In sum, we predict that, when proprietary costs of disclosure are significant, managers will be more reluctant to disclose operating activities in attractive locations. We likewise hypothesize that firms that decide or are

forced to disclose more attractive segments will provide less information about them than they provide about segments they do not want to conceal. We therefore propose the following:

H1: Firms are more likely to hide information about more attractive geographic segments.

The extent of a nation's entry barriers has been identified as a location-related characteristic that may determine disclosure levels (e.g., Leuz, 2003; Li, 2010). The proprietary cost perspective dictates that firms have an incentive to hide information on geographic locations that are easy to enter for competitors, which may erode the disclosing firm's competitive advantage. Conversely, proprietary costs of disclosing geographic information are likely lower when it is more difficult for competitors to act upon this information (i.e., when it is harder for them to start or do business in a particular region). Therefore, managers may have a proprietary cost motive to aggregate geographic segments with low entry barriers. When proprietary costs of disclosure prevail, we expect managers to be more reluctant to reveal the company's operating activities in locations that are easy for potential new rivals to enter. Likewise, we also predict that firms forced to disclose these segments will provide comparatively less information about them. We therefore propose the following:

H2: Firms are more likely to hide information about geographic segments with lower entry barriers.

4. METHODOLOGY

To study segment disclosure decisions, one would ideally want to know the private information available to managers and observe how this is aggregated into disclosed segments. However, due to the unobservability of private information, early studies rely on cross-sectional variation in segment disclosure to study reporting incentives (e.g., Harris, 1998; Botosan and Harris, 2000). By contrast, we examine disclosure changes due to a switch in segment reporting standards (from IAS 14 to IFRS 8) in Europe, which resulted in more disaggregated geographic segment disclosure (Crawford et

al., 2012; Nichols et al., 2012; Leung and Verriest, 2015). Our approach is similar to that of Berger and Hann (2007), who also exploit a change in US segment reporting standards to examine the drivers of business segment disclosures. Importantly, IFRS 8 requires firms to restate their segment reporting for the year prior to initial adoption. We can thus determine for the pre-adoption year which segments were hidden under IAS 14 and are now disclosed under IFRS 8, holding constant all other economic changes. Each firm therefore acts as its own control, which allows us to cleanly identify segment disclosure decisions. The sections below provide more detail on the background of IFRS 8 and how we identify hidden segments.

(i) IFRS 8 versus IAS 14

The International Accounting Standards Board (IASB) introduced IFRS 8 in November 2006 as a replacement for IAS 14. It became effective for fiscal periods starting on or after January 1, 2009, although early adoption was permitted. The introduction of IFRS 8 is part of a convergence project of the US Financial Accounting Standards Board (FASB), which has resulted in a standard that closely resembles its US counterpart, SFAS 131, which became effective in 1998. IFRS 8 was introduced to improve the quality of segment information amidst user concerns that IAS 14 lacked sufficient guidance regarding the definition of reportable segments. Under IAS 14, segments were defined based on similar risks and rewards, which led to segmentation by business line or geographic area. However, the loose definition of risks and rewards under IAS 14 led to aggregations of different business and geographic areas into very broadly defined segments, which analysts deemed insufficient for proper assessments of the risks and rewards of different types of operations (McConnell and Pacter, 1995). To address this issue, IFRS 8 uses the so-called “management approach” to segment reporting, which requires firms to define and disclose segments in a way consistent with their definition for internal management purposes (IASB, 2006). Under the new regime, firms have to identify *operating segments*, the firm components for which separate financial information can be retrieved and that are regularly assessed by a chief operating decision maker, for resource allocation and performance evaluation purposes. This rule reduces a firm’s discretion in defining what

constitutes a reportable segment and is intended to increase the usefulness of segment information by allowing users to view a firm's operations through the eyes of management (Nichols et al., 2012). Although prior research finds that SFAS 131, the US equivalent of IFRS 8, led to improvements, some users had voiced the concern that the first draft of the proposed standard might lead to a loss in geographic segment information if firms define operating segments along their lines of business (Véron, 2007; Nichols et al., 2012). Under IAS 14, firms that chose business segments as their "primary" segments were still required to disclose limited geographic segment information (i.e., sales, assets, and capital expenditures) under the "secondary" reporting format. These secondary segment disclosures were no longer required under IFRS 8. Due to users' concern over the loss of geographic segment information, the final draft of IFRS 8 also includes entity-wide disclosure requirements: IFRS 8.33 requires the disclosure of revenue and non-current assets for geographic areas and even disclosures by individual foreign countries if material, which was not the case under IAS 14.³ Crawford et al. (2012) show that IFRS 8 results in a greater disaggregation of geographic segments. Bugeja et al. (2015) and Leung and Verriest (2015) come to the same conclusion after studying samples of Australian and European firms, respectively. All three studies show that IFRS 8 causes more geographic segments to be disclosed.

Based on the above, we assume that IFRS 8 results in less opportunity for managers to hide geographic segment information. However, a remaining concern is that IFRS 8 does not explicitly define materiality. By contrast, IAS 14 defines a 10 percent materiality threshold in order to determine whether a geographic segments needs to be disclosed. As such, IFRS 8 potentially offers the opportunity to managers to hide geographic segments that were disclosed under IAS 14. Cereola et al. (2017) specifically focus on materiality and investigate the threshold levels used by management in deciding to disclose or conceal individual country information. In their analyses, the authors determine the upper bound on each company's materiality threshold for a sample of large European, Australian and New Zealand firms. They find that, after adoption of IFRS 8, management employs a materiality threshold of less than 10 percent for determining a material geographic segment. However, they also document that only 57 percent of firms provide country information other than their home

country. Cereola et al. (2017) conclude that the IASB should consider to either require managers to disclose the materiality threshold they use, or to impose a specific materiality level. We acknowledge that *ex ante*, the lack of a materiality threshold, along with the issue that IFRS 8 does not require the disclosure of geographic information if such information is not prepared for internal use, may weaken our argument that IFRS 8 requires firms to provide more geographic segment information. However, Crawford et al. (2012), Bugeja et al. (2015), Leung and Verriest (2015), and Cereola et al. (2017) all find that the adoption of IFRS 8 did result in the disclosure of more geographic segments, greater disaggregation and fineness and lower materiality thresholds. We therefore believe that the lack of a materiality threshold under IFRS 8 does not invalidate our assumption that the standard results in more geographic segment disclosure.

(ii) Identification of Hidden Segments

IFRS 8 requires firms to restate their segment disclosures for the year prior to the adoption of the new standard to allow for better comparisons of performance over time. This requirement means that, for the pre-adoption year, we can compare the restated disclosures to the original disclosures and determine which segments are newly disclosed and which are old. We hand-collect the original segment disclosures from the annual report in the pre-adoption year as well as the restated segment information from the annual report in the year of adoption. For instance, when a firm adopts IFRS 8 in 2009, we gather historical segment data under IAS 14 for 2008 from the 2008 annual report and the restated segment data under IFRS 8 for 2008 from the 2009 annual report. This clean setting allows us to identify changes in reporting behavior rather than changes in a firm's operating activities. In other words, these restatements allow us to use each firm as its own control, holding economic factors that could also drive segment reporting constant.

If we find that a segment in the restated segment footnote does not exist in the original pre-adoption year segment footnote, we consider these new or previously hidden segments. If a segment appears in both the original and restated segment footnote, we consider these as old. Segment names can differ slightly from year to year, which is why we do not match on segment name alone. We first

match the segments from restated reports with segments in the original report by name, and then check whether the reported amounts for sales and assets are the same for both reports to determine whether they are old or new. For the remaining unmatched segments, we manually review the original report to see whether these segments were disclosed in the old report. For example, if a segment is defined as “Europe” in the original report and as “European region” in the restated report, but either the segment’s sales or assets are the same, we do not consider these segments as new. Only when there is no clear match on segment name and segment assets or sales do we code a segment as new. We assign the dummy variable $D(New\ Segment)$, the dependent variable in our main test, a value of 1 for newly disclosed segments and 0 otherwise.⁴

5. DATA

(i) Sample

We hand-collect segment reports for the years around the switch to IFRS 8 for the largest non-financial publicly listed firms in the following 19 European countries: Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal, Spain, Sweden, Switzerland, and the UK.^{5 6} As mentioned, we retrieve the pre-adoption- and adoption-year annual reports and collect the original and restated segment data for the pre-adoption year. We collect each geographic segment’s name and record whether the segment footnote provides earnings data or other line items. We are able to find geographic segment data in the annual reports for 1,439 stock-listed firms.⁷

(ii) Segment Location Characteristics

A key contribution of our study is that we test the hypothesis of proprietary costs of disclosure without having to rely on any measure of competition or market concentration. Rather, we focus on attractiveness and entry barriers as characteristics of geographic segments. In this section, we describe how we measure location attractiveness and entry barriers.

