

Firm-level disclosure in the Baltic and Nordic regions before and after the mandatory adoption of the IFRS

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Abstract

This study systematically examines the levels of disclosure (i.e. the availability of firm-specific information to those outside publicly traded firms, measured by disclosure indices) in the annual reports of firms from the Baltic states of Estonia, Latvia and Lithuania, and compares the results with a sample of Nordic firms. The Baltic and Nordic regions are members of the EU and have had the same accounting regulations and stock market structure since 2005. In order to focus on and isolate the effect of regulation change on disclosure as reliably as possible, the time period used in this paper is 2004 and 2006, i.e. one year before and one year after the mandatory adoption of the IFRS. NASDAQ OMX owns and operates (with similar trading and quotation mechanisms) the stock exchanges that list all of our sample firms. The countries in our sample also have similar corporate governance regulations and recommendations for their listed firms. These similarities enable us to analyze whether other institutional and economic related factors, i.e. remaining matters that rule, regulate and monitor firms' legal duties and the role of stock markets in an economy, and the principal societal differences in the sample countries, influence firms' disclosure practices. We find that the level of financial reporting disclosure in annual reports is lower for Baltic firms than for Nordic firms, both before and after the introduction of the EU mandated International Financial Reporting Standards (IFRS) in 2005. However, the regulated financial reporting disclosure of Estonian firms matches that of their Nordic counterparts. This outcome is in line with the early proactivity and long-range strategy of regulators in Estonia aligning Estonia's GAAP with the IAS/IFRS. Our results support the conclusion that disclosure practices are affected by factors beyond the IFRS and the similarity between the regions' market trading and quotation mechanisms. This study provides evidence that systematic and strong-enough regulatory actions influence disclosure practices. We also hope that the disclosure indices described in this paper will help managers recognize the potential and richness of financial reporting disclosure as a communication tool.

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1. Introduction

There has been a call for studies on how to improve the practice and transparency of financial reporting (Ahmed, *et al.*, 2013; Ball *et al.*, 2000; Ball *et al.*, 2003; Glaum *et al.*, 2013). Under a given set of standards, financial reporting practices are sensitive to the interplay between market and political aspects, such as stock markets' significance in firms' financing, government's impact on laws and regulations, in a reporting jurisdiction (Ball *et al.*, 2003). Transparency can be characterized as the availability of firm-specific and firm-origin information to those outside publicly traded firms (Bushman, *et al.*, 2004).

Our paper increases understanding of what information firms disclose in their annual reports and how those disclosures are affected by political and market related factors when applied accounting standards and stock exchange infrastructure are practically the same. A common way to operationalize and capture the important characteristics of transparency is to analyze firms' disclosure practices. Those disclosures, in turn, can be quantified by disclosure indices (see Appendix A; Schadewitz & Blevins, 1997). This study focuses on the disclosure practices of firms in the Baltic region and compares them with those of firms in the Nordic region in relation to the mandatory adoption of the International Financial Reporting Standards (IFRS) and the implementation of the common NASDAQ OMX stock exchange infrastructure. A survey by Manea and Pearce (2006) indicates that Eastern European governments should consider targeted policies to help remove major business uncertainties in order to attract investment from multinational enterprises. The historically large differences in the institutional features of Eastern and Western European countries suggest that their financial reporting and disclosure practices may differ (Bailey *et al.*, 1995). Systematically improving corporate disclosure is one way to alleviate the uncertainties facing foreign and domestic investors (see Ernst and Young, 2011; International Accounting Standards Board, 2010). A number of studies provide evidence of the importance of accounting development in transition economies (Albu, *et al.*, 2011; King *et al.*, 2001).

Using a unique, hand-collected dataset of disclosures made in annual reports, we compare the disclosure levels (quantified by two disclosure indices) between the Baltic and Nordic regions before and after the introduction of the mandatory IFRS in the EU. The first index comprises the "typical" accounting-related disclosures (financial reporting disclosures) and regulation-driven financial reporting items. The

second index, which is broader in scope, is geared towards capturing ownership and corporate governance practices.

Our tests support the overall conclusion that the level of disclosure in firm reports is lower for Baltic firms than for Nordic firms, as the disclosure levels vary considerably across the regions despite the accounting harmonization and capital market consolidation (Ball, 2001). Our country-specific analyses indicate that when the measures emphasize regulated disclosure – the CIFAR (the Center for International Financial Analysis & Research) disclosure index score variable captures items that are mainly regulation driven (see also section 4.2. Sample), the level of disclosure among the Estonian firms is approximately equal to that of their Nordic counterparts. This finding can be explained by Estonia's overall strategy, since the 1990s, to align its GAAP with IAS/IFRS (Alver, *et al.*, 2014a).

The other index this study uses is based on S&P and mainly codes ownership- and governance-related disclosures (see also section 4.2. Sample). The S&P-based index reveals that firms from all three Baltic countries exhibit lower levels of disclosure compared with their Nordic counterparts before and after the mandatory adoption of the IFRS. The overall stage of stock market development in the Baltic countries may also explain the level of disclosure captured by the S&P-based index and the demand for that information. The stock markets in the Baltic states were established fairly recently, whereas those in the Nordic countries included in our sample have long traditions. Specifically, the Vilnius Stock Exchange was established in 1992, Riga Stock Exchange in 1993, and Tallinn Stock Exchange in 1995 (www.nasdaqomxnordic.com), whereas the Helsinki Stock Exchange was established in 1912, Stockholm Stock Exchange in 1863, and Copenhagen Stock Exchange in 1808 (www.nasdaqomxnordic.com).

The findings of this study are of potential importance for managers and government officials in the Baltic region and other emerging markets. As Holthausen (2009) observes, it is important to study financial reporting in its institutional context because an improved understanding may help legislators and managers complete their respective legislative, enforcement and reporting roles. It is also important to know to what extent the convergence of the IFRS fosters real improvement in the quality of disclosures, making it not merely a label change.

The remainder of this paper is organized as follows. In Section 2, we review the literature. Section 3 displays the institutional setting and presents the hypothesis. The research design and sample are presented in Section

4. In Section 5, we report our findings. Finally, we present our conclusions and suggestions for further research in Section 6.

2. Literature review

The use of IFRS has increased remarkably. In 2015, 131 countries already permitted or required IFRS for domestic listed companies (www.iasplus.com/country/useias.htm). A large body of research has examined the consequences of IFRS and also analyzed the role of regulated disclosure in capital markets (e.g., Barth *et al.*, 2007; Florou & Pope, 2012; Healy & Palepu, 2001; Kothari, 2001; Verrecchia, 2001). In general, the literature has found that the adoption of IFRS has a positive impact on accounting quality. The typical accounting quality measures used in IFRS are related to earnings management, the timeliness of loss recognition and the value relevance of accounting amounts. However, there is a lack of research on whether IFRS adoption potentially affects other information disclosed in, for example, annual reports (Legenzova, 2016). Furthermore, if IFRS does affect information disclosure in annual reports, in what ways does that occur?

The prior research shows that earnings quality is increased by mandatory IFRS adoption in countries with strong investor protection (Houqe *et al.*, 2012). In other words, IFRS adoption *per se* does not automatically lead to better earnings quality (Houqe *et al.*, 2012; Legenzova, 2016).

Nobes (2013) shows that international differences persist under the IFRS and those standards *per se* are not enough to improve financial reporting. In addition to the quality of standards, there are two other factors that affect accounting quality: a country's financial reporting incentives and its legal and political system (Soderstrom & Sun, 2007). Even in cases where there is a single set of accounting standards, accounting and disclosure quality might not be uniform throughout firms and countries, owing to additional factors affecting (directly and indirectly) reporting quality (Hodgdon *et al.*, 2009; Soderstrom & Sun, 2007). Therefore, more research on analyzing the determinants of accounting quality, other than those of accounting standards, is called for. There is also a shortage of studies that would analyze the determinants of disclosed information in, say, annual reports. Also governmental bodies and international organizations have emphasized the importance of disclosures as a means by which a firm's transparency can be improved.¹

Better disclosure enables shareholders to better relate managerial decisions to firm performance (e.g., De Franco *et al.*, 2013; Hope & Thomas, 2008; Lombardo & Pagano, 2002). Similarly, Ball (2006) argues that increased monitoring causes managers to act more in the interests of shareholders. Bens and Monahan (2004) and Hope and Thomas (2008) provide examples of how firm disclosure can be used by outsiders to monitor the activities of managers. Managers can exercise discretion in a disclosure in terms of the extent of the detail provided and the language used – and will do so in an attempt to decrease negative market reaction to bad news (Davis & Tama-Sweet, 2012).

