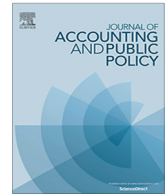




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## Risk disclosure noncompliance

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## ABSTRACT

We examine companies' compliance with IFRS risk disclosure rules for the first fiscal year following 2007. For a sample of 383 firms from 20 European countries, we find that average risk disclosure compliance is only 62 percent. Countries' enforcement strength is generally positively associated with risk disclosure compliance and even more effective in the presence of outsider monitoring. We highlight that cross-country differences in enforcement must be properly accounted for to ensure consistent risk disclosure compliance.

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## 1. Introduction

Reporting practices differ widely across industries and countries. To facilitate the interpretation of accounting information, the comparability of financial statements is of paramount importance. The dominant approach to achieving this objective is to harmonize reporting standards. To date, many countries obligate companies to report in accordance with the International Financial Reporting Standards (IFRS). However, it cannot be taken for granted that harmonizing accounting standards is sufficient to make reporting comparable. Corporate reporting is affected not only by company-specific factors but also by country-specific factors such as a country's strength of enforcement of accounting regulations and by the need for information from the company's stakeholders.

Our study addresses two questions: Do companies comply with harmonized accounting standards such that their risk-reporting behavior is consistent and comparable? Moreover, if companies do not comply, what is the likely cause of this non-compliance? We answer these questions by focusing on companies' risk disclosure based on an item-by-item disclosure analysis. Risk disclosure has specific rationales that have been underinvestigated in nonrisk-related research. For example, risk disclosure (i) conveys information that is hard to verify and highly subjective compared to other areas of disclosure, (ii) is a particularly sensitive area for reporting due to information spillovers to competitors and stakeholders (Adam et al., 2007), and (iii) is the outcome of disclosure choices that differ from other forward-looking disclosures, such as earnings guidance. While both guidance and risk disclosures refer to presently unobservable future amounts, guidance is often presented as a quantitative *point estimate* of future earnings (Anilowski et al., 2007). In contrast, risk disclosures focus implicitly or explicitly on the *probability distribution*, rather than on just the mean, of the outcome of interest.

Analyzing the 2007 annual reports of 383 European listed companies from 20 countries yields two main findings: First, companies hardly ever fully comply with disclosure requirements as set forth in the IFRS. On average, companies only report

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62 percent of the items that they are obliged to report. Because all companies follow the same reporting standards, our finding is puzzling. Second, we document that enforcement strength is associated with disclosure compliance in an economically and statistically significant way and that enforcement strength interacts with company-level characteristics, suggesting that enforcement strength varies even for companies within the same country.

We contribute to the literature in three ways. First, we add to the literature on risk disclosure compliance by analyzing a large and unique dataset. Our dataset ensures that all companies apply the same accounting standards, as they are all headquartered in the European Economic Area. Our dataset also allows us to analyze the first-time effect of IFRS 7 on risk disclosure behavior. IFRS 7, in combination with IAS 32 and IAS 39, is perceived to be among the most difficult reporting standards in regard to interpretation and consistent application, resulting in considerable discretion in the standards' implementation. Given this discretion, enforcement strength is expected to play an even more pronounced role in companies' disclosure choices.

Second, we focus on a disclosure score as a direct measure of disclosure intensity rather than investigating the cause of heterogeneity in disclosure quality using indirect measures (e.g., conservatism, earnings response coefficients). The disclosure intensity approach involves a quantitative measure of disclosure and constitutes the foundation of disclosure index studies such as [Botosan \(1997\)](#) and [Bushman et al. \(2004\)](#). This approach allows for comparing disclosure compliance across companies and suggests that disclosure quantity is an intuitive aspect of disclosure compliance and transparent reporting ([Columbano and Trombetta, 2019](#)). We are thus able to emphasize the questions of what and whether companies report rather than how they report and how the market perceives the reporting.

Third, we tackle the question of whether harmonizing reporting standards is enough to ensure comparable reporting. We emphasize the importance of enforcement strength when analyzing companies' disclosure practices. We also contribute to a better understanding of how enforcement affects reporting outcomes by documenting a complementary effect of outsiders' need for risk information and country-level enforcement. Our study complements findings from [Cascino and Gassen \(2015\)](#), who document disclosure noncompliance for nonrisk-related disclosure by German and Italian firms. Contrary to our study, these authors do not investigate the role of institutions as determinants of compliance but rather as a moderator of the effect of compliance on post-IFRS comparability.

## 2. Risk disclosure and hypothesis

We focus on disclosure and are, to the best of our knowledge, the first to study the risk disclosure compliance of nonfinancial companies across a large set of countries.