To test H1, we measure geographic segment attractiveness using three variables. First, we employ the Forbes “Best Countries for Business” ranking as a principal indicator of business attractiveness. This ranking index is available for a large number of countries for the period over which we measure business attractiveness. Forbes commands worldwide attention and is widely read by managers. We thus deem its ranking to accurately reflect managers’ impressions of the business climate in a certain location. The Forbes ranking is available for 139 countries and is based on 11 factors: property rights, innovation, taxes, technology, corruption, freedom (personal, trade, and monetary), red tape, investor protection, and stock market performance. Forbes weighs each category equally and includes only those countries with data across at least eight categories. We employ this rating in our study and label it *business attractiveness*. To implement it in our regression model, we reverse-code the original ranking. A higher *business attractiveness* score indicates that the geographic segment is considered a more attractive location for conducting business by foreign firms.

Second, we measure a location’s attractiveness by considering its future economic prospects. Specifically, we use the size of the country’s middle class as a measure of future economic performance. Easterly (2001) finds a strong relation between a country’s economic growth and the size and share of the middle class’ income. The middle class has been found to hold the key to a country’s prosperity and can strengthen the prospects for economic growth that result in poverty reduction (Ravallion, 2009). A prime example of this phenomenon is China. Its middle class has grown from five million in 2000 to 225 million in 2015 (The Economist, 2016). Out of the BRIC countries, China has displayed the highest and most consistent growth pattern in the last decade. In addition, Ravallion (2009) finds that a larger middle class is associated with a higher rate of poverty reduction in developing countries. Middle class citizens are considered to have a heavy influence on national policy implementation, as they typically represent the viewpoints upon which politicians and policymakers tend to converge to obtain widespread support. Other studies have shown that high inequality, especially in combination with a small middle class, can be detrimental to economic growth. Kharas (2010) and Kharas and Gertz (2010) discuss the potential negative implications of a small middle class, which can cause countries to be stuck in a trap wherein growth stagnates and

inhibits the ability of the countries to transform from middle-income into high-income economies. In sum, we consider the size of a country's middle class as a valid and important indicator of future economic prospects. We construct the *size middle class* variable by relying on data provided by the World Bank to measure the magnitude of the middle class in each country. We consider the percentage share of total income per quintile of the population and sum the percentages of the three middle quintiles. A higher *size middle class* value indicates a location with a larger middle class and that is therefore more attractive.

Third, we examine a location's attractiveness by considering its financial outlook—specifically, its proneness to currency and solvency risk (*credit rating*). Dealing with currency fluctuations is a major source of risk for multinational firms operating in or penetrating foreign countries (Jorion, 1991; Choi and Prasad, 1995). We use the long-term credit rating provided by Fitch as a measure for the risk that firms face related to a country's currency fluctuations and financial instability. We translate the credit rating ranging from AAA to D into a numerical variable ranging from one to 24. For the regression analyses, we reverse-code this measure, such that higher values indicate a better credit quality, fewer currency fluctuations, and more financial stability. Therefore, we consider locations with higher *credit rating* values as more attractive segments.

To test H2, we measure entry barriers in four ways. First, we focus on a measure that captures how burdensome it is to conduct trade with a certain country: The more difficult it is to trade with a country, the higher its entry barriers are. Specifically, we measure the number of documents required to import a shipment of goods, relying on data provided by the World Bank (in their Doing Business Report). We label this variable *import doc*, where higher values of *import doc* indicate higher entry barriers.

Second, we consider the number of days it takes on average to establish a new firm in a certain location, which we call *startup days*. This measure is widely used as an indicator for entry barriers (e.g., Klapper et al., 2006). Typically, countries in which it takes a long time to establish a new business are considered to have high entry barriers. For instance, Klapper et al. (2010) find a negative relationship between the number of days needed to start a business and the number of new entrants

and business density in a country. Data are from Djankov et al. (2002). Higher *startup days* values indicate higher entry barriers.

Third, we measure the freedom with which businesses are able to trade with a location. Locations with more trade freedom and countries that are more open to trade attract more foreign investment and typically have lower entry barriers (Barro, 1997; Djankov et al., 2002). To capture trade openness or trade freedom, we rely on the Economic Freedom of the World database, which provides an aggregated index called the “Freedom to trade internationally.” The index combines measures of import tariffs, regulatory trade barriers on imports, and controls over the movement of capital and people for almost all countries in the world. Data are from the Fraser Institute, a public policy think tank. The score ranges from one to 10. We label the variable *trade barriers*. In the regression analyses, we reverse-code the original variable such that higher values of *trade barriers* indicate higher entry barriers.

Fourth, as a final indicator of entry barriers, we consider a measure for the extent to which a country engages in protectionism. Higher levels of protectionism likely make it harder for new entrants to gain a foothold (Blonigen and Feenstra, 1997). We use the protectionism indicator included in the World Competitiveness Rankings, constructed and provided by the IMD Business School. In the survey, business executives from countries all over the world are asked to provide their perception of the degree to which protectionism impairs the conduct of business in their country. We label this indicator *protect* and measure the variable for 2008. The score ranges from one to 10. Again, for the regression analyses, we reverse-code the original values of the variable, such that higher values of *protect* indicate more protectionism and therefore higher trade barriers.

We use several measures from different sources, since we want to capture the various channels through which firms can encounter potential competitors, from competitors establishing new local entities to foreign firms competing by exporting goods to these markets. Furthermore, some of these measures are based explicitly on existing regulations, while others capture executives’ own experiences with administrative and regulatory procedures. Our selection allows for a complete

assessment of barriers to entry in a particular region. We provide details on these measures in the appendix.

Since these data are provided at the country level, and not all of the reported geographic segments are individual countries, we employ the following method. If a segment consists of a single country, we simply assign the value of a measure to the segment. If firms aggregate two or more countries into a single segment and report the names of the group of countries, we assign the average values of these countries to the segments. If firms label a segment as a subcontinent or continent without reporting the specific countries, we assign the average across all countries in the subcontinent or continent. We remove segments with names such as “Other,” “Rest of the World,” and “Headquarters” from our sample. After matching these with the data necessary for the control variables in the regression analyses, our sample consists of 1,277 firms with 4,580 geographic segments, of which 1,082 are new segments. Table 1 provides further details on the sample and the distribution of segment observations across countries. As expected, a large proportion of our sample consists of firms from the UK, followed by firms from Germany and France.⁸

- TABLE 1 ABOUT HERE -

(iii) *Model*

We run the following logistic regression model to test the hypotheses:

$$D(\text{New Segment}_{i,j}) = f(\text{Segment Location Characteristic}_i, \text{Control Variables}_{i,j}), \quad (1)$$

where i represents the segment, j represents the firm, and *Segment Location Characteristic* is as defined in the previous section. H1 expects that segments in more attractive locations are hidden from competitors (i.e., we expect to see a positive relation between these variables and the likelihood of a segment being newly revealed), while H2 expects that entry barriers reduce the likelihood of segments being aggregated (i.e., the coefficient for these variables is expected to be negative in these regressions).

We control for a number of factors that can affect (segment) disclosure, such as firm size, profitability, growth opportunities, closely held shares, analyst following, industry concentration, segment size, and the corporate tax rate and labor market regulations in the segment's region. We incorporate the segment's size, measured as the segment's sales relative to firm sales, to alleviate concerns that disclosure is purely driven by segment materiality. We include the segment location's corporate tax rate to control for tax-related incentives to hide a segment, as tax avoidance and the nondisclosure of segmental information are related (e.g., Hope et al., 2013). We provide details on these variables in the appendix. We cluster standard errors at the firm level. The results are unchanged if we cluster at the country or industry level.