Ball *et al.* (2003) focus on the timeliness of economic loss recognition rather than the overall quality of financial reporting. Data from four East Asian countries indicate that financial reporting practices, under a given set of standards, are sensitive to the market and political forces in the reporting jurisdiction. Market forces refer to the extent of demand for high-quality financial reporting. Examples of market forces are the amount of publicly traded equity, the size of the public debt market, and the extent of private vs. public contracting in the economy (Ball *et al.*, 2003). Examples of political forces include the extent of the involvement of governments in codifying and enforcing accounting standards and political incentives to reduce the volatility of reported income (Ball *et al.*, 2003). These forces influence the reporting incentives of those preparing the report (managers). They show that, besides accounting standards, these incentives affect financial reporting quality. Moreover, differing market demands can cause variations in reporting quality. For example, Ball and Shivakumar (2005) report that despite having substantially equivalent regulations on auditing, accounting standards and taxes, the financial reporting of UK private companies is of a lower quality than that of public companies (see also Burgstahler *et al.*, 2006).

The variation in the recognition of bad news among different European countries indicates that the institutional setting plays a role in shaping financial reporting under the IFRS (Amiraslani *et al.*, 2013).

Mandatory IFRS adoption does not always increase accounting quality (Ahmed *et al.*, 2013). More specifically, enforcement mechanisms are sometimes unable to counter the initial effects of the greater flexibility of the IFRS relative to domestic GAAP (Ahmed *et al.*, 2013; André *et al.*, 2015). Larson and Street (2004) report that the complicated nature of the IFRS, the development of a national capital market, insufficient guidance and limited experience hamper national convergence.

In a study on asset impairment, Amiraslani *et al.* (2013) find that IFRS compliance varies across Europe. Companies in Finland, Sweden and Denmark (OMX Nordic countries in a strong enforcement cluster) show higher quality compliance in relation to bad news recognition than companies in Estonia and Lithuania (OMX Baltic countries in a weaker enforcement cluster). Glaum *et al.* (2013) focus on the disclosure requirements relating to IFRS 3 (business combinations) and IAS 36 (the impairment of assets). Their findings, based on country-level variables, reveal that each of the three Eastern European countries (Czech Republic, Hungary and Poland) in their sample of 17 European countries are significantly negatively associated with compliance compared with the average for compliance in Nordic countries. They also find that both the strength of the enforcement system and the size of the national stock market are associated with compliance.

Cross-country research designs are considered to be potentially fruitful for gaining an understanding of how regime characteristics relate to financial accounting information in general (e.g., Bushman & Smith, 2001) and this study's setting of disclosure quantity and quality, in particular. In our sample, despite the comparable market microstructures (shared trading system, harmonized rules and market practices) in the Baltic and Nordic regions, the disclosures that firms make may deviate owing to variations in the various legal and political systems and financial reporting incentives.

Berglöf and Pajuste (2005) analyze corporate governance reporting in Central and Eastern European countries based on website disclosures and annual reports (five individual measures of disclosure in annual reports) from 2003. Their results show that the laws and regulations relating to the disclosure of corporate governance arrangements were poorly followed. This suggests that the switch from a non-IFRS regime to an IFRS regime takes time. In this respect, IFRS adoption can be characterized as being more of a process of convergence than a sudden and complete shift (Zeff & Nobes, 2010).

The Baltic markets are currently in an emerging, transitional phase, and economic development in the region has been flourishing in recent years (UK Trade & Investment, 2013). However, Kooskora (2008) reports that many firms fail to recognize the importance of stakeholder interests and their relationship with the wider social and natural environment. This lack of recognition may, in turn, affect the degree to which disclosures serve the interests of those who analyze and use disclosures.

3. Institutional setting and hypothesis

3.1. Accounting regulations and their development in the Baltic region

In this section, we first provide a detailed description of accounting regulations and their development in the three Baltic countries.² In Estonia (NASDAQ OMX Tallinn), the overall strategy since 1993 has been to align the Estonian GAAP with the IAS/IFRS (Alver *et al.*, 2014a; Alver *et al.*, 2014b). The Tallinn Stock Exchange has thus required the use of the IAS/IFRS since 1998, and legislation stipulating this requirement was passed in 2002. The legislation required every listed non-financial firm to apply the IFRS from 2003, and every listed and non-listed bank and insurance firm to do the same from 2005.³ The results show that a country's proactive approach to legislation can have a positive effect on market development. For example, in a study on the internationalization of the Estonian accounting system, Tikk (2010) observes that the recent developments in Estonia have attracted positive attention from other countries. Estonia has continued to develop its market structure and there have recently been calls for further investment in areas such as specialist training (Tikk, 2010). In this study, we examine whether this proactivity, the anticipation of future change and, accordingly, timely orientation before that change, has discernible effects on firms' disclosure practices. By discernible effects we refer to those that could potentially be identified in our research setting.

Before 2005, Lithuanian listed firms (NASDAQ OMX Vilnius) were permitted to report under either the national GAAP or the IFRS. According to the Director of the Lithuanian Accounting Institute, there were no significant differences between the national GAAP and the IFRS (as the national GAAP were based on international standards). Since 2005, listed firms have been required to apply the IFRS. Legenzova (2007) reports that *de jure* accounting regulation changes in Lithuania are just one of the factors influencing a firm's *de facto* choice of accounting standards, with other factors including managers' incentives and preferences.

In Latvia (NASDAQ OMX Riga), listed firms were allowed to report under either the national GAAP or the IFRS prior to 2005 (the national GAAP were based on the IFRS). Since 2005, listed firms have been required to apply the IFRS. According to one representative of the Riga Stock Exchange, although reports by listed firms comply with the IFRS and local standards, their content, especially in terms of supplementary information is often unsatisfactory and below the standard achieved by the Nordic listed firms.

In 2004, our first sample year, IFRS reporting was only required by the Tallinn Stock Exchange. The other five exchanges permitted a choice between local and IFRS standards. The 2004 annual report data show that 30 out of 63 Baltic firms reported under the IFRS and that one, a firm listed on NASDAQ OMX Vilnius, reported under US GAAP. All of our sample countries have financial supervisory authorities that enforce the IFRS.

IFRS implementation can be supported by means other than formal IFRS legislation. At the First Baltic IFRS Adoption and Implementation Forum in 2009, the participants agreed that the IFRS principles were essential and that regional discrepancies existed in the adoption and implementation of the IFRS (<http://www.conferences.lv/eng/2ndIFRSForum/ifrs>). The comments on the implementation of the IFRS by the forum participants are highly enlightening. For example, Kristine Potapovica, board member of the Latvian Association of Certified Auditors, states that:

Latvian legal system and tradition is not sufficiently flexible to allow for instant changes of Latvian Accounting Standards. Rapid developments of IFRS and limited resources of the Accounting Council cause difficulty to follow, resulting in increasing number of differences between Latvian Accounting Standards and IFRS (sic).

As the above citation indicates, the Latvian legal system and its limited resources have affected the implementation of full disclosure under the IFRS. Furthermore, commenting from an educational perspective, Dr Nataliya Vovchuk, Head of the Association of the Chartered Certified Accountants in the Ukraine, Baltic and Caucasus, states that the: ‘Educational system needs to increasingly react to transformation of profession – therefore examination on IFRS should be essential part of accounting qualification’ (sic). This highlights the role of education in transforming the profession to manage IFRS issues. The availability of IFRS education and guidance is likely to affect the disclosure practices of firms.

3.2. General market characteristics and hypothesis

Markets can be characterized by the presence and nature of particular information users (Armstrong *et al.*, 2010). The different traditions and experience of information users in the Baltic and Nordic countries can influence their demand for firm-specific information, which may, in turn, reflect firms’ disclosures.