In principle, risk disclosure might have several dimensions. It might reduce asymmetric information on the exposure to systematic risk factors or on idiosyncratic risks, but it might also disclose information on how a company deals with various types of risks by offering details on risk management systems and policies in general or positions in financial derivatives aimed at managing tradable risks. By its very nature, risk disclosure is largely forward looking, contrasting with most other accounting disclosures, which focus on past performance or events. Investors and other users of financial statements do not even have to be risk averse or ambiguity averse with respect to a company's cash flows or market values to benefit from risk disclosure; this fact provides strong theoretical backing for practitioners' demand for risk disclosure.<sup>1</sup>

Regulators have reacted to these information needs by requiring or recommending that firms disclose risk information, for example, by imposing the IFRS 7 regulation. However, risk and financial instrument disclosure standards are complex and complicated to implement ([Lins et al., 2011](#)). The complexity of the disclosure requirements is also acknowledged by standard-setters and regulators. As early as 1997, the SEC concluded that risk and financial instrument disclosure rules are often incomplete and, in some circumstances, misleading. As recently as 2014, the IASB stated in its introduction to IFRS 9 that the requirements for risk and financial instrument disclosure are difficult to understand, apply and interpret. One reason for this difficulty is that risk disclosures are highly subjective and hard to verify externally, resulting in considerable discretion on the part of the manager.<sup>2</sup> Hence, what is intended by regulators to be mandatory risk disclosure can be expected to effectively contain significant elements of voluntary disclosure.

Before developing our hypothesis, we briefly review the theoretical and empirical literature on risk disclosure. Since [Verrecchia \(1983\)](#) and [Dye \(1985\)](#), an extensive literature on corporate disclosure theory has evolved. More recent contributions include [Einhorn and Ziv \(2008\)](#), [Jorgensen and Kirschenheiter \(2012, 2015\)](#), [Cheynel \(2013\)](#), [Dye \(2017\)](#) and [Dye and Hughes \(2018\)](#), among others.<sup>3</sup> In the signaling games analyzed in these papers, a manager discloses information about the mean of firm value or cash flow. In contrast, the literature on risk disclosure analyzes the impact of revealing information on the variance or related measures of dispersion. This strand of the literature is significantly smaller: In [Jorgensen and Kirschenheiter \(2003, 2007\)](#), a manager may disclose perfect information on the variance, whereas [Heinle and Smith \(2017\)](#) focus on an imperfect signal about cash flow variance. [Heinle et al. \(2018\)](#) analyze the disclosure of systematic risk factors to investors, while [Smith \(2019\)](#) focuses on the disclosure of idiosyncratic risk in a [Kyle \(1985\)](#) type model. [Lin \(2019\)](#) considers qualitative risk disclosure to ambiguity-averse investors.

<sup>1</sup> To be more specific, qualitative and quantitative risk disclosure is vital in enabling financial statement users to assess, for example, liquidity, market and credit risks.

<sup>2</sup> For example, [Linsley and Shrivs \(2000\)](#) emphasize that disclosure regulation may not overrule managers' incentives to hide sensitive risk information that may reveal potential vulnerabilities for a company's going concern.

<sup>3</sup> [Verrecchia \(2001\)](#) and [Dye \(2001\)](#) provide excellent surveys of the disclosure theory literature.

Per se, disclosing information to corporate outsiders reduces information asymmetry and might thus reduce agency costs. While earlier theoretical contributions indicate that this is likely to reduce the cost of capital<sup>4</sup>, [Heinle et al. \(2018\)](#) call this into question. In addition, disclosure, including risk disclosure, might trigger various types of direct or indirect costs, such as the costs of revealing proprietary information to competitors. Moreover, managers might incur proprietary costs themselves as a result of corporate information being disclosed to their monitors. Consequently, disclosure incentives on the part of managers are far from clear. As [Abraham and Shrivs \(2014\)](#) point out, there is no comprehensive theory that clearly identifies the determinants of discretionary disclosure; we share their view with respect to the theory on risk disclosure.

Identifying 32 papers published over the last 20 years, [Elshandidy et al. \(2018\)](#) provide an excellent overview of the empirical literature on corporate risk disclosure.<sup>5</sup> They demonstrate significant divergence with regard to mandatory versus voluntary disclosure, manual versus automated content analysis, within-country versus cross-country analysis, and risk disclosure of financial versus nonfinancial firms. [Elshandidy et al. \(2018\)](#) identify only one other paper that, like our paper, analyzes mandatory risk disclosure of nonfinancial companies<sup>6</sup> in a cross-country setting. However, that paper, by [Elshandidy et al. \(2015\)](#), uses automated textual analysis, applied to data from three countries with dissimilar accounting standards, and finds that country characteristics such as the legal system and cultural values have high explanatory power over mandatory risk reporting variations over time, even under international convergence of accounting standards. In our paper, however, we manually collect data from annual reports from 20 countries with identical standards and explain the variation in risk disclosure compliance between firms across countries.

This paper focuses on an accounting standard that should lead to harmonization within Europe. Studies that analyze the effects of harmonizing accounting standards are discordant. Some studies show that harmonized standards result in fewer adverse selection problems, lower financing costs and reduced information asymmetries (e.g., [Barth et al., 2008](#); [Daske et al., 2008](#)). Other studies conclude that heterogeneous institutions can result in lower-quality reporting even in the presence of harmonized standards (e.g., [Holthausen, 2003](#); [La Porta et al., 2008](#)). Combining the two streams of literature, it is essentially an empirical question whether the adoption of the IFRS has led to consistent risk disclosure across countries.