(iv) *Descriptive Statistics*

We provide descriptive statistics for our sample in Table 2. We find that 1,082 segments, or 24 percent of all geographic segments in the sample, are newly disclosed (D(New Segment)), which is consistent with prior studies that show greater disaggregation under IFRS 8 (Crawford et al., 2012; Leung and Verriest, 2015). Next, we consider D(Report Earnings), a dummy variable equal to 1 if earnings are disclosed for the segment and 0 otherwise. Since the disclosure of geographic segment earnings is not mandatory, this line item is reported for only 26 percent of all segments. We find that there is substantial variation in the characteristics of segment locations (note that the variables *business attractiveness*, *trade barriers*, and *protect* have not yet been reverse-coded in Table 2). On average, segments are located in countries that rank 40th in the *Forbes* ranking, with considerable variation across segments (ranging from first to 90th place). *Size middle class* ranges from 37.65 percent to 55.30 percent, and *credit rating* varies between a highest rating of AAA (1) to B+ (14). Entry barriers also exhibit considerable variation across locations. On average, it takes around 27 days to start a new business (*startup days*) and ranges between one and 114 days across locations, while importing goods requires filling out between two to 10 forms. On average, the segments in our sample are located in areas that score relatively well on international trade freedom, with an average segment score of 7.55 out of 10 on the freedom of trade measure.

- TABLE 2 ABOUT HERE -

6. RESULTS

(i) New Segments and Location Characteristics

In Table 3, we compare the means of firm and segment characteristics between old segments and newly revealed segments. We find that firms with new segments on average have smaller sales and assets but higher market-to-book ratios, which is consistent with growth firms having a greater incentive to hide potentially proprietary information. Firms with new segments have a higher proportion of foreign sales relative to total sales. This finding is consistent with Tsakumis et al. (2006), who conclude that firms reveal less geographic segment information for proprietary reasons when they depend more on foreign activities. We also find that the corporate statutory tax rate of new segment locations is higher, which suggests that firms try to conceal information about activities in highly taxed areas. New segments are also more often defined at the country-level than old segments are (60 percent versus 38 percent), consistent with the greater level of disaggregation under IFRS 8. The changes in geographic segment names do not appear to be strongly driven by any particular country. For instance, we find that “North America” and “Europe” are less likely to be mentioned as a geographic region after IFRS 8. In line with this decrease, “U.S.,” “France,” “Germany,” “Switzerland,” “Italy,” and “Belgium” appear more frequently among new segments. These differences are minor, however: These countries are approximately one percent more likely to be disclosed as a new segment.

- TABLE 3 ABOUT HERE -

Turning to segment location characteristics, we find that most variables are significantly different in the predicted direction. Consistent with H1, new segments are located in regions that score higher in the Forbes “Best for Business” ranking, have a larger middle class segment, and face less credit risk (neither the Forbes ranking nor the credit rating are reverse-coded yet in this table). We also find support for H2: It is generally easier to enter locations of newly revealed segments. For instance, on average, it takes 3.6 days less to start a business in the locations of hidden segments and requires less

paperwork to import goods. Trade freedom is higher in newly revealed segments (the variable *trade barriers* is not yet reverse-coded). *Protect* does not differ significantly across new and old segments.

We present the main empirical results of our study in Table 4 (H1) and Table 5 (H2). As explained earlier, we reverse-code the Forbes ranking and Fitch credit rating in the regression analyses, such that a positive coefficient indicates that more attractive segments are more likely to be hidden prior to IFRS 8 adoption. Similarly, *trade barriers* and *protect* are reverse-coded, such that a negative coefficient means that segments with lower entry barriers are more likely to be hidden.

- TABLE 4 ABOUT HERE -

As Table 4 shows, we find that all three measures of geographic segment attractiveness are significantly and positively associated with the likelihood of segments being hidden, consistent with H1.⁹ Relative to the mean likelihood of a segment being hidden (24 percent), the effects are non-trivial. In terms of economic magnitude, a one-standard-deviation increase in *business attractiveness* is associated with a 3.7 percent decrease in the likelihood of segment disclosure, while a similar increase in *size middle class* results in a 3.9 percent higher likelihood of a segment being hidden.¹⁰ *Credit rating* has the strongest effect: A one-standard-deviation decrease in a country's credit risk reduces the likelihood of a segment being disclosed by 4.7 percent.¹¹ These results are consistent with the view that more attractive geographic segments are hidden to prevent competitive harm.

As Table 5 shows, we find that all four entry barrier measures are significant in the predicted direction: Segments are more likely to be hidden in countries where the administrative burden of importing goods or starting a new firm is lower, trade freedom is higher, and perceived protectionism is lower. We find that *startup days* has the greatest effect on segment disclosure: A one-standard-deviation decrease in the number of days it takes to start a new firm increases the likelihood of a segment being hidden by 3.3 percent.¹² These findings suggest that, although competition from potential import matters, the threat that another firm can easily set up a business has the strongest effect on disclosure.

- TABLE 5 ABOUT HERE -

Concerning the control variables, we find that firms with higher R&D expenditures are more likely to disclose new segments. This result is consistent with Ellis et al. (2012), who find that proprietary costs of disclosure are greater for firms that engage in R&D. We also find that firms are less likely to hide segments when they are in more concentrated industries, consistent with Harris (1998) and Botosan and Stanford (2005). However, as explained earlier, given the ambiguous interpretation of industry concentration as a measure of proprietary costs, we are cautious in interpreting this result. We still find that the corporate tax rate of a segment location is positively related to nondisclosure: Firms appear to have concealed segments in regions with a higher corporate statutory tax rate. At first glance, this appears to conflict with the findings of Hope et al. (2013), who conclude that firms appear to hide information about operations in tax havens. However, statutory corporate tax rates do not necessarily imply a low effective tax burden. We interpret this result to indicate that firms may want to avoid disclosing detailed information about their activities in high tax regions to avoid scrutiny if their effective tax rate is low. As expected, larger segments are more likely to be already disclosed, since the materiality of the segment is an important determinant of segment disaggregation.

Early adoption of IFRS 8 was permitted. Voluntary adopters of IFRS 8 constitute approximately 10% of our sample. Untabulated results show that our results do not change in any material manner when voluntary adopters are excluded from our analyses, as we find significant coefficients on each of the 7 variables of interest from Tables 4 and 5.

Overall, our results suggest that proprietary costs provide an important motivation for firms to withhold the disclosure of relevant information and that the economic characteristics of a segment's location matter for disclosure.

(ii) Cross-sectional Variation in Proprietary Costs

As Tables 4 and 5 show, the presence of R&D affects segment disclosure decisions, consistent with R&D firms facing higher proprietary costs of disclosing disaggregated information (Ellis et al., 2012). We further explore these findings in Table 6, where we repeat the analyses of Tables 4 and 5,

conditional on the presence of R&D expenditures. As before, we run separate regressions for each segment location characteristic, including control variables in each regression, but split the sample into firms without R&D (Panel A) and those with R&D (Panel B). We expect our results to be more evident in the latter panel.

Table 6 provides some evidence consistent with our intuition that location characteristics matter more when firms engage in R&D. We observe that the coefficients on all segment characteristics are larger and highly significant in the predicted direction for R&D firms (Panel B), while the results of the coefficients for non-R&D firms in Panel A are smaller and less significant or insignificant. Specifically, we find that the entry barrier variables for R&D-intensive firms are more significant than are those for firms with no R&D expenditure, which is consistent with these location characteristics affecting disclosure decisions more strongly when proprietary costs are a more salient concern.

- TABLE 6 ABOUT HERE -

(iii) How Much Information is Disclosed About New vs. Old Segments?

Our main findings so far indicate that segments that are disclosed only after the introduction of IFRS 8 tend to be in regions that are more attractive and have lower entry barriers. Since IFRS 8 prevents managers from hiding the existence of these segments, we next examine whether the *amount* of information disclosed about these segments varies along with location characteristics as well. Even though a segment has to be disclosed under this new rule, companies still have discretion in the amount of information that is disclosed per segment. If the proprietary cost hypothesis holds, we would expect economic attractiveness and location barriers to have a stronger effect on the amount of disclosed information for new segments. Indeed, in untabulated results, we find that earnings are reported significantly less frequently for new segments (18 percent versus 29 percent), which indicates that firms attempt to withhold information about these segments. In our tests, we focus on the disclosure of geographic segment earnings, as well as the number of line items disclosed per segment (e.g., assets, sales, non-capital expenditures) in these tests.

In Table 7, we first examine the effects of location characteristics on the amount of information disclosed for new segments separately. Panel A presents our results for the disclosure of geographic segment earnings. We find that the attractiveness of a segment (columns [1] to [3]) decreases the likelihood of geographic earnings disclosure, consistent with H1. Next, our results show that *import doc* and *trade barriers* are significantly positively related to the likelihood of earnings disclosure, in line with H2. Lower entry barriers are associated with a lower likelihood of disclosing earnings information. Similarly, we find in Panel B that, with the exception of *protect*, all segment characteristics are associated with the number of disclosed segment items in the predicted direction.