Analysts are a major user group of financial disclosures. The Financial Analysts Association (Lithuania) was founded in 1999 and currently has around 60 members. We were unable to acquire

information from public Internet resources on the Latvian Association of Securities Market Professionals. However, the Chairman of the Management Board of the Latvian Central Depository AS, NASDAQ OMX, informed us that the Latvian Association of Securities Market Professionals (LASMP) was registered in 1997 and currently has around 20 members (information received via email on 14 May 2014). We also conducted an Internet search on Estonian security market professional associations, but could not find any information in this area, which matches with the information we received directly from the NASDAQ OMX. A typical and potentially market-phase related characteristic of the Baltic markets is the provision of few or no profit warnings, i.e. when managers warn markets that anticipated profit will be significantly below projections (Alves *et al.*, 2009). Typically, it is an unexpected event or matter that triggers a profit warning.

The financial analyst associations in Finland, Sweden and Denmark have approximately 300, 1100, and 1700 members, respectively. These Nordic associations were established many years earlier than their Baltic counterparts, in 1989, 1971 and 1974, respectively. All national analyst associations are members of the European Federation of Financial Analysts Societies (EFFAS, <http://effas.net/>). EFFAS has established training and qualification standards to support the development of professional financial analysts.

Overall, investor relations in the Baltic region are becoming more professionalized. For example, according to the NASDAQ OMX Baltic Market Awards project, the quality of investor relations in the Baltic region improved by 40% during 2006-2011, while the quality of financial reports issued by Baltic listed companies improved by 55% during the same period (<http://www.nasdaqomxbaltic.com/?id=3794581>). These figures were compiled by the Market Awards Evaluation Committee, which comprises academics, investors, financial analysts, and representatives from the media and the Baltic stock exchanges. The gradual improvement in the quality of investor relations and financial reporting has created pressure for firms to be responsive to the increased demand for information, thus improving their disclosures accordingly. The Baltic states recently introduced corporate codes of governance, with the first versions of the governance codes for listed firms in Estonia, Lithuania and Latvia being introduced in 2006, 2003 and 2005, respectively (<http://www.ecgi.org/codes/>). In contrast, the Nordic states introduced corporate governance codes some years earlier. This difference might reflect their scores on the S&P disclosure index because many corporate governance measures are only covered by the S&P index and not the CIFAR index.

The prior research indicates that there is little integration between the Baltic and international capital

markets (Maneschiöld, 2006). NASDAQ OMX has pursued better integration by the means of improving market transaction efficiency. NASDAQ OMX owns and operates the equity and derivatives exchanges in Copenhagen, Stockholm, Helsinki, Iceland, Tallinn, Riga and Vilnius, and the central securities depositories in Estonia and Latvia.⁴ The stock exchanges in Copenhagen, Stockholm, Helsinki and Iceland make up the NASDAQ OMX Nordic, while the stock exchanges in Tallinn, Riga and Vilnius comprise the NASDAQ OMX Baltic. NASDAQ OMX offers access to approximately 80% of the combined Nordic and Baltic securities market.

As they have the same operator, the NASDAQ OMX Baltic and Nordic markets have the same market microstructure. In other words, Baltic and Nordic markets share the same trading system, and have harmonized rules and market practices. This shared market provides a natural control that supports the research focus of this study. There is also evidence that the adoption of mandatory IFRS and stock exchange consolidations have improved earnings comparability in Denmark, Finland and Sweden (Caban-Garcia & He, 2013). This is consistent with the broader view that the Nordic countries have similar accounting and disclosure practices. On this basis, it is valid to primarily use OMX Helsinki listed firms when matching, and draw on Swedish and Danish firms if there is a shortage of usable Helsinki listed matching firms.

We hypothesize that firm-level disclosure is superior in the Nordic region compared to the Baltic region before and after the mandatory adoption of the IFRS.

4. Research design and sample

4.1. Model application

In this section, we analyze the extent to which regional differences account for the quality and quantity of disclosures in firms' annual financial reports. Our main variable of interest is the Baltic test indicator (equal to 1 if the firm is a Baltic firm, 0 if it is a Nordic firm), representing the weaker enforcement group of countries (Amiraslani *et al.*, 2013). Our model for testing the hypothesis is as follows:

$$(1) \text{ Disclosure} = a_0 + a_1 \text{Baltic} + a_2 \text{Size} + a_3 \text{Leverage} + a_4 \text{Profitability} + a_5 \text{Ownership} + a_6 \text{Auditor} + a_7 \text{Equity offer} + a_8 \text{Year}$$

Disclosure	Disclosure score based on one of two indices (the CIFAR- or the S&P-based index).
Baltic	Indicator variable equal to 1 if the company is from Estonia, Latvia or Lithuania, and otherwise 0.
Size	Logarithm of the total assets in euros.
Leverage	Ratio of total debt to total assets.
Profitability	Industry mean adjusted ROE.
Ownership	Aggregate percentage of the three largest shareholders at the fiscal year-end, calculated by voting rights.
Auditor	Indicator variable equal to 1 if the company is audited by a Big 4 firm, and 0 otherwise.
Equity offer	Indicator variable equal to 1 if the company arranged an equity offer during 2004 or 2006.
Year	Indicator variable equal to 1 if the year is 2006, and 0 if 2004.

We will refine the model above in order to be able also to analyze country-specific effects on disclosure practices in the Baltic region. This refinement will be executed by replacing the Baltic indicator variable with a country-specific indicator variable.

As all of the firms included in our analysis are listed under the NASDAQ OMX system, our sample already controls for the significant possibility that the disclosure differences relate to the trading and quotation requirements of the respective capital markets. Furthermore, the Nordic and Baltic countries have comparable financial reporting regulations. It could even be argued that the Tallinn market has a relatively more rigorous regulation environment, as it has required that listed firms comply with the IFRS since 2004. Therefore, we control for the influence of firm-specific characteristics using a regression analysis of size and industry matched samples. In line with the disclosure literature, we include firm size, leverage, profitability, ownership, audit quality, equity offer and year as control variables.

Size

Although our tests are based on matching industry and firm size, we include size as a control variable given its importance in explaining firm disclosure. The literature generally documents a positive relationship between firm size and disclosure level (e.g., Glaum *et al.*, 2013; Hope, 2003; Lang & Lundholm, 1996; Watts & Zimmerman, 1978). This is because larger companies tend to allocate more resources to their accounting functions and financial reporting (Amiraslani *et al.*, 2013). Furthermore, public scrutiny and market interests may be greater for larger firms than for smaller firms (Watts & Zimmerman, 1990). We use

the natural logarithm of sales (in euros) as our measure of firm size. And we use sales instead of total assets to circumvent the potential variations in the recognition of several intangible assets between the GAAP and the IFRS.

Leverage

Companies with high levels of debt have higher agency costs and require greater monitoring (Amiraslani *et al.*, 2013). Firms use financial disclosures to decrease the monitoring costs of their creditors. When a firm has a high level of debt, it has an incentive to disclose more information, enabling it to better manage its credit risk (e.g., Salamon & Dhaliwal, 1980). We use the ratio of total liabilities to total assets as our leverage measure.

Profitability

The literature generally suggests that there is a positive relationship between disclosure level and firm profitability (Lang & Lundholm, 1996). When profitability is high, managers are more motivated to disclose detailed information to support the continuation of their position and remuneration. In contrast, when the rate of return is low, managers disclose less information to conceal the reasons for the losses or the decline in profits. Our proxy for profitability and performance is a firm's ROE (the income before extraordinary items divided by the book value of equity) relative to its sector ROE. We use the Global Industry Classification Standard (GICS) to classify firms into sectors, and calculate the ROE ratios for each Nordic and Baltic exchange sector while considering the potential differences in the levels of risk in the respective countries.

Ownership

A firm's level of monitoring can depend on the ownership structure (Armstrong *et al.*, 2010). If the ownership of a firm is highly concentrated, the owners may receive information through means other than disclosures, e.g. having a seat on the board (Healy & Palepu, 2001). The listed firms in the Baltic countries are often ex-state-owned enterprises or newly created private firms still controlled by the first generation founders. These factors suggest that the institutional environment and ownership structure in the Baltic countries could also affect firms' disclosure practices. Therefore, we include an ownership variable in the

model, which measures the aggregate percentage of the ownership of the three largest shareholders at the fiscal year-end as calculated by voting rights.

Audit quality

Financial reporting quality is often associated with audit quality in the literature (e.g., Becker *et al.*, 1998; Hope *et al.*, 2009). Information quality is typically positively associated with audit quality. According to Glaum *et al.* (2013), auditors play a pivotal role in the enforcement of financial reporting standards. There is also evidence that audit quality affects firms' financial reporting in general (Hodgdon *et al.*, 2009).