This paper focuses on differences in enforcement strength across countries. Prior studies find that enforcement strength is positively related to the correct application and implementation of reporting standards ([Ball, 2006](#)) and expect a more pronounced role for enforcement if more and more companies apply the same reporting standards ([Leuz, 2010](#)). Consequently, differences in enforcement strength will amplify and result in more diverse outcomes. For example, [Armstrong et al. \(2010\)](#) document a negative market reaction to the adoption of the IFRS in countries with weak enforcement mechanisms; [Li \(2010\)](#) shows that IFRS adoption reduces financing costs only in countries with strong enforcement.

Despite ample evidence of the influence of enforcement on capital market outcomes, evidence of the effect of enforcement on risk disclosure compliance is still lacking. We expect enforcement strength to be positively related to disclosure compliance after controlling for differences in countries' institutional settings. We would expect no association if companies were to implement existing rules correctly and comply with all requirements.

We also expect that disclosure compliance varies across companies even within the same country because country-level enforcement is likely to interact with company-specific factors. We hypothesize that the need for accounting information by outsiders interacts with enforcement strength. More specifically, we presume that the association between enforcement and disclosure compliance is stronger when there is more scrutiny and a larger need for risk information from outsiders. There are two reasons for this: First, outsiders monitor the company, as they need risk information for contracting purposes. Their presence might have a positive first-order effect on risk disclosure compliance. Second, heightened scrutiny has a stronger effect in countries with strong enforcement mechanisms in place: Noncompliance is more likely to be detected under heightened scrutiny and should more likely result in legal action in countries with strong enforcement mechanisms. We therefore expect a second-order effect of outsider scrutiny on disclosure compliance. To explore this issue, we build on [Jensen and Meckling \(1976\)](#) and assume that risk information is crucial for monitoring. Consequently, risk disclosure is more important for companies that are monitored more closely by (a) lenders, (b) international investors, and (c) financial analysts.

In sum, we hypothesize the following:

**Hypothesis.** The association between enforcement strength and risk disclosure compliance is positive and stronger if company outsiders rely more heavily on risk information.

### 3. Sample and variables

Our sample is a random draw of 300 nonfinancial companies listed in the Dow Jones STOXX Europe 600 (as of May 31, 2009), comprising the 600 largest companies from 17 European countries. We require at least 10 companies per country and manually add companies (if they appear in the national stock index and if they have an annual report in English available) for countries otherwise represented by fewer than 10 companies. We also add at least 10 companies from the three largest European countries (by population) that are not represented in the STOXX index: Czech Republic, Hungary and Poland. Our final sample contains 383 companies from 20 countries. Details are provided in [Table 1](#).

<sup>4</sup> See [Bertomeu and Cheynel \(2016\)](#) for an overview.

<sup>5</sup> See also [Dobler \(2008\)](#).

<sup>6</sup> [Bischof et al. \(2019\)](#) analyze risk disclosure by banks.

**Table 1**  
Sample.

<b>Panel A: Firms by country</b>				
	<b>EURO STOXX 600</b>	<b>Filled-up</b>	<b>Final sample</b>	<b>Percent</b>
Austria	7	4	11	2.9%
Belgium	10	0	10	2.6%
Czech Republic	0	10	10	2.6%
Denmark	12	0	12	3.1%
Finland	13	0	13	3.4%
France	42	0	42	11.0%
Germany	55	0	55	14.4%
Greece	6	5	11	2.9%
Hungary	0	11	11	2.9%
Ireland	7	3	10	2.6%
Italy	13	0	13	3.4%
Luxemburg	4	6	10	2.6%
Netherlands	19	0	19	5.0%
Norway	8	3	11	2.9%
Poland	0	14	14	3.7%
Portugal	7	3	10	2.6%
Spain	21	0	21	5.5%
Sweden	15	0	15	3.9%
Switzerland	16	0	16	4.2%
United Kingdom	69	0	69	18.0%
<b>Total</b>	<b>324</b>	<b>59</b>	<b>383</b>	<b>100.0%</b>
<b>Panel B: Firms by industry</b>				
<b>1-digit SIC</b>	<b>Industry</b>	<b>N</b>	<b>Percent</b>	
1	mining and construction	43	11.2%	
2, 3	manufacturing	190	49.6%	
4	transportation	77	20.0%	
5	trade	35	9.1%	
7	services	27	7.0%	
8	public administration	11	2.9%	
<b>Total</b>		<b>383</b>	<b>100.0%</b>	

Table 1 shows our sample composition by country (Panel A) and by industry (Panel B). We first randomly chose 300 non-financial companies from the Dow Jones Euro STOXX 600. We then manually added more companies to the sample so that we have at least 10 companies per country. The added companies are taken from, if available, the Euro STOXX 600 or, if not available, from the leading stock market in each country. We also added companies from the leading national stock market of the Czech Republic, Hungary, and Poland.