- TABLE 7 ABOUT HERE -

By contrast, Table 8 shows a markedly different pattern for “old” segments. We expect proprietary costs to play a less important role for these segments, since these were already revealed prior to IFRS 8. Hence, we expect that the likelihood of reporting earnings and the number of reported items will *not* be negatively related to the attractiveness of a segment’s location or positively related to entry barriers for these segments. When we examine the effects of segment characteristics on the disclosure of geographic earnings in Panel A, we find that only *size middle class* and *credit rating* have a marginally significant effect. Moreover, these coefficients are much smaller (approximately one third to half the size) than those in Table 7 Panel A. All other segment characteristics are insignificant in Panel A. None of the coefficients of interest in Panel B is significant, suggesting that economic characteristics do not affect the number of disclosed segment line items. The differences in results between new and old segments are also unlikely to be driven by a lack of statistical power in Table 8, since the sample for old segments is three times larger than that for new segments. Taken together, our results suggest that proprietary costs are indeed an important determinant of geographic segment disclosure decisions.

- TABLE 8 ABOUT HERE -

7. CONCLUSION

Gaining insight into a firm's international operations is important for investors in multinational companies. These disclosures inform investors about the size and performance of the company in different locations, but also signal the potential geographic or geopolitical risks the firm may be facing. We investigate these geographic disclosures for a large set of European firms. Foreign operations constitute a substantial part of the business for many big European firms, adding relevance to our findings.

Theoretical studies suggest that proprietary costs are an important determinant of nondisclosure. Although well-founded in theory, the empirical evidence of the influence of proprietary costs on disclosure is mixed. Our study shows evidence of the effects of these disclosure costs and is, to our knowledge, the first to provide this evidence for geographic segment disclosures. Given the growing importance of international operations for many firms, our results are relevant for shareholders and other stakeholders, such as suppliers and creditors.

One of the difficulties researchers have encountered is in measuring disclosure costs. We advance this literature by assessing proprietary cost motives without relying on typical competition measures such as industry concentration, which have been criticized (e.g., Ali et al., 2009). Instead, we examine the economic conditions of a segment's location, such as its attractiveness and conduciveness for doing business and its ease of entry for competitors. A crucial feature of our study is that we consider a shock to the reporting requirements of geographic segment information for European firms: The introduction of IFRS 8 requires firms to disclose more geographic segments, enabling us to infer disclosure decisions more accurately.

Our results show that firms are more likely to hide or aggregate information for segments in locations with that are more attractive for conducting business. We also find that when entry barriers are lower and it is easier for other competitors to start a business in a particular region, the segment is less likely to be disclosed. These effects are more pronounced for firms that likely face higher proprietary costs of disclosure, such as R&D-intensive firms. Finally, we document that firms provide

significantly less information about newly disclosed segments. Overall, our findings are consistent with proprietary concerns being an important driver of geographic segment disclosure decisions.

In this study, we focus on the determinants of firms' geographic information. Our study remains silent on the consequences of this information, or the lack thereof, for valuation purposes. For a set of US firms, Hope et al. (2009) find that increased geographic disclosure is positively related to the valuation of foreign earnings. One potentially fruitful avenue for future research would be to investigate how geographic information affects the pricing of foreign earnings for European firms. Future studies could also focus on how the lack of geographic information hinders outside investors from accurately pricing firms. Finally, our analyses leave out financial firms, mainly for reasons of comparability with non-financial firms. However, financial firms are highly economically relevant, and future research could analyze changes in their geographic disclosures. In particular, further research could examine the determinants of financial firms' segment disclosures, perhaps by using alternative measures of proprietary costs tailored to this industry, such as country-specific bank regulation.

FOOTNOTES

APPENDIX: VARIABLE DEFINITIONS

Dependent variables

D(New Segment): Dummy variable equal to one if a geographic segment is only disclosed in the restated IFRS 8 segment report, and zero if a segment is disclosed in both the restated IFRS 8 and original IAS 14 segment report (Source: hand-collected from IFRS 8 pre-adoption year annual report).

D(Report Earnings): Dummy variable equal to one if an earnings measure is reported for a geographic segment, zero otherwise (Source: hand-collected from IFRS 8 pre-adoption year annual report).

Number of Segment Items: Number of line items reported per segment. (Source: hand-collected from IFRS 8 pre-adoption year annual report).

Segment Location Characteristics

1) *Attractiveness*

Business attractiveness: 2009 Forbes Best Countries for Business Ranking, which rates countries based on business conditions such as economic growth, unemployment, personal freedom, regulation, corruption, and taxation in 2008. Index can range from 1 (best for business = Denmark) to 127 (worst for business = Zimbabwe). (Source: Forbes Best Countries for Business Ranking: http://www.forbes.com/lists/2009/6/bizcountries09-best-countries-for-business_Best-Countries-for-Business_Rank.html) (Note: for the regressions, the Forbes index is reverse-coded such that higher values indicate segments in countries that are better for business).

Size middle class: Sum of the percentage share of total income for the three middle quintiles of a population of a country in 2008 (Source: World Bank, Development Research Group).

Credit rating: Fitch long-term credit rating for foreign currency rating in 2008. Ratings range from AAA (1) to D (24) (Source: https://www.fitchratings.com/web_content/ratings/sovereign_ratings_history.xls.) (Note: for the regressions, a higher value for *Credit rating* means higher credit risk or lower credit quality).

2) *Barriers of Entry*

Import docs: Number of required documents to import a shipment of goods per 2008 (Source: World Bank Doing Business database: <http://data.worldbank.org/indicator/IC.IMP.DOCS>).

Startup days: Median duration indicated by incorporation lawyers of completing all start-up procedures with minimum follow-up with government agencies and no extra payment per 2008 (Source: World Bank Doing Business database: <http://www.doingbusiness.org/methodology/starting-a-business>).

Trade barriers: Item 4 from the Economic Freedom of the World database for 2008. Score between one (restrictive) and 10 (least restrictive) based on four different dimensions: A) information about tariffs; B) (perceived) regulatory trade barriers; C) black market exchange rates; and D) controls of the movement of capital and people. (Sources: Economic Freedom of the World database; note: for the regressions, this variable is reverse-coded such that a higher value indicates higher trade barriers).

Protect: Score between one and 10, capturing executives' perception of the degree to which protectionism impairs the conduct of business per 2008. (Source: 2013 IMD World Competitiveness Yearbook: <http://www.imd.org/wcc/world-competitiveness-center-rankings/world-competitiveness-yearbook-ranking/>; note: For the regressions, this variable is reverse-coded such that a higher value indicates more protectionism, therefore higher trade barriers).

Other Variables

Log(Assets (USD)): Log of Assets (USD) (Source: Datastream).

Log(Sales (USD)): Log of Sales (USD) (Source: Datastream).

Return on sales: Firm-level net income divided by sales. (Source: Datastream).

Herfindahl (SIC3): $\sum (\text{firm sales}/\text{total industry sales})^2$, measured using all public and private firms in the Amadeus database (Source: Amadeus).

D(Loss): Dummy variable equal to one if firm has negative earnings, zero otherwise.

MTB: Market value of equity divided by book value of equity (Source: Datastream).

Analyst following: Number of analysts following a firm (Source: I/B/E/S).

Closely held shares: Percentage of closely held shares (Source: Datastream).

Foreign sales %: Foreign sales divided by total sales (Source: Datastream).

Segment size %: Segment sales divided by total sales (Source: hand-collected from annual report).

Corporate tax rate: Country-level Corporate Tax Rates from the KPMG corporate tax rates table for individual segments. If the tax rate is progressive, the highest tax rate is used in this measure (Source: <http://www.kpmg.com/global/en/services/tax/tax-tools-and-resources/pages/corporate-tax-rates-table.aspx>).

Labor regulation index: Component of the Economic Freedom of the World Index developed by the Fraser Institute, which measures the strength of labor market regulations. This measure captures hiring regulations and minimum wage, hiring and firing regulations, centralized collective bargaining, hours regulation, mandated cost of worker dismissal, and conscription. Higher values of this index represent less labor market regulation (Source: Fraser Institute: <http://www.freetheworld.com/reports.html>).

D(Country): Dummy variable equal to one if a geographic segment is defined at the country-level, and zero otherwise (Source: hand-collected from IFRS 8 pre-adoption year annual report).