Following the literature, we use the Big 4 firm indicator variable 'Auditor' as a proxy for audit quality.

Equity offer

Firms can strengthen and broaden their equity base through equity rights issues. In this case, investors will demand information to properly evaluate a firm as a potential investment object (Healy & Palepu, 2001). A firm undertaking an equity offer has a clear incentive to supply its investors with adequate, transparent information to mitigate information asymmetry in the capital market and to lower the cost of capital (Glaum *et al.*, 2013; Healy & Palepu, 2001). We use an indicator variable to represent whether a firm made an equity offer during 2004 and 2006.

Year

Even when following the IFRS is a mandatory requirement, firms typically require sufficient time, effort, skills and resources to fully adjust their financial reporting and disclosure practices accordingly (Misirlioglu *et al.*, 2013). Our 'Year' indicator variable reveals whether a firm's disclosure level (as measured by our disclosure metric variables) is significantly higher in 2006 compared with 2004.

4.2. Sample

We used original annual reports to quantify the disclosed information. We hand collected information from annual reports and used self-calculated disclosure indices (CIFAR, 1991) and the S&P disclosure index (Standard & Poor's, 2002) to evaluate the level of disclosure.

In terms of scoring, we attribute the values 1, 0 or 'exclude' to each disclosure item in the indices. The general principle of the evaluation is as follows. Code '1' refers to a situation in which either the information is provided or the firm discloses that it is inappropriate (impossible or irrelevant) to provide that

piece of information. Code '0' refers to a situation in which either the information is not provided (although it would be possible) or the firm does not disclose that the item is inappropriate in its report. 'Exclude' indicates that no information is given or that the disclosure is irrelevant and there is no need to disclose that it is inappropriate. Explicit, written coding instructions were used item by item to secure and maintain consistency throughout the coding. Furthermore, to minimize the influence of subjectivity and personal opinion, the disclosure score sheets were independently completed by two researchers using original annual reports. Any scoring differences were analyzed and corrections were made where necessary. Several annual reports were only available in the local language, especially in the Baltic region. These reports were coded by native speaking students and their work was supervised and executed at the Stockholm School of Economics in Riga. The scoring protocol and follow-up procedure were identical for all of the coders. Appendix A details the index items.

We use the information disclosed in the firms' annual reports for the fiscal years 2004 and 2006 to score our disclosure indices. The annual reports were obtained from the NASDAQ OMX website where available, otherwise they come from the firms' websites. After excluding banks and insurance firms, the sample initially comprised 86 Baltic firm-years.⁵ We then created a size- and industry-matched sample beginning with Finnish listed firms (58 firm-years). Where the match with Finnish firms was inadequate, we selected a match from the Stockholm (14 firm-years) or Copenhagen (6 firm-years) stock exchanges, resulting in a Nordic matching sample of 78 firm-years.

We believe that Finnish firms provide a proper match because Finland's culture, history and language are relatively closer to those of the Baltic countries (Schadewitz & Blevins, 2000). Therefore, this design should not favor finding differences between the Nordic and Baltic regions. It is likely that if our hypothesis about higher disclosure quality holds for mainly Finnish firms it will also hold for other Nordic countries. Although Finnish firms are likely to provide the best match for Baltic firms, the Nordic countries of Denmark, Finland and Sweden share a number of common features (Benito *et al.*, 2003).⁶ In addition, the comparability between Denmark, Finland and Sweden is reportedly increasing due to their adoption of mandatory IFRS and stock exchange consolidations (Caban-Garcia & He, 2013). Moreover, in the comparative literature on international accounting, the Nordic countries are often collectively considered to be a homogeneous region (e.g., Doupnik & Salter, 1993). After eliminating 11 firms due to missing data or

foreign cross-listings, we included 164 firm-years (78 Nordic firm-years, 86 Baltic firm-years) in our multivariate tests. We use a few Nordic matched sample firms more than once because the Baltic stock exchanges include more firms from the energy industry compared with their available Nordic counterparts.

Five out of the six exchanges accepted either local or IFRS reporting during 2004, with only the Tallinn Stock Exchange requiring IFRS reporting. During 2006, all of the consolidated financial statements of the sample firms were required to comply with IFRS. None of the Nordic matched firms used IFRS in their 2004 annual reports. Our size-matched design excludes Nordic early IFRS adopters because they are large firms. No-adoption suggests that a firm had assessed that the costs (broadly defined) of the early adoption of the IFRS would have exceeded the benefits.

Although cross-listing is permitted on the NASDAQ OMX exchanges, no Baltic firm was listed on another NASDAQ OMX exchange, and none of the firms in the matched sample were listed on another NASDAQ OMX exchange during the sample years (2004 and 2006). We conducted research to find out whether any of our sample firms were listed on other foreign exchanges. Only one Nordic firm, the Danish company D/S Torm A/S, was listed elsewhere (on NASDAQ, prior to the merger). This firm applied the Danish GAAP in its reporting. Three Baltic firms were listed on foreign exchanges (NASDAQ OMX Tallinn): Eesti Telekom on the London Stock Exchange (main list of GDRs); Merko Ehitus on the Munich and Frankfurt Stock Exchanges and Norma Aktsia on the Munich, Frankfurt and Berlin Stock Exchanges. These four firms are excluded from the final sample.

5. Empirical findings

5.1. Univariate test results

Our descriptive results in Table 1 show that the Baltic firms disclose significantly less information than their Nordic counterparts. Table 1 shows that both the CIFAR- and S&P-based scores are, in the vast majority of cases, significantly lower for the Baltic firms than for their Nordic counterparts. The overall and year-specific t-test results for the equality of mean are reported in the end section of Table 1. The difference is especially striking for the S&P score, which indicates that Baltic firms disclose considerably less information on their ownership structure and corporate governance issues than Nordic firms. This outcome is quite

logical and intuitive because the S&P-based index is geared towards ownership- and governance-related items that are more flexible and sensitive to differences in external demand. Compared to that, the CIFAR-based index primarily scores information that is formally instructed by the IFRS.

The lower disclosure level may reflect the Baltic managers' discretionary response to a lower demand for high levels of disclosure. As discussed in Section 3.2, the professional financial analyst organizations in the Baltic region are less developed than those in the Nordic region. There are also indications that the costs of preparing high quality disclosures are greater in the Baltic region than in the Nordic region for reasons such as a lack of knowledge and paucity of guidance on IFRS implementation. This observation is supported by the prior research (Larson & Street, 2004), leading Tikk (2010) to call for more specialist training.

Table 1. Descriptive statistics for the disclosure indices

		CIFAR 2004	S&P 2004	CIFAR 2006	S&P 2006
Baltic Region (n = 43)	Minimum	49.3 %	15.6 %	52.1 %	18.0 %
	Q1	75.9	33.6	67.6	31.8
	Mean	78.2	38.0	73.4	36.6
	Median	78.6	40.2	72.6	35.7
	Q3	82.9	43.4	78.7	40.5
	Maximum	93.1	48.9	87.7	53.6
	Standard Deviation	7.7	7.8	7.8	8.3
Nordic Region (n = 39)	Minimum	70.7 %	34.8 %	43.8 %	41.2 %
	Q1	79.1	60.6	87.4	69.8
	Mean	82.8	66.5	88.8	72.8
	Median	83.8	68.7	91.8	75.0
	Q3	87.8	74.9	93.2	79.0
	Maximum	92.0	79.3	95.9	84.8
	Standard Deviation	6.2	10.5	9.1	10.0
Estonia (n = 5)	Minimum	73.4 %	31.0 %	71.8 %	37.5 %
	Q1	75.4	33.0	77.3	39.8
	Mean	80.9	35.8	81.3	46.5
	Median	78.6	36.0	82.6	49.4
	Q3	84.1	39.3	87.1	52.2
	Maximum	93.1	39.5	87.7	53.6
	Standard Deviation	7.9	3.8	6.7	7.4
Latvia	Minimum	49.3 %	15.6 %	52.1 %	18.0 %
	Q1	64.7	22.9	69.1	25.3