More than 40 percent of companies are headquartered in France, Germany, or the UK. As IFRS 7 became effective in 2007, the analyses are based on data from the first fiscal year starting after that date.<sup>7</sup> We collect risk data from annual reports. Other data sources are *Compustat*, *Datastream*, *I/B/E/S*, *Reuters*, and [Ding et al. \(2005\)](#) and [Kaufmann et al. \(2009\)](#).

We develop a compliance score that is based on mandatory disclosure requirements as outlined in IFRS 7 and IAS 39. The maximum number of items is 26 (see [Table 2](#)). If an item is disclosed, we assign the indicator variable a value of 1 and 0 otherwise. We sum up all indicators and divide the actual disclosure level by the possible disclosure level to obtain the compliance score. We do not penalize the nondisclosure of irrelevant disclosure items. For example, if a company is not exposed to commodity risks, we do not include any item that relates to commodity risks.

Panels A and B of [Table 3](#) present descriptive statistics for the compliance score and all other variables. The average compliance is surprisingly low at 62 percent, with a minimum of 10 percent and a maximum of 92 percent. The highest average compliance is observed among companies domiciled in Finland (72 percent) and Austria and Germany (68 percent each). It is lowest among companies from Hungary (46 percent), Greece (51 percent), and the Czech Republic (52 percent).

The low disclosure compliance may be due to the following reasons. First, our analyses not only focus on Western European countries with relatively homogenous capital markets and institutions but also include countries with different characteristics. These differences may partially account for our findings. Second, theory predicts that companies may withhold sensitive risk information. [Dobler et al. \(2011\)](#) suggest that noncompliance with risk disclosure rules is aimed at circumventing political scrutiny. Third, risk disclosure can be subjective and difficult to verify for outsiders; thus, executives might withhold information that is not easily verifiable.

Our main independent variable is *enforcement*. It is the first and only factor (with an eigenvalue larger than 1) that emerges from a factor analysis using four components: corruption, legislative effectiveness, rule-of-law, and regulatory quality, all taken from [Kaufmann et al. \(2009\)](#). Other country-level variables are *business liberty* (movement of capital); a country's *market capitalization*, scaled by GDP (economic strength); *absence* and *divergence* of accounting standards (differences

<sup>7</sup> A disadvantage is that we only have one year of data, such that all inferences are drawn from purely cross-sectional correlations, not lending themselves to causal interpretation.

**Table 2**  
Disclosure compliance check-list.

	# of companies that should disclose	# of companies that do disclose	Compliance (percent)
Commodity risk: exposure	137	8	5.84%
Commodity risk: sensitivity analysis description	137	81	59.12%
Commodity risk: sensitivity analysis first detail	137	76	55.47%
Commodity risk: sensitivity analysis second detail	137	46	33.58%
Concentration of risks	383	78	20.37%
Credit risk: exposure	383	132	34.46%
Derivatives: book value per hedge accounting type	300	236	78.67%
Derivatives: impact on profit and loss	346	308	89.02%
Fair value: financial assets	383	342	89.30%
Fair value: financial liabilities	383	231	60.31%
Fair value: note on computation	356	217	60.96%
Financial instruments: impact on equity	383	171	44.65%
Financial instruments: impact on P&L	383	184	48.04%
Financial instruments: book value per category	383	244	63.71%
Financial liabilities: maturity analysis	383	373	97.39%
Foreign exchange risk: exposure	367	133	36.24%
Foreign exchange risk: sensitivity analysis description	367	315	85.83%
Foreign exchange risk: sensitivity analysis first detail	367	306	83.38%
Foreign exchange risk: sensitivity analysis second detail	367	199	54.22%
Interest rate risk: exposure	361	80	22.16%
Interest rate risk: sensitivity analysis description	361	322	89.20%
Interest rate risk: sensitivity analysis first detail	361	314	86.98%
Interest rate risk: sensitivity analysis second detail	361	149	41.27%
Liquidity risk: exposure	383	237	61.88%
Operational risk management strategy	383	181	47.26%
Financial risk management strategy	383	357	93.21%
Average disclosure compliance score			61.96%

Table 2 outlines the disclosure check-list to build our disclosure compliance score.

between local GAAP and the IFRS); *economic volatility* (variability in economic strength); and indicators for *common* and *German law* (differences in legal origins).

To control for companies' business characteristics and executives' incentives, we employ the following firm-level variables: *analysts following*, *BIG4 auditor*, *cash flow variability*, *debt increase*, *equity increase*, *future abnormal returns*, *growth opportunities*, *industry membership*, *institutional ownership*, *internationality*, *leverage*, *profitability*, *size*, and *trading on own account*. All variables are defined in the Appendix.