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Table 1

Sample

Panel A: Sample selection

Step	Number of firms	Number of segments
All publicly listed European firms (selected in Summer of 2009 in Datastream/Worldscope)	5,725	
<i>Less: firms with SIC between 6000 and 6799</i>	-1,194	
Publicly listed non-financial European firms	4,531	
<i>Less: firms that do not report under IFRS</i>	-478	
Publicly listed nonfinancial European firms reporting under IFRS	4,053 [#]	
<i>Less: firms with less than 50% foreign sales on total sales</i>	-2,783	
All publicly listed nonfinancial European firms with 50% or more foreign to total sales	1,270	
<i>Plus: the 1,000 largest firms (in terms of sales) of the 2,783 firms that dropped out because of the previous selection criterion</i>	+1,000	
Firms for which we gathered segment data	2,270	
<i>Less: firms without geographic segment footnote/restated segment data</i>	-831	
Firms with segment data	1,439	5,336
<i>Less: firms without data for regression analyses</i>		
<i>Missing segment location variables</i>	-114	-578
<i>Missing control variables</i>	-48	-178
Sample used in analyses	1,277	4,580

[#] From these 4,053 firms, we first select all firms with over 50% foreign sales of total sales according to Worldscope, following Leung and Verriest (2015). This procedure yielded 1,270 firms. We increase our sample by also including the 1,000 largest firms (in terms of sales in 2009) that have less than 50% foreign of total sales (i.e., 1,000 biggest firms of the remaining 2,783). A total of 1,783 drop out because of this selection procedure, leaving us with 2,270 firms for which we hand-collect segment information. For clarity, we point out that many of the 831 firms dropping because of a lack of segment data are not necessarily non-complying firms. Most of these firms mainly operate in one geographic area or country and therefore do not have more than one (material) geographic segment. We drop these from the sample. Utility companies are an example of such firms.

Panel B: Sample distribution across countries

Country	Firms		Segments	
	Number	Percentage	Number	Percentage
Austria	36	2.82%	129	2.82%
Belgium	34	2.66%	131	2.86%
Czech Republic	1	0.08%	2	0.04%
Denmark	34	2.66%	128	2.79%
Finland	64	5.01%	292	6.38%
France	117	9.16%	434	9.48%
Germany	165	12.92%	563	12.29%
Greece	26	2.04%	73	1.59%
Ireland	20	1.57%	45	0.98%
Italy	63	4.93%	262	5.72%
Luxembourg	12	0.94%	45	0.98%
The Netherlands	54	4.23%	257	5.61%
Norway	54	4.23%	222	4.85%
Poland	13	1.02%	40	0.87%
Portugal	13	1.02%	48	1.05%
Spain	38	2.98%	123	2.69%
Sweden	85	6.66%	442	9.65%
Switzerland	86	6.73%	368	8.03%
United Kingdom	362	28.35%	976	21.31%
Total	1,277		4,580	

Table 1 details our sample selection process (Panel A) and presents the distribution of our firms and segments across countries (Panel B).

Table 2
Descriptive statistics

Variable	Mean	Std Dev	P1	P25	P50	P75	P99
D(New Segment)	0.24	0.42	0.00	0.00	0.00	0.00	1.00
D(Report Earnings)	0.26	0.44	0.00	0.00	0.00	1.00	1.00
Log(Assets (USD))	14.00	2.04	8.89	12.61	13.94	15.38	18.71
Log(Sales (USD))	13.86	2.07	8.10	12.58	13.88	15.16	18.36
Return on sales	-0.02	0.40	-1.69	-0.01	0.03	0.07	0.33
MTB	2.08	1.96	0.00	0.94	1.50	2.55	12.14
Herfindahl (SIC3)	0.07	0.16	0.00	0.01	0.02	0.06	1.00
Corporate tax rate	25.50	5.71	16.00	20.68	23.84	29.44	40.00
Labor regulation index	6.62	1.02	4.50	5.92	6.64	6.92	9.10
Segment size (%)	0.23	0.22	0.00	0.07	0.16	0.33	0.96
Analyst following	8.25	8.09	0.00	1.00	6.00	13.00	32.00
Closely held shares (%)	39.03	31.40	0.00	10.80	33.22	62.28	100.00
Foreign sales (%)	68.05	23.79	6.63	53.74	70.75	87.41	100.00
<i>Segment location characteristics</i>							
Business attractiveness	39.93	25.81	1.00	16.00	41.28	62.88	89.87
Size middle class	49.51	4.26	37.65	47.86	51.83	52.38	55.30
Credit rating	5.60	3.99	1.00	1.00	5.89	8.34	13.70
Import doc	5.54	1.75	2.00	4.00	5.61	6.65	10.00
Startup days	26.97	23.17	4.00	14.00	17.61	34.27	114.58
Trade barriers	7.55	0.59	6.04	7.24	7.73	8.02	8.72
Protect	5.67	0.92	3.97	5.17	5.59	6.18	8.18

Table 2 presents descriptive statistics for the entire sample. The variables *Business attractiveness*, *Credit rating*, and *Trade barriers* are not yet reverse-coded. All continuous variables are winsorized at the 1st and 99th percentile and are defined in the appendix.

Table 3
Old versus new segments

Variable	Mean Old Segments N = 3,498	Mean New Segments N = 1,082	Diff.
Log(Assets (USD))	14.04	13.88	-0.16*
Log(Sales (USD))	13.88	13.79	-0.09
Return on sales	-0.03	0.00	0.03*
MTB	2.04	2.22	0.18**
Herfindahl (SIC3)	0.08	0.05	-0.03***
Corporate tax rate	25.12	26.75	1.63***
Labor regulation index	6.61	6.66	0.05
Segment size (%)	0.24	0.18	-0.06***
Analyst following	8.32	8.00	-0.31
Closely held shares (%)	38.06	42.16	4.10***
Foreign sales (%)	66.77	72.19	5.42***
<i>Segment location characteristics</i>			
Business attractiveness	41.49	34.88	-6.62***
Size middle class	49.34	50.04	0.71***
Credit rating	5.88	4.70	-1.18***
Import doc	5.63	5.25	-0.38***
Startup days	27.82	24.20	-3.62***
Trade barriers	7.54	7.60	0.06**
Protect	5.66	5.71	0.05
D(Country)	0.38	0.60	0.22***

Table 3 compares the mean of firm and segment characteristics across old and new segments. The variables *Business attractiveness*, *Credit rating*, and *Trade barriers* are not yet reverse-coded. *, **, and *** denote significance at the 10%, 5%, and 1% levels respectively. All variables are winsorized at the 1st and 99th percentile and are defined in the appendix.

Table 4
Segment disclosure and location attractiveness (H1)

Dependent variable = D(New Segment)	(1)	(2)	(3)
Business attractiveness	0.008*** (3.964)		
Size middle class		0.054*** (4.842)	
Credit rating			0.069*** (4.918)
D(R&D)	0.482*** (3.451)	0.490*** (3.503)	0.487*** (3.480)
Return on sales	0.348** (2.104)	0.344** (2.077)	0.346** (2.091)
MTB	0.032 (0.971)	0.033 (1.012)	0.033 (1.006)
Size	-0.075* (-1.666)	-0.074* (-1.647)	-0.074* (-1.654)
Herfindahl	-1.095** (-2.271)	-1.135** (-2.337)	-1.096** (-2.283)
Corporate tax rate	0.033*** (3.865)	0.048*** (6.485)	0.026*** (3.063)
Labor regulation index	-0.083** (-2.500)	-0.043 (-1.262)	-0.047 (-1.415)
Segment size	-1.682*** (-6.251)	-1.733*** (-6.441)	-1.715*** (-6.361)
Analyst following	-0.002 (-0.141)	-0.002 (-0.137)	-0.002 (-0.131)
Closely held shares	0.004** (2.098)	0.004** (2.117)	0.004** (2.124)
Intercept	-1.073 (-1.579)	-3.841*** (-4.334)	-1.239* (-1.818)
Pseudo R ²	0.052	0.055	0.056
χ^2	97.71	105.1	102.2

Table 4 presents logistic regression analyses with $D(\text{New Segment})$ as the dependent variable. *Business attractiveness* and *credit rating* are reverse-coded (higher values indicate a segment located in a more attractive country or region). A positive coefficient for the attractiveness variables indicates that segments in more attractive locations are more likely to be hidden (i.e., less likely to be disclosed), consistent with H1. Z-statistics (in parentheses) are presented below the coefficients and are based on heteroscedasticity-robust standard errors clustered by firm. *, **, and *** denote significance at the 10%, 5%, and 1% levels respectively. All variables are winsorized at the 1st and 99th percentile and are defined in the appendix.