(n = 8)	Mean	68.9	25.6	70.5	28.3
	Median	70.4	26.0	71.7	28.3
	Q3	75.8	27.7	74.4	32.4
	Maximum	83.3	36.0	82.2	35.2
	Standard Deviation	10.8	5.8	8.9	5.9
Lithuania (n = 30)	Minimum	69.1 %	29.1 %	58.3 %	21.3 %
	Q1	77.1	39.9	67.6	34.1
	Mean	80.3	41.7	72.8	37.2
	Median	80.0	42.2	72.4	36.9
	Q3	83.5	44.3	78.4	40.5
	Maximum	87.7	48.9	86.3	51.2
	Standard Deviation	4.4	4.4	7.1	7.0

T Test for equality of means		
	T	Sig. (two tailed)
CIFAR (Baltic vs. Nordic)	-7.8058***	0.0000
S&P (Baltic vs. Nordic)	-21.7474***	0.0000
CIFAR (Baltic vs. Nordic 2004)	-2.9423***	0.0021
CIFAR (Baltic vs. Nordic 2006)	-8.1931***	0.0000
S&P (Baltic vs. Nordic 2004)	-13.8552***	0.0000
S&P (Baltic vs. Nordic 2006)	-17.6748***	0.0000
CIFAR (Estonia vs. Nordic)	-1.9657	0.0711
S&P (Estonia vs. Nordic)	-10.2853***	0.0000
CIFAR (Estonia vs. Nordic 2004)	-0.5108	0.6312
CIFAR (Estonia vs. Nordic 2006)	-0.8073	0.4366
S&P (Estonia vs. Nordic 2004)	-12.9247***	0.0000
S&P (Estonia vs. Nordic 2006)	-7.1774***	0.0004
CIFAR (Latvia vs. Nordic)	-6.2513***	0.0000
S&P (Latvia vs. Nordic)	-22.6162***	0.0000
CIFAR (Latvia vs. Nordic 2004)	-3.5189***	0.0079
CIFAR (Latvia vs. Nordic 2006)	-5.2862***	0.0004
S&P (Latvia vs. Nordic 2004)	-15.4173***	0.0000
S&P (Latvia vs. Nordic 2006)	-16.9687***	0.0000
CIFAR (Lithuania vs. Nordic)	-7.1318***	0.0000
S&P (Lithuania vs. Nordic)	-20.8183***	0.0000
CIFAR (Lithuania vs. Nordic 2004)	-1.9865	0.0511
CIFAR (Lithuania vs. Nordic 2006)	-8.2144***	0.0000
S&P (Lithuania vs. Nordic 2004)	-13.3008***	0.0000
S&P (Lithuania vs. Nordic 2006)	-17.3854***	0.0000

Baltic region = Estonia, Lithuania and Latvia.

Nordic region = Finland, Sweden and Denmark.

CIFAR = Disclosure scores for the index constructed by the authors but *based on* the Center for International Financial Analysis & Research Index.

S&P = Disclosure scores for the index constructed by the authors but *based on* Standard & Poor's disclosure scores.

The scores report the percentage of items that were scored and received a score for satisfactory disclosure (1 for satisfactory, 0 for unsatisfactory).

*** and ** denote statistical significance at the 1% or 5% levels (two-tailed test), respectively.

Our univariate results are consistent with the view that disclosure practices continue to vary considerably from one country to another, even after the ongoing processes of accounting upgrades and capital market consolidation.

The results for the three Baltic countries provide further insights. In 2004, the mean CIFAR scores for firms listed in Estonia and Lithuania are close to each other. The mean CIFAR score for Latvian listed firms is less than the scores observed in Estonia and Lithuania. The CIFAR scores for 2006 show slight improvements for the Estonian and Latvian listed firms but a decrease for the Lithuanian listed firms. Moreover, the frequency of qualified audit opinions for firms listed in Latvia and Lithuania was rather high during 2006, indicating that the firms faced challenges in fulfilling all of the IFRS requirements.

There are only a few situations in which the equality of means is accepted. One is between the Nordic region and Estonia when using a CIFAR-based index. Another is the equality of means between the Nordic region and Lithuania for the CIFAR-based index for 2004. All other country-specific tests support the inequality of means between the Nordic region and Baltic countries. This finding for the S&P-based index is also in line with the recent (since 2009) initiative of the Baltic Institute of Corporate Governance (BICG) to promote the adoption of leading corporate governance practices by Baltic companies (www.corporategovernance.lt), i.e. the need to improve corporate governance practices has been recognized. The following comment by Ivars Bergmanis, Head of Institutional Markets at Estonia's LHV Bank, supports this view (Guide to the NASDAQ OMX Baltic Securities Market, 2011):

Estonia has shown the way to the Baltics as it is now one of the most disciplined of the Eurozone economies. It's a tiny country but it's serving as a kind of model of a new Eastern European country and if you take the whole of Eastern Europe from the Baltics to the Balkans the Estonia model shines through. (p. 6)

Finally, a potential shortage of people with adequate knowledge of the IFRS may also explain the prevalence of qualified audit opinions in certain regions (Latvia and Lithuania). In sum, in vast majority of cases univariate tests support our hypothesis that firm-level disclosure is superior in the Nordic region compared the Baltic region before and after the mandatory adoption of the IFRS.

5.2. Multivariate test results

We now turn to the multivariate test results. The descriptive statistics for the independent variables are reported in Table 2 (all-firms sample; Baltic sample; Nordic sample). Due to size matching, the Baltic and Nordic firms exhibit similar mean sizes at 17.597 and 19.182, respectively. Table 2 shows that the leverage for the Baltic firms (0.414) is lower than that of the Nordic firms (0.500). We further observe that the mean profitability of the Baltic firms is clearly higher when compared to the Nordic firms. However, the standard deviation of profitability is higher in the Nordic sample. The ownership variable shows that, on average, ownership is clearly more concentrated in the Baltic States (0.836) compared to the Nordic countries (0.452). The auditor variable indicates that the firms in both samples are mainly audited by Big 4 auditors (85% and 76% in the Baltic and Nordic samples, respectively). In other words, the potential differences in disclosure between the two regions are not likely to be caused by variations in audit quality. However, a higher percentage of Big 4 auditors in the Baltic region may indicate some substitution of high level disclosure with the Big 4 auditors. Furthermore, relatively few of the sample firms made equity offers, with the Baltic firms making the lowest percentage of offers (9%).

Table 2. Descriptive statistics for the independent variables

Variable	Baltic and Nordic Regions n = 164		Baltic Region n = 86		Nordic Region n = 78	
	Mean	Std. deviation	Mean	Std. deviation	Mean	Std. deviation
Size	18.351	1.685	17.597	1.147	19.182	1.789
Leverage	0.455	0.199	0.414	0.213	0.500	0.171
Profitability	-0.019	0.259	-0.013	0.193	-0.025	0.318
Ownership	0.653	0.701	0.836	0.903	0.452	0.242
Auditor	0.805	0.398	0.849	0.360	0.756	0.432
Equity offer	0.140	0.348	0.093	0.292	0.192	0.397

Size = logarithm of the total sales in euros. Leverage = ratio of the total debt over the total assets. Profitability = ROE-industry mean ROE. Ownership = aggregate percentage of the three largest shareholders at the fiscal year-end calculated by voting rights. Auditor = indicator variable equal to 1 if the company is audited by a Big 4 firm and 0 otherwise. Equity offer = indicator variable equal to 1 if the company arranged an equity offer during the sample years (2004 or 2006).

Table 3 presents the correlations between the disclosure indices, the control variables and our Baltic test variable (equal to 1 if Baltic, 0 if Nordic). We first note that both of the disclosure metrics are positively and significantly correlated with firm size and leverage. The CIFAR-based disclosure score is positively correlated with audit quality. This is a logical outcome because the CIFAR-based index primarily measures specifically regulated information. Equity offer is positively and significantly correlated with the CIFAR metrics but not significantly correlated with the S&P metrics.

The CIFAR- and S&P-based scores have strong negative correlations with the Baltic test variable, suggesting that the Baltic firms have lower levels of disclosure than the Nordic firms. Furthermore, disclosure (measured with the CIFAR- or S&P-based metric) has a noticeably low correlation with year. This may indicate that it takes several years before the adoption of new financial reporting standards and their related disclosures actually improves firm-level disclosure practices. In fact, year correlates significantly and positively only with the equity offer variable. The generally low significance of the year variable suggests that the before and after the implementation of the IFRS setting is not highly dependent on the enveloping year (2004, 2006).

These delayed effects relate to the complexity of the IFRS (Hoogendoorn, 2006) and the continuation of national accounting practices following their adoption (Kvaal & Nobes, 2012; Soderstrom & Sun, 2007).