#### 4. Empirical results

To test our hypothesis on the association between disclosure compliance, enforcement, and outsider scrutiny, we estimate the following OLS model:

$$\text{disclosure compliance}_i = \alpha + \beta_1 \text{ enforcement}_c + \beta_2 \text{ outsider's scrutiny}_i + \beta_3 \text{ enforcement}_c \times \text{outsider scrutiny}_i + \gamma_1 \text{ country-level controls}_c + \gamma_2 \text{ firm-level controls}_i + \varepsilon_i \quad (1)$$

whereby the subscript *i* denotes observations at the firm level and the subscript *c* denotes observations at the country level. All continuous variables are standardized to ease interpretation and comparison across regressions. Standard errors are bootstrapped with 500 replications, while each replication is a bootstrap sample of country clusters.<sup>8</sup> We inspect the variance inflation factors (VIFs) to assess multicollinearity; all are below 3.3.

We present our main results in Table 4. Column (1) presents the baseline model for the association between compliance and enforcement, while columns (2) to (5) present the results of analyzing the interaction between enforcement and outsider scrutiny and the associations of these two variables with compliance.

Enforcement is, as expected, positively related to disclosure compliance; its coefficient is significant at the 1-percent level, and an increase of one standard deviation in enforcement strength correlates to a 0.37-standard-deviation increase in disclosure compliance (a 6-percentage-point increase). The association is robust to including a large set of variables controlling for institutional and macro-level factors, as well as for companies' operations.

<sup>8</sup> In two untabulated tests, we (i) cluster standard errors at the country level and (ii) bootstrap standard errors while drawing replications from the entire sample of observations, instead of from country clusters. Our main findings remain qualitatively unchanged.

**Table 3**  
Descriptive statistics.

Panel A: Descriptive statistics						
	N	mean	sd	min	p50	max
Disclosure compliance	383	0.6196	0.1506	0.1000	0.6364	0.9259
Absence acc. standards	383	19.9060	14.2526	0.0000	21.0000	54.0000
Analyst following	383	15.3211	8.3462	0.0000	15.0000	40.0000
Attention	383	1.5196	0.9289	0.0000	2.0000	3.0000
BIG4	383	0.9138	0.2810	0.0000	1.0000	1.0000
Business liberty	383	0.7774	0.1092	0.5177	0.7630	0.9070
Cash flow variability	383	4.5940	2.8819	0.0000	4.9807	12.3558
Debt increase	383	0.5065	0.5006	0.0000	1.0000	1.0000
Divergence acc. standards	383	30.6580	6.2951	17.0000	34.0000	38.0000
Economic volatility	383	1.7249	1.0811	0.7234	1.2597	5.7390
Enforcement	383	0.1362	0.8436	-1.8144	0.4153	1.1763
Equity increase	383	0.5013	0.5007	0.0000	1.0000	1.0000
Future abnormal return	383	-0.0237	0.3346	-0.4970	-0.0837	1.8067
Growth opportunities	383	0.0397	0.0553	-0.0186	0.0289	0.4763
Institutional ownership	383	0.3233	0.2698	0.0000	0.2837	0.9706
Internationality	383	0.3285	0.2972	0.0000	0.3102	0.9377
Leverage	383	0.2530	0.1645	0.0004	0.2321	0.8204
Market capitalization (country)	383	1.6989	1.2602	0.0045	1.3180	4.0955
Profitability	383	0.0920	0.0810	-0.2320	0.0785	0.3465
Size	383	8.7665	1.6624	4.4226	8.7411	12.3719
Trading on own account	383	0.0627	0.2427	0.0000	0.0000	1.0000

Panel B: Descriptive statistics by country							
Country	Absence acc. std.	Business liberty	Disclosure compliance	Divergence acc. std.	Economic volatility	Enforcement	Market capitalization
Austria	34	0.7390	0.6839	36	2.6168	0.6348	0.3276
Belgium	22	0.8753	0.6292	32	1.3036	0.1392	0.5578
Czech Republic	44	0.7037	0.5195	20	3.5782	-1.1469	0.2407
Denmark	31	0.8827	0.5621	21	0.7881	1.1763	0.7794
Finland	22	0.8177	0.7165	31	2.8698	0.9176	2.2112
France	21	0.6573	0.6441	34	0.7234	-0.3200	1.3180
Germany	18	0.7630	0.6805	38	2.0100	0.4153	1.0119
Greece	40	0.5323	0.5086	28	2.8561	-1.4869	0.489
Hungary	40	0.6673	0.4619	26	0.9668	-1.1031	0.3423
Ireland	0	0.9070	0.6710	34	2.4548	0.6066	0.5261
Italy	27	0.6900	0.5836	37	1.0604	-1.6072	1.0932
Luxemburg	54	0.8230	0.6103	17	2.3832	0.8739	0.0045
Netherlands	10	0.8613	0.6394	25	2.4998	0.7865	2.3171
Norway	7	0.6370	0.6404	17	1.1484	0.7481	1.2177
Poland	23	0.5177	0.5840	30	5.7390	-1.8144	0.1988
Portugal	29	0.6620	0.5658	22	1.1814	-0.7821	0.6474
Spain	28	0.7600	0.5463	29	0.9045	-0.5835	2.0558
Sweden	10	0.8140	0.5427	26	1.2597	0.9009	2.0947
Switzerland	42	0.7470	0.6271	22	1.7454	0.9499	4.0955
United Kingdom	0	0.9040	0.6377	35	1.0584	0.6952	3.6886

Table 3, Panel A shows descriptive statistics for our dependent and independent variables. Variables are defined in the Appendix.