Table 5

Segment disclosure and location barriers to entry (H2)

Dependent variable = D(New Segment)	(1)	(2)	(3)	(4)
Import doc	-0.102*** (-3.691)			
Startup days		-0.008*** (-3.947)		
Trade Barriers			-0.174** (-2.141)	
Protect				-0.131*** (-2.916)
D(R&D)	0.476*** (3.418)	0.478*** (3.430)	0.465*** (3.348)	0.458*** (3.296)
Return on sales	0.337** (2.046)	0.345** (2.073)	0.341** (2.066)	0.345** (2.092)
MTB	0.031 (0.959)	0.032 (0.973)	0.031 (0.960)	0.030 (0.929)
Size	-0.078* (-1.728)	-0.075* (-1.667)	-0.076* (-1.693)	-0.075* (-1.664)
Herfindahl	-1.086** (-2.270)	-1.113** (-2.293)	-1.098** (-2.275)	-1.119** (-2.290)
Corporate tax rate	0.039*** (4.956)	0.046*** (6.131)	0.047*** (6.148)	0.055*** (7.115)
Labor regulation index	-0.036 (-1.076)	-0.111*** (-3.037)	-0.054 (-1.611)	-0.051 (-1.533)
Segment size	-1.662*** (-6.236)	-1.738*** (-6.421)	-1.671*** (-6.202)	-1.621*** (-6.101)
Analyst following	-0.002 (-0.167)	-0.002 (-0.158)	-0.003 (-0.214)	-0.003 (-0.215)
Closely held shares	0.004** (2.119)	0.004** (2.076)	0.004** (2.064)	0.004** (2.084)
Intercept	-0.389 (-0.547)	-0.430 (-0.619)	-0.809 (-1.164)	-0.819 (-1.188)
Pseudo R ²	0.0514	0.0520	0.0488	0.0496
χ^2	96.96	98.29	92.85	93.97

Table 5 presents logistic regression analyses with $D(\text{New Segment})$ as the dependent variable. *Trade barriers* and *Protect* are reverse-coded (higher values indicate a segment located in a country or region with higher entry barriers). A negative coefficient on entry barrier measures indicates that segments with higher entry barriers are less likely to be hidden (i.e., more likely to be disclosed), consistent with H2. Z-statistics (in parentheses) are presented below the coefficients and are based on heteroscedasticity-robust standard errors clustered by firm. *, **, and *** denote significance at the 10%, 5%, and 1% levels respectively. All variables are winsorized at the 1st and 99th percentile and are defined in the appendix.

Table 6
Cross-sectional variation in effects of proprietary costs on segment disclosure
Panel A: No R&D firms (N = 2,002)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Business attractiveness	0.008** (2.152)						
Size middle class		0.051** (2.358)					
Credit rating			0.063** (2.496)				
Import doc				-0.078* (-1.739)			
Startup days					-0.008** (-2.064)		
Trade Barriers						-0.162 (-1.171)	
Protect							-0.092 (-1.208)
Return on sales	0.395* (1.653)	0.379 (1.580)	0.388 (1.612)	0.389 (1.638)	0.393* (1.653)	0.392* (1.652)	0.397* (1.700)
MTB	-0.003 (-0.064)	-0.000 (-0.003)	-0.002 (-0.040)	-0.002 (-0.039)	-0.000 (-0.010)	-0.001 (-0.023)	-0.001 (-0.021)
Size	-0.107 (-1.282)	-0.106 (-1.259)	-0.106 (-1.269)	-0.108 (-1.294)	-0.104 (-1.249)	-0.107 (-1.278)	-0.106 (-1.263)
Herfindahl	-0.516 (-0.781)	-0.550 (-0.826)	-0.528 (-0.801)	-0.529 (-0.802)	-0.538 (-0.808)	-0.521 (-0.782)	-0.538 (-0.802)
Corporate tax rate	0.017 (1.270)	0.031*** (2.682)	0.011 (0.792)	0.024** (2.010)	0.027** (2.277)	0.029** (2.488)	0.035*** (2.951)
Labor regulation index	0.054 (0.937)	0.100 (1.635)	0.091 (1.560)	0.093 (1.570)	0.038 (0.612)	0.083 (1.414)	0.082 (1.390)
Segment size	-0.763** (-2.211)	-0.805** (-2.330)	-0.785** (-2.280)	-0.760** (-2.203)	-0.789** (-2.292)	-0.754** (-2.181)	-0.724** (-2.108)
Analyst following	-0.000 (-0.017)	-0.001 (-0.024)	-0.000 (-0.014)	-0.002 (-0.074)	-0.001 (-0.060)	-0.002 (-0.099)	-0.002 (-0.082)
Closely held shares	0.003 (0.901)	0.003 (0.910)	0.003 (0.908)	0.003 (0.895)	0.003 (0.903)	0.003 (0.888)	0.003 (0.904)
Intercept	-1.198 (-0.945)	-3.865** (-2.356)	-1.379 (-1.093)	-0.655 (-0.490)	-0.631 (-0.480)	-0.945 (-0.723)	-1.005 (-0.771)
Pseudo R ²	0.0266	0.0279	0.0285	0.0247	0.0258	0.0234	0.0233
χ^2	26.33	26.91	26.80	25.22	26.85	25.18	25.40

Panel B: R&D firms (N = 2,578)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Business attractiveness	0.009*** (3.436)						
Size middle class		0.057*** (4.442)					
Credit rating			0.074*** (4.438)				
Import doc				-0.116*** (-3.342)			
Startup days					-0.009*** (-3.662)		
Trade Barriers						-0.197** (-1.976)	
Protect							-0.146*** (-2.720)
Return on sales	0.348 (1.584)	0.350 (1.596)	0.349 (1.593)	0.334 (1.524)	0.346 (1.559)	0.341 (1.547)	0.345 (1.556)
MTB	0.052 (1.184)	0.053 (1.197)	0.053 (1.216)	0.051 (1.168)	0.051 (1.175)	0.051 (1.158)	0.049 (1.109)
Size	-0.056 (-1.012)	-0.056 (-1.004)	-0.056 (-1.014)	-0.059 (-1.079)	-0.056 (-1.025)	-0.057 (-1.034)	-0.056 (-1.017)
Herfindahl	-1.616** (-2.370)	-1.664** (-2.416)	-1.608** (-2.373)	-1.586** (-2.345)	-1.635** (-2.371)	-1.617** (-2.375)	-1.647** (-2.375)
Corporate tax rate	0.044*** (4.065)	0.061*** (6.305)	0.037*** (3.461)	0.051*** (4.893)	0.059*** (6.134)	0.060*** (5.966)	0.068*** (6.876)
Labor regulation index	-0.181*** (-4.462)	-0.143*** (-3.518)	-0.146*** (-3.687)	-0.128*** (-3.147)	-0.220*** (-4.835)	-0.149*** (-3.700)	-0.144*** (-3.587)
Segment size	-2.597*** (-6.593)	-2.652*** (-6.760)	-2.642*** (-6.690)	-2.553*** (-6.577)	-2.693*** (-6.770)	-2.590*** (-6.555)	-2.512*** (-6.491)
Analyst following	-0.005 (-0.357)	-0.005 (-0.351)	-0.005 (-0.345)	-0.005 (-0.354)	-0.005 (-0.363)	-0.006 (-0.402)	-0.006 (-0.424)
Closely held shares	0.006** (2.120)	0.006** (2.144)	0.006** (2.150)	0.006** (2.166)	0.005** (2.092)	0.005** (2.098)	0.005** (2.105)
Intercept	-0.397 (-0.483)	-3.317*** (-3.104)	-0.543 (-0.655)	0.334 (0.390)	0.346 (0.416)	-0.137 (-0.164)	-0.170 (-0.206)
Pseudo R ²	0.0725	0.0756	0.0765	0.0717	0.0732	0.0685	0.0694
χ^2	88.71	94.18	92.02	91.50	88.93	86.50	86.75

Table 6 presents the same logistic regression analyses in Tables 4 and 5, run separately for firms with and without R&D as a proxy for the importance of proprietary costs. We run separate regressions for each location characteristic, as in Tables 4 and 5. Panel A presents results for firms without R&D; Panel B presents the results for firms with R&D. We expect stronger results in the latter panel (Ellis et al., 2012). As before, *business attractiveness*, *credit rating*, *trade barriers*, and *protect* are reverse-coded for ease of interpretation. Z-statistics (in parentheses) are presented below the coefficients and are based on heteroscedasticity-robust standard errors clustered by firm. *, **, and *** denote significance at the 10%, 5%, and 1% levels respectively. All continuous variables are winsorized at the 1st and 99th percentile and are defined in the appendix.