Table 3. Correlation table for the variables – Entire firm sample (n = 164)

Variable	CIFAR	S&P	Baltic	Size	Leverage	Profit-ability	Owner-ship	Auditor	Equity offer
Baltic	-0.523***	-0.866***							
Size	0.402***	0.432***	-0.470***						
Leverage	0.206***	0.204***	-0.217***	0.131					
Profit-ability	0.128	0.052	0.023	0.236***	-0.211***				
Owner-ship	-0.308	-0.279	0.274	-0.124	-0.179	-0.026			
Auditor	0.156**	-0.060	0.116	0.095**	0.153**	0.150**	-0.158		
Equity offer	0.159**	0.114	-0.143**	-0.072	0.094	-0.107	-0.064	0.110	
Year	0.016	0.059	0.000	-0.457	-0.031	-0.041	0.267	-0.062	0.193***

Baltic = indicator variable equal to 1 if the company is located in the Baltic region (Estonia, Lithuania and Latvia) and 0 otherwise. Size = logarithm of the total sales in euros. Leverage = ratio of the total debt over the total assets. Profitability = ROE-industry mean ROE. Ownership = aggregate percentage of the three largest shareholders at the fiscal year-end calculated by voting rights. Auditor = indicator variable equal to 1 if the company is audited by a Big 4 firm and 0 otherwise. Equity offer = indicator variable equal to 1 if the company arranged an equity offer during the sample years (2004 or 2006). Year = indicator variable equal to 1 if the year is 2006 and 0 if it is 2004. *** and ** denote statistical significance at the 1% or 5% levels (two-tailed test), respectively.

Table 4 presents the results of our multivariate tests on the association between disclosure and the Baltic region after controlling for firm characteristics. The reported significance levels are one-sided and based on the study by White (1980). Table 4 reports heteroscedasticity-corrected *t* values. Furthermore, the variance inflation statistics and the condition indices suggest that multicollinearity is not a major concern in any of our regressions. The adjusted R² for the model (column: CIFAR-based disclosure variable) is reasonably high at 37.8%. First, we used a pooled sample of Baltic and Nordic firms and tested whether a significant difference exists between the CIFAR-based disclosures of the two regions. The indicator variable for the Baltic countries had a negative estimated coefficient with a

p-value of 0.000 (Hypothesis accepted). In terms of the control variables, we further note that ownership is significantly negatively related to disclosure, which is consistent with the prior research. The variable coefficients for size, leverage, profitability, auditor, equity offer and year are not significant.

When we repeated the test using the S&P-based index a much stronger regression fit was obtained by using this disclosure index compared with the CIFAR-based disclosure metric (adjusted R²s of 75.1% and 37.8%, respectively). This supports the conclusion that the model performs better with the S&P-based index, which is geared more towards tracking ownership- and governance-related disclosures. More importantly, the table shows that the Baltic dummy is negative and significant at the 1% level, suggesting that after controlling for firm-specific characteristics, the Baltic firms have lower quality disclosure practices than the Nordic firms in terms of ownership and governance (Hypothesis accepted) (see also Kooskora, 2008). The control variable coefficients for size, leverage, profitability, ownership, auditor, equity offer and year are not significant.

Table 4. Regression results – Determinants of disclosure levels**Regressions of the disclosure metric in the Baltic region and controls**

Variables	CIFAR-based Disclosure Variable		S&P-based Disclosure Variable	
	Coef.	Sig.	Coef.	Sig.
Baltic	-0.077	0.000	-0.320	0.000
Size	0.009	0.203	-0.000	0.972
Leverage	0.032	0.310	-0.026	0.447
Profitability	0.037	0.140	0.053	0.107
Ownership	-0.019	0.000	-0.011	0.250
Auditor	0.032	0.131	0.012	0.584
Equity offer	0.025	0.200	-0.012	0.579
Year	0.004	0.752	0.027	0.077
Intercept	0.648	0.000	0.675	0.000
Adj. R ²		0.378		0.751
N		164		164

The Baltic region and Ownership have negative predicted signs. All of the other variables have positive predicted signs. The P-values are for one-tailed tests (based on the standard errors used by White (1980)). Industry is controlled for via a matched sample design. The other control variables are defined as follows.

Baltic	Indicator variable equal to 1 if the company is located in a Baltic country (Estonia, Lithuania or Latvia) and 0 otherwise.
Size	Logarithm of the total sales in euros.
Leverage	Ratio of the total debt over the total assets.
Profitability	ROE-industry mean ROE.
Ownership	Aggregate percentage of the three largest shareholders at the fiscal year-end calculated by voting rights.
Auditor	Indicator variable equal to 1 if the company is audited by a Big 4 firm and 0 otherwise.
Equity offer	Indicator variable equal to 1 if the company arranged an equity offer during the sample years.
Year	Indicator variable equal to 1 if the year is 2006 and 0 if it is 2004.

Overall, we observe that the Baltic firms disclose less information than the Nordic firms. The CIFAR- and S&P-based disclosure metrics both emphasize the differences between the two regions. Despite their integration into the EU, the application of the European Accounting Directives, and their recent efforts to upgrade their accounting regulations, the Baltic states fall short of their Nordic counterparts in terms of their financial reporting information – when treated as a group. This result is in line with the prior research, such as Larson and Street (2004), and with the prevailing opinions in

current profession- and practice-oriented forums (<http://www.conferences.lv/eng/2ndIFRSForum/ifrs>). It takes time for firms to fully adjust their reporting following IFRS convergence, and this is especially clear in the Baltic countries. The evidence also shows that there is little integration between the Baltic stock markets and the international stock markets (Maneschiöld, 2006). Furthermore, it is possible that managers use other communication methods to complement the lack of high level disclosure in their firms' annual reports, especially during the transition phase (Davis & Tama-Sweet, 2012). In summary, there are several probable explanations for why the Baltic firms exhibit a lower level of disclosure than the Nordic firms.

In addition to the region indicator variable, we analyze the level of disclosure in each Baltic country by replacing the Baltic variable with three country-specific indicator variables (one for each Baltic country, i.e., Estonia, Latvia, and Lithuania). Country-specific variables are intended to capture potential differences between each of the Baltic countries in the sample.

Table 5. Regression results – Determinants of disclosure levels

Regressions of the disclosure metric in Estonia, Lithuania, Latvia and controls

Variables	CIFAR-based Disclosure Variable		S&P-based Disclosure Variable	
	Coef.	Sig.	Coef.	Sig.
Estonia	-0.029	0.287	-0.277	0.000
Lithuania	-0.139	0.000	-0.422	0.000
Latvia	-0.064	0.000	-0.293	0.000
Size	0.011	0.008	0.004	0.459
Leverage	0.018	0.571	-0.002	0.964
Profitability	0.032	0.199	0.044	0.122
Ownership	-0.020	0.025	-0.013	0.199
Auditor	0.028	0.077	0.008	0.657
Equity offer	0.022	0.232	-0.014	0.510
Year	0.004	0.743	0.026	0.058
Intercept	0.612	0.000	0.618	0.000
Adj. R ²		0.402		0.788
N		164		164

Estonia, Lithuania, Latvia and Ownership have negative predicted signs. All of the other variables have positive predicted signs. The P-values are for one-tailed tests (based on the standard errors used

by White (1980)). Industry is controlled for via a matched sample design. The other control variables are defined as follows.

Estonia	Indicator variable equal to 1 if the company is located in Estonia and 0 otherwise.
Lithuania	Indicator variable equal to 1 if the company is located in Lithuania and 0 otherwise.
Latvia	Indicator variable equal to 1 if the company is located in Latvia and 0 otherwise.
Size	Logarithm of the total sales in euros.
Leverage	Ratio of the total debt over the total assets.
Profitability	ROE-industry mean ROE.
Ownership	Aggregate percentage of the three largest shareholders at the fiscal year-end calculated by voting rights.
Auditor	Indicator variable equal to 1 if the company is audited by a Big 4 firm and 0 otherwise.
Equity offer	Indicator variable equal to 1 if the company arranged an equity offer during the sample years.
Year	Indicator variable equal to 1 if the year is 2006 and 0 if it is 2004.