Table 3, Panel B shows descriptive statistics for the dependent and independent variables by country. Variables are defined in the Appendix.

We also find that future debt issuances, divergence of accounting standards, economic volatility, leverage, size, and trading on own account are positively associated with compliance, whereas future equity issuances and abnormal returns are negatively associated with compliance. Thus, firms comply more if they are more closely monitored due to their mere size and/or due to their reliance on debt financing. Companies are also more compliant if differences between local GAAP and the IFRS are larger, suggesting that divergence in standards makes companies more sensitive to applying new rules correctly. Furthermore, the association of a more volatile economic environment with higher compliance suggests that risk disclosure is needed more under such circumstances. Firms issuing equity within the next two years are associated with less risk disclosure compliance, possibly because they are trying to obtain more favorable financing conditions by hiding risk exposure.

Next, we test whether outsider scrutiny moderates the relation between disclosure compliance and enforcement strength. We proxy for outsider scrutiny via three indicator variables, all taking the value of 1 if the respective continuous variable is larger than the sample median and 0 otherwise. The three variables are the number of analysts following a company, the ratio of foreign assets to total assets, and the leverage ratio. Each indicator variable interacts with enforcement strength. We also create the variable *attention* as the sum of all indicator variables.

**Table 4**  
Disclosure compliance and enforcement.

	(1)	(2)	(3)	(4)	(5)
		Conditional variable (0/1)			Sum of (2–4)
		Analyst follow.	Internationality	Leverage	Attention
<i>Enforcement</i>	0.3689*** (2.99)	0.3026*** (2.70)	0.3390*** (2.62)	0.2912** (2.51)	0.2184* (1.70)
<i>Conditional variable</i>		0.0036 (0.04)	0.2422 (1.40)	0.2156** (2.39)	0.1723** (2.17)
<i>Enforcement × cond. variable</i>		0.2256** (2.10)	0.0949 (0.44)	0.1478** (1.99)	0.1373** (2.32)
<i>Absence acc. standards</i>	0.1175 (0.56)	0.1393 (0.70)	0.1294 (0.60)	0.1261 (0.65)	0.1569 (0.84)
<i>Analyst following</i>	0.0450 (0.67)		0.0461 (0.71)	0.0450 (0.69)	
<i>BIG4</i>	0.2892 (1.09)	0.3127 (1.16)	0.2880 (1.09)	0.2919 (1.14)	0.3323 (1.30)
<i>Business liberty</i>	-0.2111 (-1.18)	-0.2279 (-1.29)	-0.2093 (-1.11)	-0.2119 (-1.25)	-0.2301 (-1.21)
<i>Cash flow variability</i>	-0.0217 (-0.46)	-0.0129 (-0.29)	-0.0193 (-0.40)	-0.0241 (-0.51)	-0.0284 (-0.60)
<i>Common law</i>	0.3404 (0.68)	0.3077 (0.71)	0.3401 (0.65)	0.3165 (0.65)	0.3591 (0.83)
<i>Debt increase</i>	0.2713** (2.41)	0.2655** (2.28)	0.2522** (2.29)	0.2803*** (2.59)	0.2439** (2.34)
<i>Divergence acc. standards</i>	0.2298** (2.33)	0.2568** (2.39)	0.2338** (2.26)	0.2239** (2.44)	0.2375** (2.50)
<i>Economic volatility</i>	0.1863* (1.93)	0.1547* (1.72)	0.1737 (1.60)	0.1795** (2.02)	0.1408 (1.50)
<i>Equity increase</i>	-0.1586* (-1.80)	-0.1497 (-1.63)	-0.1457* (-1.74)	-0.1528* (-1.77)	-0.1116 (-1.26)
<i>Future abnormal return</i>	-0.1156** (-2.17)	-0.1201** (-2.28)	-0.1121** (-2.08)	-0.1331** (-2.52)	-0.1435*** (-2.87)
<i>German law</i>	-0.1715 (-0.69)	-0.2175 (-0.94)	-0.1772 (-0.68)	-0.1814 (-0.80)	-0.2165 (-0.99)
<i>Growth opportunities</i>	-0.0601 (-1.14)	-0.0596 (-1.06)	-0.0709 (-1.28)	-0.0572 (-1.53)	-0.0746 (-1.40)
<i>Institutional ownership</i>	-0.0334 (-0.48)	-0.0213 (-0.32)	-0.0375 (-0.53)	-0.0230 (-0.34)	-0.0263 (-0.41)
<i>Internationality</i>	0.0931 (1.31)	0.0962 (1.35)		0.0846 (1.30)	
<i>Leverage</i>	0.1067** (2.16)	0.1150** (2.41)	0.1054** (2.08)		
<i>Market capitaliz. (country)</i>	-0.0038 (-0.02)	-0.0077 (-0.03)	-0.0102 (-0.04)	0.0091 (0.04)	-0.0051 (-0.03)
<i>Profitability</i>	-0.0024 (-0.05)	-0.0019 (-0.05)	0.0037 (0.08)	-0.0073 (-0.17)	0.0003 (0.01)
<i>Size</i>	0.1445** (2.15)	0.1630*** (2.76)	0.1391* (1.95)	0.1570** (2.46)	0.1429** (1.97)
<i>Trading on own account</i>	0.3351* (1.82)	0.3339* (1.84)	0.3452* (1.90)	0.3481* (1.90)	0.3605** (2.09)
<i>Constant</i>	-0.4769 (-1.07)	-0.4062 (-0.95)	-0.5410 (-1.16)	-0.5943 (-1.39)	-0.6548 (-1.40)
<i>Industry fixed effects</i>	Yes	Yes	Yes	Yes	Yes
<i>N</i>	383	383	383	383	383
<i>Adjusted R<sup>2</sup></i>	0.253	0.260	0.260	0.257	0.269
<i>Wald Chi<sup>2</sup></i>	350.4	436.9	322.3	440.8	380.1