Table 7
Amount of disclosure—New segments (N=1,082)
Panel A: Dependent variable: D(Report Earnings)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Business attractiveness	-0.009** (-2.123)						
Size middle class		-0.050** (-2.100)					
Credit rating			-0.073*** (-2.772)				
Import doc				0.158*** (3.476)			
Startup days					0.005 (1.181)		
Trade Barriers						0.240* (1.724)	
Protect							0.125 (1.343)
D(R&D)	-0.724** (-2.524)	-0.726** (-2.515)	-0.730** (-2.545)	-0.730** (-2.539)	-0.703** (-2.434)	-0.712** (-2.467)	-0.693** (-2.393)
Return on sales	1.005 (1.245)	0.980 (1.220)	1.057 (1.319)	1.057 (1.303)	0.968 (1.174)	0.975 (1.206)	0.963 (1.181)
MTB	0.039 (0.542)	0.039 (0.549)	0.040 (0.559)	0.034 (0.474)	0.042 (0.584)	0.037 (0.516)	0.041 (0.570)
Size	0.161 (1.594)	0.164 (1.612)	0.162 (1.596)	0.166* (1.659)	0.167* (1.647)	0.166 (1.644)	0.162 (1.606)
Herfindahl	-2.157 (-0.815)	-2.059 (-0.830)	-2.141 (-0.828)	-2.199 (-0.802)	-2.052 (-0.828)	-2.116 (-0.812)	-2.068 (-0.814)
Corporate tax rate	1.864*** (4.548)	1.933*** (4.617)	1.902*** (4.618)	1.880*** (4.575)	1.883*** (4.583)	1.887*** (4.562)	1.846*** (4.498)
Labor regulation index	-0.068*** (-3.837)	-0.085*** (-5.118)	-0.061*** (-3.434)	-0.067*** (-4.156)	-0.082*** (-4.880)	-0.079*** (-4.721)	-0.086*** (-5.234)
Segment size	-0.040 (-0.453)	-0.075 (-0.881)	-0.064 (-0.742)	-0.083 (-1.007)	-0.051 (-0.540)	-0.081 (-0.967)	-0.083 (-0.993)
Analyst following	-0.048* (-1.911)	-0.049* (-1.901)	-0.049* (-1.924)	-0.050** (-1.966)	-0.048* (-1.888)	-0.048* (-1.877)	-0.047* (-1.866)
Closely held shares	0.007 (1.311)	0.007 (1.314)	0.007 (1.318)	0.006 (1.268)	0.007 (1.311)	0.007 (1.311)	0.006 (1.288)
Intercept	-1.070 (-0.681)	1.443 (0.743)	-0.972 (-0.621)	-2.280 (-1.450)	-1.437 (-0.885)	-1.501 (-0.937)	-1.352 (-0.841)
Pseudo R ²	0.108	0.108	0.111	0.113	0.104	0.106	0.105
χ^2	65.33	65.75	69.95	70.40	61.24	63.22	62.03

Panel B: Dependent variable: Number of segment items

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Business attractiveness	-0.006** (-2.191)						
Size middle class		-0.025* (-1.691)					
Credit rating			-0.045*** (-2.612)				
Import doc				0.097*** (2.977)			
Startup days					0.004* (1.701)		
Trade Barriers						0.179* (1.804)	
Protect							0.069 (1.171)
D(R&D)	-0.306 (-1.507)	-0.302 (-1.475)	-0.305 (-1.506)	-0.306 (-1.510)	-0.297 (-1.453)	-0.302 (-1.483)	-0.288 (-1.406)
Return on sales	0.826** (2.315)	0.807** (2.284)	0.844** (2.355)	0.839** (2.331)	0.805** (2.268)	0.817** (2.280)	0.801** (2.252)
MTB	0.001 (0.023)	0.001 (0.024)	0.001 (0.032)	-0.001 (-0.026)	0.002 (0.060)	-0.001 (-0.013)	0.002 (0.057)
Size	0.149* (1.863)	0.152* (1.880)	0.150* (1.868)	0.155* (1.934)	0.153* (1.896)	0.152* (1.895)	0.150* (1.875)
Herfindahl	-1.068* (-1.923)	-1.014* (-1.876)	-1.051* (-1.916)	-1.045* (-1.893)	-1.024* (-1.883)	-1.044* (-1.896)	-1.019* (-1.859)
Corporate tax rate	1.433*** (4.426)	1.446*** (4.460)	1.441*** (4.481)	1.411*** (4.386)	1.455*** (4.446)	1.454*** (4.460)	1.415*** (4.369)
Labor regulation index	-0.020** (-2.240)	-0.031*** (-3.328)	-0.018** (-1.973)	-0.021** (-2.466)	-0.030*** (-3.223)	-0.028*** (-3.054)	-0.033*** (-3.346)
Segment size	-0.006 (-0.153)	-0.029 (-0.803)	-0.026 (-0.716)	-0.043 (-1.201)	-0.004 (-0.099)	-0.034 (-0.949)	-0.033 (-0.918)
Analyst following	-0.023 (-1.222)	-0.023 (-1.203)	-0.023 (-1.234)	-0.024 (-1.269)	-0.023 (-1.208)	-0.023 (-1.205)	-0.022 (-1.178)
Closely held shares	-0.002 (-0.616)	-0.002 (-0.637)	-0.002 (-0.615)	-0.002 (-0.671)	-0.002 (-0.624)	-0.002 (-0.622)	-0.002 (-0.653)
Intercept	1.588 (1.513)	2.833** (2.271)	1.683 (1.602)	0.889 (0.807)	1.256 (1.155)	1.271 (1.170)	1.445 (1.349)
R ²	0.085	0.083	0.087	0.089	0.082	0.083	0.081
F-statistic	3.981	3.897	4.160	4.173	3.892	3.866	3.833

Table 7 Panel A presents logistic regression analyses with *D(Report Earnings)* as the dependent variable; Panel B presents OLS regressions with *Number of Segment Items* as the dependent variable for **new** segments. As before, *business attractiveness*, *credit rating*, *trade barriers*, and *protect* are reverse-coded for ease of interpretation. Z-statistics (in parentheses) are presented below the coefficients and are based on heteroscedasticity-robust standard errors clustered by firm. *, **, and *** denote significance at the 10%, 5%, and 1% levels respectively. All continuous variables are winsorized at the 1st and 99th percentile and are defined in the appendix.

Table 8**Amount of disclosure—Old segments (N=3,498)****Panel A: Dependent variable: D(Report Earnings)**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Business attractiveness	-0.002 (-0.879)						
Size middle class		-0.022** (-2.097)					
Credit rating			-0.023* (-1.680)				
Import doc				0.029 (0.986)			
Startup days					0.002 (1.145)		
Trade Barriers						0.058 (0.705)	
Protect							0.064 (1.293)
D(R&D)	-1.004*** (-6.414)	-1.013*** (-6.481)	-1.009*** (-6.444)	-1.004*** (-6.412)	-1.004*** (-6.423)	-1.001*** (-6.402)	-1.001*** (-6.407)
Return on sales	0.065 (0.507)	0.072 (0.552)	0.068 (0.523)	0.068 (0.526)	0.067 (0.516)	0.067 (0.522)	0.065 (0.504)
MTB	0.048 (1.370)	0.048 (1.353)	0.048 (1.361)	0.048 (1.370)	0.048 (1.365)	0.048 (1.367)	0.048 (1.374)
Size	-0.058 (-1.150)	-0.059 (-1.164)	-0.058 (-1.157)	-0.058 (-1.145)	-0.059 (-1.163)	-0.058 (-1.154)	-0.059 (-1.159)
Herfindahl	-0.763 (-1.172)	-0.751 (-1.148)	-0.764 (-1.168)	-0.767 (-1.176)	-0.759 (-1.167)	-0.766 (-1.176)	-0.761 (-1.168)
Corporate tax rate	0.772*** (3.999)	0.813*** (4.159)	0.797*** (4.110)	0.774*** (4.045)	0.786*** (4.018)	0.774*** (3.977)	0.764*** (4.072)
Labor regulation index	0.015* (1.750)	0.012 (1.486)	0.020** (2.277)	0.014* (1.746)	0.012 (1.525)	0.012 (1.516)	0.009 (1.129)
Segment size	-0.045 (-1.085)	-0.058 (-1.467)	-0.054 (-1.343)	-0.055 (-1.379)	-0.036 (-0.822)	-0.051 (-1.280)	-0.053 (-1.326)
Analyst following	0.019 (1.498)	0.019 (1.478)	0.019 (1.485)	0.020 (1.509)	0.020 (1.506)	0.020 (1.516)	0.019 (1.499)
Closely held shares	0.004 (1.596)	0.004 (1.572)	0.004 (1.573)	0.004 (1.602)	0.004 (1.599)	0.004 (1.612)	0.004 (1.595)
Intercept	-0.113 (-0.154)	1.007 (1.167)	-0.076 (-0.104)	-0.316 (-0.402)	-0.275 (-0.359)	-0.202 (-0.265)	-0.255 (-0.337)
Pseudo R ²	0.075	0.073	0.078	0.080	0.072	0.074	0.071
χ^2	76.70	78.91	77.89	76.94	77.22	76.72	77.42