The country-specific variables equal 1 when a company is located in a particular country and 0 otherwise. This analysis adds further insights to the overall results. Using the CIFAR-based disclosure variable, we find that the disclosure level is lower for firms located in Lithuania (coefficient -0.139, significance 0.000) and Latvia (coefficient -0.064, significance 0.000) but not for firms located in Estonia (coefficient -0.029, significance 0.287). In other words, the results show that the Estonian firms and their Nordic counterparts have roughly similar disclosure practices when their financial reports emphasize regulated disclosure (i.e., the CIFAR-based disclosure variable). This could be explained by Estonia's overall strategy to align its GAAP with the IAS/IFRS. Since 2003, Estonian legislation has required every listed non-financial firm to apply the IFRS. Larson and Street (2004) further characterize the IFRS convergence in Estonia as having made considerable progress. Size is now positively related to the CIFAR-based disclosure index. The significance levels for the other variables, and the model as a whole, are in line with the Baltic variable regression model in Table 4.

Using the S&P disclosure variable, the disclosure level is lower for firms located in Estonia (coefficient -0.277, significance 0.000), Lithuania (coefficient -0.422, significance 0.000) and Latvia (coefficient -0.293, significance 0.000). The received values for all three country-specific indicators are highly significantly negative (Hypothesis accepted). The significance levels for the other variables, and the model as a whole, are in line with the Baltic variable regression model. S&P's index focuses

on ownership, finance and governance issues. It could be that during the emerging market phase there is lower demand for this type of information and therefore all three Baltic country dummies receive a negative value from the S&P index model. Low negative significant country variable values for Lithuania are also in line with some recent research based on interviews of Lithuanian accounting experts (Legenzova, 2016).

We executed an Omitted Random Effects test in order to analyze whether there were some overlooked time-series or cross-sectional effects (testing model misspecification). The null hypothesis is that an effect is present. For example, the Breusch-Pagan test result for both dependent variables was the acceptance of the null hypothesis (no effects are missing).

In addition to the variations in model specification and their tests reported above, we systematically performed some additional analyses with the model. Specifically, we ran the model separately for both years with the Baltic variable, and alternatively with country-specific variables. Furthermore, we ran index change regressions, where CIFAR- (S&P-) based disclosure index change was the dependent variable. Also these runs were performed separately with the Baltic variable and alternatively with country-specific variables. None of these modifications altered the primary conclusions reported and discussed in this paper. In fact, models with the index change variable as the dependent variable strengthen the idea that Estonia was well prepared for the transition to IFRS. With the CIFAR-based disclosure change variable, Estonia was not significant, and with the S&P-based disclosure change variable, Estonia was positive and significant in these models. Lithuania and Latvia have non-significant or significant negative coefficients with these disclosure change variables.

It could be stated that Estonia's early pro-active overall strategy since 1993 to align the Estonian GAAP with the IAS/IFRS prepared and supported also the adoption of the IFRS around 2005. On the other hand, in Latvia and Lithuania, there were more rigid systems and less long-term advance allocation of resources for the preparation of the mandatory adoption of the IFRS (<http://www.conferences.lv/eng/2ndIFRSForum/ifrs>).

We believe that the differences between the shareholder and stakeholder models described by Ball *et al.* (2000) and Ball *et al.* (2003) may help to explain some of the differences in the institutional contexts of the Nordic and Baltic regions. This conclusion is also in line with the prior academic

research. For example, Kooskora (2008) reports that business organizations in Estonia still do not consider stakeholder interests and corporate relations with the business environment to be important issues. Furthermore, there is strong market demand in shareholder-oriented systems for the improved disclosure of not only basic financial information, but also ownership structure and corporate governance. In line with this argument, there are fewer professional information users and much less of an overall tradition of financial information usage in the Baltic region compared with the Nordic region. For example, there are clearly fewer financial analysts in the Baltic states than in the Nordic states. In addition, although a few national analyst associations have been founded in the Baltic region in recent decades, such associations have a long history and tradition in the Nordic region.

6. Conclusions

This study systematically examines the levels of disclosure in the annual reports of firms from the Baltic states of Estonia, Latvia and Lithuania, and compares the results with a matched sample of Nordic firms. The Baltic and Nordic regions have had the same accounting regulations and stock market structure since 2005, and the countries also have similar corporate governance regulations and recommendations for their listed firms. These similarities enable us to analyze whether other institutional and economic related factors in the sample countries influence firms' disclosure practices. We find that the level of disclosure is lower for Baltic firms than for Nordic firms, both before and after the introduction of the EU mandated IFRS in 2005. However, country-specific analyses revealed that the regulated financial reporting disclosure (captured by the CIFAR-based disclosure variable) of Estonian firms matches that of their Nordic counterparts. This outcome is in line with Estonia's early proactivity and long-range strategy to align its GAAP with the IAS/IFRS. The results we obtained support the conclusion that disclosure practices are affected by multiple factors beyond the IFRS and the regions' market trading and quotation mechanisms. Furthermore, systematic and strong-enough regulatory actions do influence a firm's and a country's disclosures.

In this paper, we have analyzed quantitatively how mandatory adoption of the IFRS is associated with firm-level disclosure in the Baltic and Nordic regions. Our research is in line with the

calls for quantitative accounting quality studies regarding the Baltic countries. This study uses a relatively short time period (years 2004 and 2006) in order to test how mandatory adoption of IFRS affects disclosure quality and quantity in the vicinity of that event. Further understanding regarding adoption's consequences could be gained by including more years in the analyses. This is one potential area for further research. According to a NASDAQ Baltic press release, the overall quality of annual and corporate governance reports published by NASDAQ Baltic listed companies has increased by 57% during the 10 year period 2006-2015

(www.nasdaqbaltic.com/en/news/press-releases/?id=3799675). More insight into the determinants of a strong increase in accounting quality would be useful for academics and legislators as well. For example, Legenzova (2016) calls for studies that would analyze the quality of the whole accounting process. Another area for future research is to focus on specific disclosures defined in IFRS and how mandating affects those defined disclosures. Finally, further insight could be gained by analyzing more precisely the role of enforcement in disclosure quality.

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Appendix A: Measurement of firms' disclosure levels

We attribute the values 1, 0 or 'exclude' to each disclosure item in the indices. The general principles of the evaluation are as follows.

- 1 = the information is provided, or the firm discloses that it is inappropriate (impossible or irrelevant) to provide that piece of information.
- 0 = the information is not provided (although it would be possible), or the firm does not disclose that the item is inappropriate in a report.
- Exclude = no information, or the disclosure is irrelevant and there is no need to disclose that it is inappropriate.

The following illustrations of the procedures offer insights into the scoring system. For example, there is a 'diluted EPS' item in the CIFAR-based index. We assume that there is no dilution effect and require firms to disclose this fact. If a firm does disclose that there is no dilution effect, it scores 1 point. Although we never exclude 'diluted EPS', there are items inappropriate for a particular firm that we do not require the firm to disclose information about (coded 'exclude').

Because they are either out of date or irrelevant to our study sample, the following items are removed from the CIFAR-based index.¹

- Funds flow statement
- Funds from operations
- Funds definition
- Quarterly/interim dividends
- Separation of non-equity reserves and retained earnings
- Total assets that can be derived

Two items are removed from the S&P-based index for the same reason.

¹ See Hope (2003) for an in-depth discussion of the CIFAR measure and extensive validity tests.