Table 4 shows the results of OLS regressions of disclosure compliance on the set of firm- and country-level determinants. Column (1) presents the baseline model. The conditional variable in columns (2–4) is equal to 1 if the company has above sample median analyst following (column 2), foreign assets (column 3), or leverage (column 4), and 0 otherwise. The conditional variable in column (5), *attention*, is the sum of the conditional variables of columns (2–4). Each model contains industry fixed effects and all continuous variables are standardized. T-values are presented in parentheses and are based on bootstrapped standard errors (500 replications) while each replication is a bootstrap sample of country clusters. Variables are defined in the Appendix.

Consider the results in columns (2) to (4). The main effect of enforcement remains positive and significant. The coefficients on the indicator variables are larger in magnitude compared to the baseline model (with the exception of *analyst following*), but their respective statistical significance remains unchanged. The interaction terms of enforcement with high analyst following and high leverage load positive. In terms of economic magnitude, for companies with above-sample-median analyst following (leverage), the association between enforcement strength and risk disclosure compliance is approximately 70 percent (50 percent) stronger than that of companies with below-median analyst following (leverage).

**Table 5**  
Robustness tests.

	(1) OLS	(2) 2SLS	(3) OLS	(4) 2SLS
	<b>Country-level regression</b>		<b>Extracted country-fixed effects</b>	
<i>Enforcement</i>	0.8783*** (3.67)	0.9441*** (3.37)	0.8292*** (2.67)	0.7330** (2.02)
<i>Absence acc. standards</i>	-0.0680 (-0.20)	-0.0506 (-0.17)	0.1341 (0.31)	0.1085 (0.25)
<i>Business liberty</i>	-0.2795 (-0.93)	-0.3173 (-1.01)	-0.2504 (-0.74)	-0.1951 (-0.53)
<i>Divergence acc. standards</i>	0.5711** (2.25)	0.5923** (2.36)	0.5601** (2.06)	0.5292* (1.96)
<i>Economic volatility</i>	0.2868 (1.50)	0.2933 (1.49)	0.4919*** (2.63)	0.4824** (2.46)
<i>Market capitalization</i>	-0.0355 (-0.14)	-0.0543 (-0.22)	-0.0411 (-0.12)	-0.0136 (-0.04)
<i>Constant</i>	-0.4919 (-1.18)	-0.5026 (-1.18)	-0.8876** (-2.09)	-0.8719** (-2.00)
N	20	20	20	20
Adjusted R <sup>2</sup>	0.600	0.597	0.506	0.499
Wald Chi <sup>2</sup>	37.23	29.06	26.09	18.48

Table 5 shows the results of OLS regressions in columns (1) and (3), and two-stage least-squares regression in columns (2) and (4). For the two-stage least-squares regression we use the countries legal origins (La Porta et al., 1998) and their real per capita GDP averaged from 1997 to 2006 as instrumental variables for enforcement. The dependent variable in models (1) and (2) is the country-average of firms' disclosure compliance. The dependent variable in models (3) and (4) is the extracted country-fixed effect from firm-level regressions of firms' disclosure compliance on the full set of firm characteristics. All continuous variables are standardized. T-values are presented in parentheses and are based on bootstrapped standard errors (500 replications). Variables are defined in the Appendix.

There is, however, no incremental effect for companies with high foreign exposure, suggesting that enforcement strength is insensitive to the level of foreign operations.

Column (5) presents the results for the variable *attention*. Our prior findings are corroborated: more scrutiny by outsiders due to a higher demand for accounting information strengthens the association between enforcement strength and disclosure compliance.