Panel B: Dependent variable: Number of segment items

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Business attractiveness	0.001 (0.698)						
Size middle class		-0.006 (-0.661)					
Credit rating			-0.002 (-0.164)				
Import doc				-0.020 (-0.744)			
Startup days					-0.000 (-0.008)		
Trade Barriers						-0.075 (-1.012)	
Protect							0.010 (0.218)
D(R&D)	-0.647*** (-4.515)	-0.657*** (-4.594)	-0.654*** (-4.554)	-0.647*** (-4.509)	-0.653*** (-4.564)	-0.646*** (-4.509)	-0.653*** (-4.558)
Return on sales	0.042 (0.245)	0.044 (0.255)	0.042 (0.248)	0.040 (0.233)	0.042 (0.247)	0.039 (0.229)	0.042 (0.247)
MTB	0.023 (0.674)	0.023 (0.660)	0.023 (0.666)	0.023 (0.672)	0.023 (0.668)	0.023 (0.680)	0.023 (0.667)
Size	0.040 (0.886)	0.040 (0.885)	0.040 (0.888)	0.040 (0.882)	0.040 (0.888)	0.040 (0.890)	0.040 (0.887)
Herfindahl	-0.925*** (-2.743)	-0.919*** (-2.709)	-0.924*** (-2.729)	-0.922*** (-2.732)	-0.924*** (-2.731)	-0.922*** (-2.738)	-0.923*** (-2.728)
Corporate tax rate	0.790*** (4.241)	0.827*** (4.373)	0.812*** (4.342)	0.789*** (4.271)	0.807*** (4.231)	0.773*** (4.121)	0.810*** (4.475)
Labor regulation index	-0.003 (-0.346)	0.001 (0.101)	0.001 (0.150)	-0.002 (-0.271)	0.000 (0.055)	-0.001 (-0.189)	0.000 (0.027)
Segment size	-0.045 (-1.206)	-0.042 (-1.183)	-0.040 (-1.124)	-0.037 (-1.035)	-0.040 (-1.007)	-0.039 (-1.101)	-0.040 (-1.125)
Analyst following	0.014 (1.187)	0.013 (1.151)	0.014 (1.161)	0.014 (1.182)	0.014 (1.166)	0.014 (1.186)	0.014 (1.162)
Closely held shares	0.000 (0.039)	0.000 (0.006)	0.000 (0.017)	0.000 (0.035)	0.000 (0.022)	0.000 (0.031)	0.000 (0.018)
Intercept	2.926*** (4.359)	3.220*** (4.165)	2.907*** (4.364)	3.062*** (4.268)	2.907*** (4.118)	3.052*** (4.379)	2.881*** (4.198)
R ²	0.039	0.039	0.038	0.039	0.038	0.039	0.039
F-statistic	6.508	6.187	6.290	6.438	6.253	6.504	6.239

Table 8 Panel A presents logistic regression analyses with *D(Report Earnings)* as the dependent variable; Panel B presents OLS regressions with *Number of Segment Items* as the dependent variable for **old** segments. As before, *business attractiveness*, *credit rating*, *trade barriers*, and *protect* are reverse-coded for ease of interpretation. Z-statistics (in parentheses) are presented below the coefficients and are based on heteroscedasticity-robust standard errors clustered by firm. *, **, and *** denote significance at the 10%, 5%, and 1% levels respectively. All continuous variables are winsorized at the 1st and 99th percentile and are defined in the appendix.

¹ By “disaggregation,” we are referring to whether segments are reported at the country, multi-country, or continent level.

² For instance, several studies use industry concentration to capture competition (Harris, 1998; Botosan and Stanford, 2005; Bugeja et al., 2015). This approach is based on the assumption that higher concentration implies less competition among existing companies in the industry. The relation between such measures and competition is not clear. Raith (2003) points out that higher industry concentration may be indicative of high-level competition, because fewer firms are able to survive in this type of environment. Consistent with these notions, Ali et al. (2014) report that firms in more concentrated industries disclose less information, presumably because of the proprietary costs of disclosure. In addition, industries are often hard to define (Bhojraj et al., 2003), and it is not always a straightforward matter to identify all the relevant competitors for each firm. Ali et al. (2009) criticize the use of concentration measures as proxies for competition, because most studies calculate concentration using only public firms. They find that including private firms in the calculation can reverse the results obtained in prior studies. In addition, Dedman and Lennox (2009) find that traditional competition measures are weakly, or not, correlated with managers’ perceptions of the competition, casting further doubt on the validity of these proxies.

³ IFRS 8 does not require geographic information to be disclosed if such information is not prepared for internal use. IFRS 8 also provides a broad exemption from entity-wide geographic disclosures when “the necessary information is not available and the cost to develop it would be excessive” (IASB, 2006).

⁴ We focus on the disclosures of geographic segments but also incorporate information from entity-wide/country-level disclosures if these country-level disclosures are more detailed and provide more information than geographic segment disclosures alone. For instance, if the “primary” geographic segment disclosures disclose aggregated multi-country areas and provide only limited financial information (i.e., sales and non-current assets) and the entity-wide disclosures are more disaggregated and provide more line items, we use the latter rather than the former.

⁵ Not all countries have mandated the use of IFRS (e.g., Switzerland). We only include firms that have switched to IFRS and have adopted IFRS 8. We provide more details on our sampling procedure in Table 1.

⁶ We exclude financial firms from the sample because of the difference in many characteristics and control variables that make it difficult to compare financial with non-financial companies. Moreover, financial firms are often subject to additional national regulation and face additional entry barriers when operating abroad (Cetorelli and Strahan, 2006).

⁷ Graduate students in the Master of Accounting program at a large Western European university assisted our hand-collection of the disclosure data on segments. We implemented several control mechanisms to ensure that the data were gathered accurately and uniformly. First, we selected students that scored above average in their undergraduate studies. These students collected the data as part of their master thesis projects, which provided an incentive for them to work accurately and in a timely manner. Second, we checked the accuracy of the students’ data collection at all stages of the collection process as follows. Prior to the data collection, we met with each student individually to explain the data-collection process and provided them with a test sample of observations to code. After the test cases were completed, we provided feedback on their test sample and the full set of observations for the student to code. We ensured that each student’s dataset partially overlapped another student’s, so that we would have an indication of the quality of their data collection. During data collection, we encouraged the students to ask questions and indicate which cases they found difficult to code. After completing their data collection, we compared the overlapping observations for each dataset. If we found differences between two students, we manually collected those observations to see which student was correct. We then reviewed the entire dataset of the student that made mistakes to ensure the data are accurate.

⁸ The results are similar when we include home-country fixed effects. Excluding firms from any individual country from our analyses does not affect our main results.

⁹ As an alternative to the Forbes Ranking, we measure business attractiveness by means of the *Image Abroad* indicator of the IMD World Competitiveness Yearbook, which is also the source of our *Protect* variable. *Image Abroad* comes from a survey of business executives and captures on a scale of 0 to 10 their perception of whether the image abroad of their country encourages business development. Consistent with our Forbes Ranking result, we find that *Image Abroad* is also significantly and positively related to the likelihood of a segment being newly disclosed (results untabulated).

⁹ Results (untabulated) are very similar if we use different definitions of middle class (e.g., as the sum of the second-poorest and middle quintile, or as the sum of the second-richest and middle quintile).

¹⁰ Results (untabulated) are very similar if we use the short-term Fitch credit rating.

¹² Another alternative for entry barriers we test for is the cost of starting up a business. Data on start-up costs are also extracted from the World Bank Doing Business Database. The costs represent the amount of money required to complete all the procedures required to start a business as a percentage of income per capita. This variable is highly related to the *Startup Days* variable used in the main analyses. In line with our predictions, we find that a higher start-up cost correlates with a lower likelihood of nondisclosure (results untabulated).