Appendix A (continued): Items included in the CIFAR-based index

A: General information

Address/Telephone/Fax/Telex
Product Segment
Geographic Segment
Management Information
Subsidiaries Information
Future Plans/Chairman or CEO's Statement
Number of Employees
Fiscal Year-end

B: Income Statement

Consolidated Income Statement
Cost of Goods Sold
Complete Income Statement
Sales
Selling, General and Administrative Expenses
Operating Income
Foreign Exchange Gains/Losses
Extraordinary Gains/Losses
Income Tax Expense
Minority Interest
Net Income Reported

C: Balance Sheet

Complete Balance Sheet
Current Assets Separated from Fixed Assets
Current Liability Separated from LT Liability
Owners' Equity Separated from Liability
Cash and Cash Equivalents
Accounts Receivable
Inventories
Current Assets
Fixed Assets on Asset Side
Goodwill and Other Intangibles
Shareholders' Equity Changes
Appropriation of Retained Earnings

D: Funds flow/Cash flow

Cash Flow Statement
Complete Cash/Fund Flow Statement

E: Accounting Policies

Accounting Standards
Financial Statements Cost Basis
50% Long-term Investments
Starting Point for Funds Statement
Research and Development Costs
Pension Costs
Reasons for Extraordinary Items
Inventory Costing Method
20% Long-term Investments

21-50% Long-term Investments
Acquisition Method
Accounting for Goodwill
Deferred Taxes
Outside Manager of Pension Funds
Long-term Financial Leases
Foreign Currency Translation Method
Foreign Currency Translation Gains/Losses
Discretionary Reserves
Minority Interest
Contingent Liabilities

F: Stockholders' Information

Dividends per Share
Earnings per Share
Number of Shares Outstanding
Multiple Shares
Par Value
Total Dividends
Stock Split/Dividend/Rights Issues
Share Price
Stock Exchange Listing
Volume Traded
Diluted Earnings Per Share
Changes in Capital
Different Div. for Multiple Share Classes
EPS for Multiple Shares Classes
Significant Shareholders
Composition of Shareholdings

G: Supplementary Information

Earnings per Share Numerator
Earnings per Share Denominator
Notes to Accounts
Disclosure of Subsequent Events
Remuneration of Directors and Officers
Research and Development Costs
Capital Expenditure
List of Board Members and their Affiliations
Exports: Financial Summary

Removed from our Scoring

Funds Flow Statement
Funds from Operations
Funds Definition²
Quarterly/Interim Dividends³
Separation of Non-equity Reserves and Retained Earnings
Total Assets that can be Derived⁴

² This has been replaced by a cash flow statement.

³ Nordic and Baltic firms pay dividends once per year.

⁴ The final two items are outdated.

Appendix A (continued): Items included in Standard & Poor's disclosure index

Ownership Structure and Investor Relations (S&P Ownership)

Are the following items disclosed in the company's annual accounts?

1. Number of issued and outstanding ordinary shares
2. Number of issued and outstanding other shares (preferred, non-voting)
3. Par value of each ordinary share
4. Par value of each other shares (preferred, non-voting)
5. Number of authorised but unissued and outstanding ordinary shares
6. Number of authorised but unissued and outstanding other shares
7. Par value of authorised but unissued and outstanding ordinary shares
8. Par value of authorised but unissued and outstanding other shares
9. Top shareholder
10. Top 3 shareholders
11. Top 5 shareholders
12. Top 10 shareholders
13. Description of share classes
14. Review of shareholders by type
15. Number and identity of shareholders holding more than 3%
16. Number and identity of shareholders holding more than 5%
17. Number and identity of shareholders holding more than 10%
18. Percentage of cross-ownership
19. Existence of a corporate governance charter or code of best practice
20. Corporate governance charter/code of best practice itself
21. Details of its articles of association (e.g., changes)
22. Voting rights for each voting or non-voting share
23. How shareholders nominate members of the board of directors
24. How shareholders convene an EGM
25. Procedure for presenting inquiries to the board
26. Procedure for making proposals at shareholder meetings
27. Review of last shareholders meeting (e.g., minutes)
28. Important dates in the shareholders' calendar

Financial Information Disclosure (S&P Finance)

Does the company disclose the following in its annual accounts?

1. Accounting policy
2. Accounting standards
3. Accounts according to local accounting standards
4. Accounts according to an internationally recognised accounting standard (IAS/US GAAP)

5. Balance sheet according to an international accounting standard (IAS/US GAAP)
6. Income statement according to an international accounting standard (IAS/US GAAP)
7. Basic earnings forecast of any kind
8. Detailed earnings forecast
9. Financial information on a quarterly basis
10. Segment analysis (broken down by business line)
11. Names of its auditors
12. Copy of the auditors' report
13. How much it pays in audit fees to the auditor
14. Any non-audit fees paid to auditor
15. Consolidated financial statements (or only the parent/holding company)
16. Methods of asset valuation
17. Information about the fixed assets depreciation method
18. List of affiliates in which it holds a minority stake
19. Reconciliation of its domestic accounting standards to IAS/US GAAP
20. Ownership structures of its affiliates
21. Details of its field of business
22. Details of the products manufactured or services provided
23. Output in physical terms (number of users, etc.)
24. Characteristics of assets used
25. Efficiency indicators (ROA, ROE, etc.)
26. A discussion of corporate strategy
27. Investment plans for the coming year(s)
28. Detailed information on investment plans in the coming year(s)
29. Output forecast of any kind
30. Overview of trends in its industry
31. Market share for any or all of its businesses
32. List/register of related party transactions
33. List/register of group transactions

Board and Management Structure and Process (S&P Governance)

Does the company disclose the following in its annual accounts?

1. List of board members (names)
2. Information about directors (other than name/title)
3. Details of directors' current employment/position
4. Details of previous employment/positions
5. When each of the directors joined the board
6. Classification of whether directors are executives of the company or are from outside the company
7. Name of the chairman
8. Information about the chairman (other than name/title)
9. Information about the role of the board of directors
10. List of matters reserved for the board
11. List of board committees
12. Existence of an audit committee

- 13 Names of audit committee members
- 14 Existence of a remuneration/compensation committee
- 15 Names of remuneration/compensation committee members
- 16 Existence of a nomination committee
- 17 Names of nomination committee members
- 18 Existence of other internal audit functions besides the audit committee
- 19 Existence of a strategy/investment/finance committee
- 20 Number of shares in the company held by directors
- 21 Review of the last board meeting (e.g., minutes)
- 22 Whether director training is provided
- 23 Decision-making process for directors' remuneration
- 24 Specifics on directors' remuneration (e.g., salary levels, etc.)
- 25 Composition of directors' remuneration (e.g., cash, shares, etc.)
- 26 Specifics on performance-related pay for directors
- 27 Decisions made on managers' (not on board) salaries
- 28 Specifics on managers' (not on board) salaries (e.g., salary levels, etc.)
- 29 Composition of managers' (not on board) salaries
- 30 Specifics on performance-related pay for managers
- 31 List of senior management (not on board)
- 32 Backgrounds of senior managers
- 33 Details of the CEO's contract
- 34 Number of shares held by senior management
- 35 Number of shares held in other affiliated companies by managers

¹ The United Nations Conference on Trade and Development (UNCTAD) helps developing countries to implement best accounting practices, corporate transparency and facilitates investment flows and economic development. At the policy roundtable on enhancing financial transparency at the Federal Deposit Insurance Corporation Symposium (Washington, DC, 4 June 2002, www.sec.gov/news/speech/spch565.htm), SEC Commissioner Cynthia A. Glassman stated that: 'Financial transparency means timely, meaningful and reliable disclosures about a company's financial performance. Companies need to provide transparent financials to raise capital. Investors need transparent financials to make informed investment decisions. Therefore, financial transparency is important not only because it is the bedrock of our financial markets, but also because it is absolutely essential to today's investors'. An article in *Business Week* (22 October 2007) discusses how European political leaders demanded greater financial disclosure in the wake of the subprime lending crisis.

² This portion of the text was corroborated through correspondence with individuals involved in setting accounting standards in the Baltic countries (details available upon request).

³ According to the law, the prior Estonian GAAP were based on standards, interpretations and guidelines promulgated by the IASC in London. The 2002 legislation introduced nothing new in particular, apart from IFRS for streamlining electronically stored data and other mainly technical details.

⁴ The history of the formation of the NASDAQ OMX stock exchanges is as follows: the Iceland Stock Exchange was acquired by NASDAQ OMX in 2006, the Copenhagen Stock Exchange in 2005, and the Stockholm Stock Exchange in 1998; the Helsinki Stock Exchange merged with NASDAQ OMX in 2003; the Tallinn Stock Exchange was acquired by NASDAQ OMX in 2003, the Riga Stock Exchange in 2003, and the Vilnius Stock Exchange in 2004. The new Nordic-Baltic trading platform was adopted in September 2004 by the Iceland, Copenhagen, Helsinki, Tallinn, and Riga exchanges. The Vilnius exchange adopted the trading system in May 2005.

⁵ The total number of listed non-financial firms at the end of 2004 comprised 12 from Estonia, 12 from Latvia, and 39 from Lithuania. Note that we include 5 firms from Estonia, 8 from Latvia and 30 from Lithuania in the tests.

⁶ The three Nordic countries score very similarly in terms of their international corruption rankings. Furthermore, webrankings.com places the Nordic countries very close to each other in terms of their financial information and investor relation rankings.