A limitation of our approach is that we have repeated observations per country for all country-level variables. We therefore also analyze our data at the country level to have just one observation per country by regressing the mean of the compliance score on all country characteristics. We estimate the following regression model:

$$\text{disclosure compliance}_c = \alpha + \beta_1 \text{ enforcement}_c + \gamma_1 \text{ country-level controls}_c + \varepsilon_c \quad (2)$$

Standard errors are bootstrapped with 500 replications. The findings are reported in column (1) of Table 5 and support our previous results. Enforcement and divergence load positive; all other variables are insignificant.

Our regressions assume that enforcement is exogenous. If, however, enforcement and disclosure levels are simultaneously determined, our results suffer from an endogeneity bias. We address this concern by running a two-stage least-squares regression employing two instruments for enforcement: legal origin and per capita GDP averaged over ten years prior to 2007. While related to the level of enforcement, a country's legal origin can be considered predetermined and exogenous to our disclosure index (Levine, 1999). Moreover, an effective legal infrastructure is costly to create and maintain, and thus a country's wealth potentially influences the level of legal enforcement (Leuz et al., 2003). We present the second-stage results in column (2) of Table 5; they corroborate our main findings.

Finally, we control for variation in within-country heterogeneity based on an approach suggested by Hail and Leuz (2006). We first estimate (EQ1) and regress disclosure intensity on all firm-level variables but exclude all country-level variables. In lieu thereof, we include country indicator variables. We then extract the country fixed effects from this firm-level regression and regress them on all country-level variables in a country-level regression (similar to (EQ2) but with the country fixed effects as the dependent variable). This approach exploits firm-level information, controls for differences in within-country economic heterogeneity, and allows us to analyze how much variation in the country fixed effects is explained by the institutional variables (Hail and Leuz, 2006). The results are presented in columns (3) and (4) of Table 5, again corroborating our previous findings.

## 5. Conclusion

We document remarkable variation in risk disclosure compliance for 383 European companies, which have an average compliance rate of only 62 percent. Our findings emphasize the role of enforcement in disclosure compliance and suggest that a mandate is truly "mandatory" only in the presence of courts and regulators that are willing to hold managers to account. We also emphasize that enforcement is more effective in the presence of outsider monitoring. Our findings imply that (i) researchers should control for enforcement strength in cross-country studies; (ii) simply harmonizing accounting



regulations across countries does not guarantee risk disclosure compliance or suffice to ensure consistent disclosure across countries; and (iii) a tailored monitoring approach might be in order to ensure that the influence of differences in enforcement on risk disclosure compliance is reduced.

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## Appendix A. Variable definitions

<i>absence acc. standards</i>	number of reporting topics that are part of IFRS, but not of local GAAP; country-level variable (Ding et al., 2005)
<i>analyst following attention</i>	unique financial analysts following the company (I/B/E/S) the sum of three indicator variables for above sample median of <i>analyst following</i> , <i>internationality</i> , and <i>leverage</i>
<i>BIG4 auditor business liberty</i>	indicates whether a company is audited by a BIG4 firm (Compustat) (business freedom + financial freedom + investment freedom)/3; country-level variable (Heritage Foundation, 2009)
<i>cash flow variability Common (German) law</i>	standard deviation of operating cash flow over 5 years (Compustat) indicates whether a country's legal system is based on Common (German) law; country-level variable (La Porta et al., 1998)
<i>debt increase</i>	indicates whether a company issues more debt in the subsequent two years than the median sample company (Compustat)
<i>disclosure compliance</i>	disclosure score of 26 items drawn from mandatory risk disclosure regulations in IFSR 7 and IAS 39 (own computation)
<i>divergence acc. standards</i>	number of accounting topics for which rules in IFRS differ from rules in local GAAP; country-level variable (Ding et al., 2005)
<i>economic volatility</i>	standard deviation of a country's GDP per capita divided by the country's average GDP over the last 5 years; country-level variable (World Bank)
<i>enforcement</i>	single and only factor drawn from a factor analysis of country-level corruption, government effectiveness, regulatory quality, and rule of law; country-level variable (Kaufmann et al., 2009)
<i>equity increase</i>	indicates whether a company issues more equity in the subsequent two years than the median sample company (Compustat)
<i>future abnormal return</i>	stock return over the subsequent year, market-adjusted (CRSP)
<i>growth opportunities industry</i>	market-to-book value of common equity (Compustat) industry classification (two-digit SIC codes, Compustat)
<i>institutional ownership</i>	percentage of shares held by institutional investors (Thomson Reuters)
<i>internationality</i>	percentage of foreign assets to total assets (Compustat)
<i>leverage</i>	total debt to total assets ratio (Compustat)
<i>market capitaliz. (country)</i>	market capitalization scaled by country GDP; country-level variable (World Bank)
<i>profitability</i>	net income to net sales ratio (Compustat)
<i>size</i>	natural logarithm of total assets (Compustat)
<i>trading on own account</i>	indicates whether a company explicitly states that it speculates on capital markets by using derivative financial instruments (own computation)

## Appendix B. Supplementary material

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jaccpubpol.2020.106739>.

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